Public Comments on BAP Farm Std 3.0 and BAP Responses

General Comments

Comment

1. Actual recirculation rate per day - how much water is being used. This is particularly important for fresh water, where the use could be competing with other users. Obviously, It matters if a RAS system recirculates 80/90/99%) in that regard. However, higher recirculation rates can cause more build-up of toxics i.e. filtration becomes (even more) important / biomass risk may increase.
2. Energy use, costs and source + potential to replace with sustainable source (solar, hydro, geo-thermal)
3. Recirculation leads to higher concentrations of N+P. We would look into discharge of N+P and potential environmental impact (eutrophication) and necessity for pre-treatment (like de-nitrification). btw we have recently invested in a company called Swedish Algae Factory, who grow (very!) high value algae (diatoms) on primality RAS discharged N+P.
4. Sludge use - what is being done with the sludge (e.g. bio fermentation of sludge for energy, use as a fertiliser, or just land fill)
5. Biomass risk mitigation (bio hazard protocols, separations of production lines, back-up systems)
6. Animal welfare issues (stocking densities, mortalities) as well as slaughtering method. btw we have invested in a company called Ace Aquatec that has a 'humane stunner', perhaps it is worthwhile for you to take a look, because this does relate to farming practices at large
7. Production parameters / risks (growth rates, FCR, mortalities, maturation issues)
8. Experience of team of farming proposed / actual species (track-record)
9. Proximity to market, this is important for two reasons: 1) a cost advantage in transportation, potentially off-setting a cost disadvantage in production costs and 2) for environmental reasons.

BAP Response

The standard now includes requirements to record and report water use and energy use.

3.4: *Records and summaries of the volume of farm intake water use and effluent water quality monitoring (if applicable) shall be maintained and available. Note: Auditors must include water use data in the audit reports.*

3.2: *The farm shall keep records of annual direct energy (fuel and electricity) consumption. Note: Auditors must include this data in the audit reports.*

Effluent requirements (Appendix B) have now been adjusted for specific systems, such as RAS.

Requirements for responsible management of sludge do not specify which methods should be applied.

The technology for humane stunning using machines is under regular review and BAP requirements are responding to roll out and evolution in best practices.

Some of the aspects mentioned in these comments relate to full life-cycle analysis and the BAP program intents to recognise leading performers in this area via its new Vanguard program.

https://www.bapcertification.org/WhatWeDo/Vanguard

Comment

There is no mention of the use of Chlorine or Bromine sterilizing agents used on dried up ponds or fixed structures (raceways). There may be residual reaction products retained in the environment that may contaminate the food chain of the pond or the production animal. The flushing of sterilant from the facility should be considered.

The use of brand names for Oxygen and other water constituents should be avoided (YSI is a qualified Oxygen test manufacturer for example)

The fish in the fish out ratio should reflect typical feeds for stages of growth (fry feed should be of the highest quality which means higher use of marine resources) otherwise seed production units could be penalized unfairly.

Overall, fairly well written but with some redundancy. (Expected, because of different writing groups and application of different sections in audit.)

Transparency of the cost cycles from Directors, staff, the cost of becoming an Auditor and the fees charges to a facility for audits and ongoing inspections. There should be a procedure censuring and fining for violation of the use of The BAP logo and of fraud in obtaining certification.

BAP Response

Two manufacturers of water quality test kits are named. This is not considered ideal, but it is a response to historical problems with the use of inferior hobbyist kits.

Please note that FIFO ratios in this standard apply to the grow-out phase. A separate BAP standard applies to nurseries and hatcheries:

https://www.bapcertification.org/Downloadables/pdf/standards/PI%20-%20Standard%20-%20Finfish,%20Crustacean%20and%20Mollusk%20Hatcheries%20and%20Nurseries%20-%20Issue%201.0%20-%2001-September-2014.pdf

There are procedures for the correct use of BAP logos and claims (https://www.bapcertification.org/Downloadables/pdf/BAP%20-%20Policy%20-%20BAP%20Logo%20Use%20Requirements%20-%20Issue%202.3%20-%2010-January-2020.pdf) and Program Integrity staff conduct 'logo policing' as part of benchmarking requirements (GFSI and GSSI)

Comment

Thank you for taking time for public comments. I hope you are all doing this to be honest and not just another buy in option for sales as we see in Organic certifications or cage free birds, etc. Please be cognizant that some of us will test these items for the contaminants found everywhere, including human medicines. Please do not allow feeding and farming in human wastewater. Thanks! A foodie in the business that can't eat shrimp anymore!

BAP Response

There are food safety requirements (Pillar 1) that prevent farming in water contaminated by human waste.

Comment

"The following Best Aquaculture Practices (BAP) standards apply to the farming of crustaceans and other aquatic invertebrates, except bivalve mollusks (refer to the BAP Mollusk Farm Standard) and finfish, except salmonids reared in net pens in marine waters (refer to the BAP Salmon Farm Standard). They cover all production methods, including flow-through, partial exchange, and closed or recirculating water systems operated in ponds, cages, net pens, tanks, raceways, or closed-containment vessels."

This sentence is a bit confusing and open to interpretation. With the current wording and punctuation, it is not clear if salmonids reared in net pens are not included, or excluded from the exception that excludes bivalve mollusks.

Also, does this now replace the BAP Finfish, Crustacean, Mollusk Hatcheries and Nurseries which do apply to the farming of salmonids? As there was no mention of this in the announcement it should be made clear.

Proposed change

The following Best Aqauaculture Practices (BAP) standards apply to the farming of crustaceans and other aquatic invertebrates and finfish. They cover all production methods, including flow-through, partial exchange, and closed or recirculating water systems operated in ponds, cages, net pens, tanks, raceways, or closed-containment vessels.

Not covered under these standards are:

- Bivalve mollusks (refer to the BAP Mollusk Farm Standard)
- Aquaculture facilities that produce eggs and/or juvenile aquatic animals for live transfer to other aquaculture facilities (refer to BAP Finfish, Crustacean, Mollusk Hatcheries and Nurseries)
- Salmonids reared in netpens in marine waters (Refer to BAP Salmon Farm Standard)

BAP Response

Suggestion adopted with slight edits:

The following Best Aquaculture Practices (BAP) standards apply to the farming of finfish, crustaceans, and other aquatic invertebrates. They cover all production methods, including flow-through, partial exchange, and closed or recirculating water systems operated in ponds, cages, net pens, tanks, raceways, or closed-containment vessels.

Not covered under these standards are:

- *Salmonids reared in net pens in marine waters (refer to BAP Salmon Farm Standard)*
- *Bivalve mollusks (refer to the BAP Mollusk Farm Standard)*
- *Aquaculture facilities that produce eggs and/or juvenile aquatic animals for live transfer to other aquaculture facilities (refer to BAP Hatchery and Nursery Standard)*

Comment

Animal Welfare NGOs Coalition Statement: BAP Farm Standard “Aquaculture Facility Certification” Issue 3.0 The Aquatic Animal Alliance is a coalition of animal welfare NGOs looking into how to best ensure aquatic animal welfare based on the best available scientific evidence. The reference and supporting materials used for this statement can be found at the end of this document. We believe standards should recognize the welfare considerations of animals who are not used directly as food; this includes cleaner fish, feeder animals, broodstock, those used in fish stripping, and others who are not directly used for human consumption. 1 We believe standards should apply to all aquatic animals involved in the production of the final product and to the full lifecycle of these animals. Within the aquaculture industry, the term “welfare” has historically been used to refer to animals’ physiological health and producers’ husbandry practices. However, the scientific animal welfare community has long known that welfare also encompasses psychological well-being and the ability to choose to engage in natural behaviors. We believe welfare standards should not only prevent the most harmful practices but also provide a positive environment where healthy aquatic animals can express their species-specific behavioral needs and preferences, and experience positive affect. 2 Species- and life stage-specific environmental enrichment shall be provided at all stages of life and production and the forms of enrichment shall be updated in response to new research.

We believe that to measurably improve welfare, aquatic animal welfare standards must be species- and life stage-specific. We believe BAP should prioritize timely updating of standards in response to new research on species- and life stage-specific welfare. We believe that BAP should enforce these standards with thorough record-keeping and record-publishing of implementation and quantification of all welfare standards, including consequent producer response and alterations to protocol when standards are not satisfied.

BAP Response

The BAP program supports improvements in the welfare of farmed aquatic species via its animal health and welfare requirements, i.e. Pillar 4 of this BAP Farm standard, and it welcomes input from interested parties/stakeholders.

Comment

We thank BAP for its dedicated work on social responsibility in seafood and for the chance to contribute during this public consultation period.

In general, is important to go the extra mile to ensure that migrant workers are treated equally to country nationals. This includes hours of work, access to training, membership in labor unions or worker organizations, etc. The farm, employer, or subcontractors acting on its behalf, should explicitly prohibit the abuse of migrant workers, including the threat of denunciation to authorities as a means of coercion. And, workers should receive equal pay for work of equal value.

Please contact us with any questions about these comments.

BAP Response

BAP social requirements have expanded to address recruitment issues, with the objective of protecting vulnerable migrant workers.

Comment

Audit transparency recommendation: Audit reports should be made publicly available. Transparency and verification of seafood supply chain audits keep companies and certifiers accountable while increasing buyer confidence in BAP-certified products. An example of how company audit reports have been made publicly available can be seen in the ISSF compliance database.

BAP Response

BAP does not make audit reports public. This stems from the confidentiality requirements specified in the ISO 17065 standard that the BAP certification program (and many others) is based on. However, certified farms are free to share their reports with interested parties or publish them as they wish.

The proposal to publish audit reports will be discussed within the BAP Program.

Comment

- The risk of illegal practices in feed production are heightened when not properly documented. BAP should continue to require farms to use BAP-certified feed mill products and include supplier declarations in farm traceability paperwork to be passed to processors downstream.

- The Global Dialogue on Seafood Traceability recently launched a set of global standards for data capture and sharing of wild-caught and farmed products. Some of the world's largest seafood companies have adopted the standard as other industry groups continue to demonstrate support and begin implementation of the standard. It is in BAP's best interest to incorporate a traceability recommendation to align with the standard including links to the implementation toolkit. In future standard revisions, BAP should require farms to include the full set of GDST KDEs in their data collection practices and adapt the Sample Product Traceability Form in Appendix E to align with the standard.

BAP Response

Important benchmarks, such as GFSI, do not permit this:

GFSI 1.5 : The certification process shall not be 'self-promoting' or 'self expanding' by mandating that products or services from the certified organisation shall contain components which are certified under a Certification Programme owned by the Certification Programme Owner

New references to and recommendations regarding GDST have now been inserted in the traceability section.

The comments regarding traceability have been noted. Beyond its own BAP traceability requirements, GAA intends to endorse key traceability initiatives to promote interoperability.

Comment

Great improvement in the standard vs. the existing one.

Comment

Ocean Plastics: ocean plastics is becoming a key concern within the seafood industry. While BAP has areas that address how to properly manage discarded products (Section 3.73: Damage discarded decommissioned or derelict net pen facilities or other floating gear shall be recollected and removed promptly from oceans, lakes, rivers or shorelines to avoid accumulation or loss), missing from the BAP standard is reference to the key word "Ocean Plastics". I feel a small section titled Ocean Plastics that pulls all areas of the standard together that addresses the issue, is overdue for the BAP standard. Having a section dedicated to Ocean Plastics will help keep BAP at the forefront of the industry.

BAP Response

New detail added to the Implementation Guidance:

Managing Derelict Gear, Marine Litter and Plastic Waste

Some aquaculture production systems require deployment of cages or net pens, rafts, racks, moorings, marker buoys, floating docks or other gear that floats or is submerged near the water surface. All deployed gear should be clearly marked or identified as property of the farm. During extreme weather events with high wind, waves and flooding, gear may become detached or damaged. Once safe to do so, every effort shall be made to retrieve this gear from the bottom, adjacent shorelines or water surfaces. Damaged gear that is retrieved can be repaired or disposed of like other solid wastes in a sanitary landfill. A procedure should be in place for the management and recording of lost, "end of life" or recovered aquaculture gear to control any risks of entanglement with wildlife.

Aquaculture uses many plastic items, including synthetic ropes, netting, floats and buoys, drums, buckets, trays, feed bags, plastic bags for transport of fry or post-larvae, Styrofoam cooler boxes, various packaging materials, boats, pipes, tanks and pond liners, among many other items. Farms are encouraged to conduct a plastics inventory to track the procurement, use and disposal of all plastic items in an effort to avoid release to the environment. All plastics should be disposed of in a manner that will not generate marine litter or have other detrimental impacts on the environment. Records of how this waste material is disposed of should be retained.

Comment

Our team has reviewed the new standard and have some valid concerns with some of the proposed changes. Several of the aforementioned clauses would prevent us from retaining our BAP certification all together (clause 3.25). We run a sustainable operation and the cage depth clause would seriously impact our production. If this is left in the new standard, we will not be able to re-certify our farm, hatcheries or processing center any longer and we will need to look at other certifications.

BAP Response

Cage farms in the Columbia river would be able to make a case that they are in a river rather than in a reservoir or lake, and thus 3.25 (now 3.26) would not be applicable.

Comment

Thank you for the opportunity to review the New Farm Standard.

I work as an Auditor to the BAP Standards and applaud your inclusion of Ralph Parkman in your review process. I have known Ralph for many years and admire his experience and thoughtful ways.

The new format following the 4 Pillars is an interesting change.

I do hope consideration has been given to the fact that adding more requirements to the audit process also needs to add more time to the audit process. I have been auditing to the BAP Standards for 8 years now and in that time the expectations of the auditor has grown tremendously, while the time allotted for the audits has remained stagnant. Especially for new facilities and single site audits.

BAP Response

The increasing pressure on auditors has been noted along with the need for adequate audit durations.

Comment

1. Our Approach:

[redacted] Group Corporate Affairs & Sustainability sets policy, standards and certification requirements for our [redacted] WE CARE globally integrated sustainability program across the world. Both the GAA BAP and all other certifications fall within the scope and responsibility of this [redacted] Group function.

[redacted] Corporate Affairs & Sustainability is providing our collective and hopefully constructive feedback for the new BAP Farm Standard Issue 3.0. on behalf of our BAP certified country producers and farming experts representing: • [redacted]

2. Overall Comments:

[redacted] welcomes and supports the evolution of requirements in the BAP Farm Standard Issue 3.0 as they raise the bar for traceability, food safety, social responsibility, environmental monitoring, fish welfare and new limits for fish-in fish-out (FIFO) ratios. Notwithstanding our support for the BAP Farm Standard Issue 3.0, we have also observed key gaps and opportunities with the draft BAP Farm Standard Issue 3.0. Drawing from [redacted] responsible farming expertise gathered over 30 years and within a proprietary Lake Water Assurance Program, we would kindly request that BAP consider the following recommendations for the BAP Farm Standard Issue 3.0.

BAP Response

Responses to content specific comments are provided in this document where they relate to specific clauses.

Comment

1) Pg. 4/65: The facility must submit evidence to the CB in order to close out all non-conformities within 35 calendar days.

Request to add: …within 35 calendar days “from the day following the end of the on-site audit”.

2) Pg. 4/65: The timelines for audit, closure of non-conformities, technical review and certification decision are as specified in the GAA/BAP CB Requirements Document.

Request to include link reference to document GAA/BAP CB Requirements.

3) Request to include overall scope table "BAP Standards Compliance Requirements" like the one on page 3 of previous BAP Standard Issue 2.4 – 23-May-2017.

4) Pg. 9/65: Statements from seed and feed suppliers ~~that~~ that attest to production procedures that exclude prohibited antimicrobial agents, unsafe levels of additives or heavy metals and physical or other contaminants are required and maintained on file in the record-keeping system.

Request to add: Statements from seed and feed suppliers “of non-BAP certified sources"

5) Pg. 18/65: Auditors shall take into account national and local regulations, however, *if the law differs from a BAP requirement, the provision that provides the greatest protection* to the worker applies.

Contradicts with clause 2.14: *Overtime shall not exceed 12 hours per week except as permitted by national law* and as arranged in a voluntary contract between farm owners and each worker

6) Pg. 41/65: Pump station records shall be maintained and annual summaries of water use provided to

verify the 10% limit. There are no limits on water exchange rate for shrimp farms that pump water directly from oceanic sources to maintain pond salinity of 40 ppt or greater.

Request to:

- change 40ppt to “35ppt” or

- remove “40ppt or greater” and replace with “to that of oceanic sources”.

If oceanic sources are considered limitless, why limiting the exception to 40ppt? why not 35ppt?

7) Pg. 44/65:

A chemical inventory should be maintained. Chemicals should be labeled with the date received and date opened.

We have not seen chemicals with instructions of use-by-date from date of opening. What is the need for this and how could it be used by farmers? Request to remove “Chemicals should be labeled with the date received and date opened” as chemicals are labeled with date manufactured and expiry. Date received/opened adds unnecessary work to farmers.

8) Pg. 44/65:

Materials should be segregated by hazard class.

Request to add: … and according to compatibility to prevent undesirable chemical reaction from occurring should two or more chemicals accidently mix.

9) Pg. 44/65:

Cylinders of compressed gases should be secured with chains.

Request to change: Cylinders of compressed gases shall be secured properly such as using chains and not breakable materials such as rope or raffia string.

10) Pg. 44/65:

Chemicals such as insecticides, herbicides, algicides, sodium metabisulfite used in shrimp, and detergents should be stored in locked, well-ventilated water-tight buildings.

Request to remove: detergents (Detergents are common household cleaning items)

11) Pg. 44/65:

First aid supplies, emergency phone numbers, eyewash and emergency shower equipment, fire extinguishers, spill cleanup supplies and personal protective equipment should be readily available and workers trained in their use.

Request to change: …shall be readily available…

12) Pg. 45/65:

The farm should keep an accurate and current inventory of all feed types used. The oldest feeds should be used first (first in, first out).

Request to change: The farm shall keep an accurate…

13) Pg. 45/65:

Pesticide applications may be necessary and these should be documented and done using only legally approved chemicals and safe application methods by trained workers.

Request to change: …and these shall be documented…

14) Pg. 46/65: Dead aquatic animals should be stored for the minimum time that is practical before disposal.

Request to add: and 14.

15) Pg. 50/65: Procedures for routine handling operations (crowding, transfer, grading, vaccination, chemical treatment, etc.) used on the farm should be described in a Standard Operating Procedure document.

For consistency with clause 4.9, Request to change: …used on the farm shall be described in a SOP document.

BAP Response

Points 1-3: changes adopted. A table of contents is inserted rather than a table indicating system applicability

Point 4: change adopted

Point 5: under review

Point 6: Wording in the guidance now changed for clarity to:

The 10% limit on water exchange rate for shrimp farms does not apply if farms use oceanic water to adjust pond salinity and compensate for evaporative water loss. However, this exemption is only allowed if the pond salinity is kept at 40 ppt or more. In arid zones, pumping oceanic water to maintain a salinity below 40 ppt would not be efficient.

Point 7: sentence deleted as proposed

Point 8, Point 9: wording inserted

Points 10 and 14: suggestions adopted

Comment

Area Management (page 49)

We strongly support the inclusion of Area Management under Pillar 4. Animal Health and Welfare and the recognition that cumulative impacts are especially critical with respect to disease transmission among neighboring farms.

We also support and are ready to seek opportunities to collaborate/highlight BAP's approach in this area e.g., through the BAP Biosecurity Area Management Standards.

We also believe that this aspect could be strengthened by moving the Area Management paragraph above the Health Management Plan & Biosecurity Plan sections and by including "*coordination with neighboring farms in disease surveillance and control*" within these sections.

We also believe that competent authority should be notified if the disease is listed by the OIE or is required by local regulations.

Re Audit Reporting and the Certification Decision (page 4).

We support making the final audit reports publicly available via the Find BAP-Certified Producers page.

Re Pillar 3. Environmental Responsibility – General Implementation Guidance (page 20)

Although it states that every BAP-certified farm should conduct an assessment that identifies the impacts from construction and operation of the farm to the surrounding environment (page 41), we believe that an environmental assessment and an environmental management plan should be an audit clause. This is similar to the approach taken under audit clause 4.1 (page 47) which requires an operational health management plan or manual is produced.

We suggest strengthening of the language "*Some of the potential issues that may be considered in an Environmental Impact Assessment and Management Plan may include*" (page 20) to "Issues that should be considered in an in an Environmental Impact Assessment and Management Plan".

As it states that the main focus of the Environmental Impact Assessment and Management Plan should be on local to regional-scale impacts, we believe that mandatory issues for an EIA should include, but are limited to: "*Environmental capacity of water bodies receiving farm wastes"* as well as "*the potential for disease transmission with neighboring farms"* with the EMP identifying management approaches to tackle these.

C. Habitat Protection and Site Selection for Ponds and All Other Land-based Systems (page 27)

As mentioned, we recognize that as per BAP's approach and core focus is on farm-level performance. However, we encourage the inclusion of clauses that account for potential cumulative impacts. Therefore, we support an additional clause that states "*New farms should not be sited in areas where there is a risk of exceeding the carrying -capacity of the waterbody*".

Traceability – We don't see the requirement to keep records of disease outbreaks in the list of audit clauses on page 51/52, but acknowledge that it is identified under Appendix E – Sample product Traceability Form

BAP Response

Implementation guidance modified:

To achieve area management of disease risks, farms are required to make a good-faith effort to initiate or participate in an Area Management Plan to coordinate disease surveillance and control and other biosecurity activities.

Regarding notification, the Implementation guidance has been modified:

The steps followed shall include reporting to the Competent Authority if the disease is listed by the OIE or is required by local regulations.

BAP does not make audit reports public. This stems from the confidentiality requirements specified in the ISO 17065 standard that the BAP certification program (and many others) is based on. However, certified farms are free to share their reports with interested parties or publish them as they wish.

Regarding the suggestion to make an Environmental Impact Assessment and an Environmental Management Plan as audit requirements (rather than as recommendations), note that compliance with BAP standards is designed to deliver an equivalent outcome. I.e., the BAP standards identify the possible environmental risks of an aquaculture operation and meeting the requirements is designed to control the risks. This BAP approach, as compared to requiring a generic environmental management standard, draws immediate attention to the key impacts of aquaculture and it is much easier for farmers, and particularly small-scale operators, to understand and apply.

The requirement (Clause 3.1) for the calculation and reporting of effluent loading indices is an essential step in collecting the information needed for carrying capacity studies. The BAP farm effluent controls define responsible behaviour for individual operators. Additional area management requirements promote collective responsibility with neighbouring farms to promote full sustainability:

3.34: For farms located in areas with other neighboring BAP-certified farms, or with members of an established Area Management Agreement, production cycles and fallowing shall be coordinated.

3.35: For farms located in areas with neighboring farms that are not BAP certified, or where an Area Management Agreement has not been established, the farm shall demonstrate that a good-faith effort has been made to cooperate with neighboring farms on matters of stocking, fallowing, animal health and biosecurity within an area twice the regulatory minimum separation distance to an upper limit of a 5-km radius from the farm.

Comment

As a good principle, all new requirements introduced in the standards should include a transition period, specially in the cases where the new requirements imply significant changes or investments in farms' operations.

BAP Response

There will be a transition period of at least 12 months to this Issue 3.0. Note also that there will be transition periods for the adoption of improved slaughter methods.

Comment

I believe that this version of the of the farm standards make the guidance much easier to follow. I think that the changes made to effluent monitoring makes a lot of sense. We appreciate the input BAP has allowed us to have throughout the process. I would like to talk to someone regarding these changes to see if we can make common sense tweaks to allow for responsible farmers to not be left outside the bounds of the rules.

BAP Response

For further exchange, please use the Stakeholder Feedback form on this page:
https://www.bapcertification.org/Standards

Or email: dan.lee[at]gaalliance.org or David.yunker[at]bapcertification.org

Comment

Suggest adding a requirement to supply data concerning energy use, without setting any specific metric.

BAP Response

Now addressed in new clause.

3.2: The farm shall keep records of annual direct energy (fuel + electricity) consumption. Note: Auditors must include this data in the audit reports.

Comment

More detail and precision are needed in the final traceability requirement.

The farm, regardless of the star status claims being made for harvested products, shall provide data for the auditor to perform at a minimum two trace-back exercises, one to feed and one to stocking materials, and one trace-forward exercise to a processing plant. Results of these exercises shall be in line with expectations. Note: at the discretion of the auditor, more trace exercises may be conducted.

BAP Response

Clause modified:

T15: The farm, regardless of the star status claims being made for harvested products, shall provide data for the auditor to perform at a minimum two trace-back exercises, one to feed and one to stocking

materials, and one trace-forward exercise to a processing plant. Results of these exercises shall be in line with expectations. Note: at the discretion of the auditor, more trace exercises may be conducted.

Comment

Some elements are missing from the traceability clauses. Insert:

Farms that purchase stocking materials from both BAP and non-BAP certified hatcheries shall identify and record all sources and have adequate systems in place to prevent mixing/comingling of stocking materials. All product harvested from use of stocking material from non-BAP certified hatcheries shall not be claimed/labeled with BAP logo.

And: Farms that purchase stocking materials from non-BAP certified nurseries and/or other intermediaries shall identify and record all sources and have adequate systems in place to prevent mixing/comingling of the stocking materials. All product harvested from use of such stocking materials shall not be claimed/labeled with BAP logo. (Note: This does not apply to nurseries within the farm and/or in close proximity to the farm that are part of the certification and that undergo audits during the farm annual audit).

BAP Response

Added:

T5: Farms that purchase stocking materials from both BAP and non-BAP certified hatcheries shall identify and record all sources and have adequate systems in place to prevent mixing/comingling of stocking materials. All product harvested from use of stocking material from non-BAP certified hatcheries shall not be claimed/labeled with BAP logo.

T6: Farms that purchase stocking materials from non-BAP certified nurseries and/or other intermediaries shall identify and record all sources and have adequate systems in place to prevent mixing/comingling of the stocking materials. All product harvested from use of such stocking materials shall not be claimed/labeled with BAP logo. (Note: This does not apply to nurseries within the farm and/or in close proximity to the farm that are part of the certification and that undergo audits during the farm annual audit).

Comment

I note that Exemption 3.2.3 with a 100-day water use would apply to perhaps 1/3rd of the production systems that utilizes floating bead bioclarifiers as their principal treatment methods. These systems tend to be highly closed. The Aquaculture Engineering Society defined “closed recirculation” as greater than a 10 percent turnover per day. If you broaden out the systems that include micro-screens, then I would guess that only 10 percent of these facilities meet the closed recirculation definition. So, I am thinking that
at this stage in development a more modest objective, perhaps 30-day reuse would encourage more RAS to attempt to comply.

I do not believe that a BAP standard should be based on concentration limits. Impact of receiving bodies of water is for the most part established by mass loading, not concentration. Defining BAP in simple

terms of concentration encourages the indiscriminate use of our limited water resources for dilution. A modern closed recirculating system can easily operate with a hydraulic turnover rate of 30-100 days and discharge of under 40 liters of water per kg of fish produced. In comparison, an open recirculating system operates with less than one day of HRT and generates several thousand liters per kg fish produced. How is it fair to compare these the basis of concentration? Closed RAS companies spend a lot of money to extend water reuse and limit quantities and now you suggest comparing the BAP on the basis of discharge concentration alone thus adding more costs on your best performers (closed RAS and pond).

I would further argue that the acceptable concentration of these parameters is defined by highly localized conditions. In the United States, protection of localized waters is already conducted by a networked State or EPA regulators that analyze the natural carrying capacity of receiving streams and then set appropriate regional standards for effluent concentrations and/or masses. In many parts of the country some of the parameters listed are not even considered in discharge analysis. Given the extreme difficulty I have observed in siting large aquaculture production facilities in this country, these regulators are doing an excellent job of protecting the receiving bodies.

If you wish to establish a best practice you should base it on a production-based impact. The units of measure should be kg/kg-production. This is the true measure of best practice. For example, measuring many grams of nitrogen do you discharge per 1kilogram of product produced. Now the playing ground is truly leveled. Simple dilution does not work. The industry is forced across of variety of platforms to optimize feed compositions, to optimize feed conversion, and to clean up their own water quality mess. Let the localized regulators define the concentration limits, if required.

Referring to Appendix B: Ponds and Raceways should be separate categories. Ponds are nature's recirculating system, and the bulk of the load is generated internally as a secondary effect of the feed loading, usually in the form of nitrogen and phosphorus. Algae blooms and sediment oxygen levels control what a pond will discharge. Raceways are wholly direct loading as water is only held long enough until a controlling parameter concentration (usually ammonia) is reached. These are not comparable systems. For example, raceways could be easily (have been) modified to reduce solids produced. A relatively stringent solids guideline can be reasonably met. Ponds are cursed by fickle algae blooms which places strict limits on the control of solids releases. Treating effluents for solids would trigger a substantial new treatment costs since they typically overflow during peak flow events driven by rainfall. Setting realistic production- based mass limits on raceways would truly reduce environmental impacts.

The pH range is very broad and should be easy to comply with. The impact of the pH on receiving streams is controlled by the receiving bodies alkalinity. Some aquaponic systems may be forced to raise the pH. Some pond operations could see pH levels in excess of 10 during algae blooms.

Total suspended solids limits are reasonable and could be met with minimal treatment by raceways, Well operated ponds would probably be able to meet 50 mg/L but would have difficulty meeting a lower (25 mg/l) standard because of algae blooms.

The 25 mg/l is achievable by direct flow from tanks for a well-designed RAS, but green water tilapia system would require effluent treatment to meet this standard due to the algae impact. Alligator systems typically closed would require treatment. Lagoon treatment alone would not reliably achieve this standard, however, lagoon wetland combinations can. Biofloc systems would require settling basins

at a minimum to meet this standard. High water reuse RAS using micro-screen filtration only could be challenged to meet this standard by direct release because of fine solids buildup. Overall, the 25 mg/l liter standards are reasonably achievable by RAS but would incur additional costs for some. Very few closed recirculating systems practice direct discharge; for the most part in the United States they flow to a treatment lagoon prior to release into a receiving stream.

Total Phosphorus (soluble plus organic and mineralized particulate) would be a more appropriate parameter than soluble phosphorus if the intent is to reduce environmental impact. Phosphorus solubility is largely controlled by pH and sediment oxygen levels. Strictly aerobic systems of moderate pH (>7.0) and alkalinity (>80 mg-CaCO3/L) will have little soluble phosphorus as it is contained in the organic solids or precipitates in a mineral form. So almost all the phosphorus is bound in the solids. Once in the natural environment, the solids settle, oxygen levels drop, and phosphorus is released by decay of the organics or changes in valence of minerals binding with the free phosphorus.

It is not likely that the reasonable total phosphorus standard could be met with the liberal solids' standards proposed here since most of the phosphorus is held in the suspended solids or sludge. Lagoon treatment is likely to increase the soluble phosphorus levels as the organic sludge breaks down, typically under anoxic to anaerobic conditions.

Total phosphorus removal at the levels proposed for the soluble phosphorus would likely require a coagulation flocculation process that is above the means of most small- scale aquaculture ventures.

The ammonia limit of 3 mg-N/L is a reasonable guideline for a well-designed RAS that operates with TAN under 1 mg-N/L. A great number of tilapia farms operate with TAN concentrations in the range of 5-10 mg-N/L. They would have to treat the effluent to meet proposed 3 mg-N/L. The standard is costly but achievable. What justifies setting a more stringent limit on RAS than raceway? This could be rectified by a normalized loading criterion: Kg TAN discharged/Kg product produced.

The sizing of "4 or more" does not make sense. This should read "<20 mg/L", for example. There is a very rough correlation between organically rich suspended solids that can be summarized: "1 mg/L TSS➔mg/L BOD_5", so you have problem when you set a high suspended solids limit and then try to set a low BOD_5 standard. Also recognize that converting 1 mg/L BOD5 leads to the creation of about 0.6 mg/L of TSS as bacteria. The two are closely related. So, I would suggest that you set this limit at the same level as the TSS sample else you will be forcing solids removal by this standard rather than the other.

I suggest you set the discharge oxygen level as ">5.0 mg/L" for all applications. This is almost a universal standard, normally obtained by cascade or aeration that prevents fish kills in the mixing zone.

The USEPA's secondary standard for chlorides in drinking water is 250 mg/L. Given the distorted water chemistry that can occur in RAS it would be better if this standard was set in terms of Total Dissolved Solids. Or, if you need something that is easier to measure, perhaps salinity or conductivity. Some RAS salt their waters to lessen the impact of nitrites. I have had the opportunity to sample RAS operations in the TDS (salinity) range of 2,000-3,000 mg/L. You would expect the chloride level to be about half that but in fact the dominate salt is sodium nitrate the by- product of adding sodium bicarbonate as a buffer. The USEPA secondary drinking water standard for TDS is 500 mg/L, about twice the chloride standard. Removal of total dissolved solids from discharged waters can be very expensive, the state of the art being Reverse Osmosis (RO) with a lot of pretreatment.

Chlorides are of no interest to states or countries that are water rich. Total dissolved solids limit groundwater reuse in our western states but are of no interest in the states east of the Mississippi nor in most coastal zones that do not have a useable groundwater or are blessed by good rainfall. Localized environmental enforcement currently tends to force high water reuse systems to areas not sensitive to salt.

A salinity standard of some sort is appropriate for arid regions. 800 mg/L chlorides (1600 mg/L TDS) are reasonable for arid regions as long as the quantity(flow) is low.

BAP Response

These detailed comments were used to help finalise the effluent water quality requirements for RAS. However, the BAP Program is moving away from reliance on effluent water quality criteria towards setting load indices for N and P, a direction which aligns with these comments.

BAP Farm Standard 3.0 collects the necessary data on loading indices to enable the setting of appropriate limits in the future:

3.1: *Farms shall calculate environmental loading indices for total nitrogen and total phosphorus based on data collected on production system type, feed conversion ratio and water exchange. Note: Auditors must include this data in the audit reports.*

Pillar 1 – Audit Clause 1.1

Comment

Suggest a stronger linkage to HACCP approach as best practice for food safety risk management and provide more specific evidence that is operational and effective through the implementation of Standard Operating Procedures

Proposed Change

Farms shall use Hazard Analysis Critical Control Point (HACCP) approach to assess and identify potential contamination risks from the surrounding environment with potential to affect the food safety of products from an aquaculture farm, including monitoring any changes to watershed land use practices over time. The farm shall develop a Management Plan that is risk-based and includes Standard Operating Procedures to monitor and control those risks and provide evidence that the plan is operational and effective.

BAP Response

The approach of the BAP program has been to assess the potential food safety risks of aquaculture operations on behalf of farmers and then to set a series of requirements to control these risks. Thus, HACCP principles have been applied in the development of BAP requirements, but a formal HACCP plan is not one of these requirements. This approach turns a farmer's attention to directly addressing the key food safety risks and is particularly appreciated by small-scale operators.

Pillar 1 – Audit Clause 1.2

Comment

Qualified' is a better word than 'trained' which implies professional qualification and certification.

Proposed Change

Use of any treatment with antimicrobial agents shall be based only on recommendations and authorizations overseen by a Qualified aquatic animal health specialist or Veterinarian and only to treat diagnosed diseases, accompanied by antimicrobial agent sensitivity testing, in accordance with instructions on product labels and national regulations, as part of a Health Management Plan.

BAP Response

Modification adopted.

Pillar 1 – Audit Clause 1.2

Comment

Aquatic animal health specialist – is it a vendor, is it a qualified vet? Need clarity but must not create barriers.

BAP Response

Modified wording:

1.2: Use of any treatment with antimicrobial agents shall be based only on recommendations and authorizations overseen by a qualified aquatic animal health specialist or veterinarian and only to treat diagnosed diseases, accompanied by antimicrobial agent sensitivity testing, in accordance with instructions on product labels and national regulations, as part of a Health Management Plan.

Pillar 1 – Audit Clause 1.2

Comment

We propose adding two more clauses to ***Clause B. Chemical and Drug Management*** to supplement subclause 1.7 and enhance the criteria in this important area.

Proposed Change

1. For farms not using any antimicrobial agents, a Non-Antimicrobial Surveillance and Verification Program shall be in place.
2. Records of laboratory testing results needs to show no trace of antimicrobial agents in water bodies and fish samples.
3. Should hormones be used for non-growth purposes, treatment duration should not exceed 7.5% of the fish growth cycle.

BAP Response

As part of the new BAP Vanguard initiative (https://www.bapcertification.org/WhatWeDo/Vanguard) there is now a 'Raised without Antibiotics' standard specifically for producers that don't use antibiotics.

The use of hormones for sex reversal in fry is covered in the BAP Hatchery and Nursery Standard, Issue 2 which will shortly be released for public comment. Comment 3 will be included in this public consultation.

Pillar 1 – Audit Clause 1.2

Comment

"Antimicrobial" refers to any compound (synthetic or natural) that kills or inhibits the growth of microbes (e.g., bacteria, viruses, fungi, etc.). Thus, “antimicrobial agents” include antibiotics as well as antifungals, sanitizing agents, etc. Sensitivity testing methods are relatively well-established for antibiotics, but it's not clear how the sensitivity of pathogens to other antimicrobials would be demonstrated. If sensitivity testing is meant to apply to antibiotics only, this should be made clear in the Standard. However, it should also be recognized that 1) veterinarians/fish health professionals are responsible for identifying and ensuring the effectiveness of recommended treatments (which may or may not include antibiotic sensitivity testing), and 2) the vast majority of farms do not have access to antibiotic sensitivity testing. Furthermore, the appropriate sensitive/resistant thresholds (i.e., zone of inhibition diameters or Minimum Inhibitory Concentrations) have not been identified for most aquatic pathogens/approved antibiotic drugs, thus it is not clear how aquaculture farms could comply with this clause. It should also be recognized that antibiotic sensitivity testing typically takes several days (or more) to complete, meaning that completion of sensitivity testing might significantly delay treatment, increase mortality, and reduce the likelihood of effective disease resolution.

Proposed Change

“Use of any treatment shall be based on recommendations of authorizations overseen by a trained aquatic animal health specialist and only to treat diagnosed diseases in accordance with instructions on product labels and national regulations, as part of a Health Management Plan.”

BAP Response

The reference in this clause to supporting evidence from sensitivity testing is considered important and a wording change has been made.

1.2: Use of any treatment with antimicrobial agents shall be based only on recommendations and authorizations overseen by a qualified aquatic animal health specialist or veterinarian and only to treat diagnosed diseases, supported by antimicrobial agent sensitivity testing, in accordance with instructions on product labels and national regulations, as part of an Animal Health Management Plan.

It is true that the veterinarian may typically need to prescribe a course of treatment before the results of any sensitivity tests specific to a particular disease outbreak are available. However, in nearly all cases, his or her recommendation will be based on an understanding of sensitivity based on experience and previous sensitivity testing. Note that the relevant Implementation guidance recommends sensitivity testing to confirm the choice of antibiotic, but it does not require it.

Pillar 1 – Audit Clause 1.2

Comment

This is a minor issue, but we object to the use of the word “approved” in “All chemical used during transport shall be approved by government regulatory authorities…” and other similar statements that may appear elsewhere in the document. In the USA, salt (NaCl) is not an “approved” drug; rather, it is an unapproved drug of low regulatory priority. However, if one where to adhere strictly to the language in this paragraph, salt could not be used as an osmoregulatory aid during fish transport.

Proposed Change

We recommend replacing “approved” with “allowed for use” or similar language to allow for allowed/accepted uses of unapproved drugs.

BAP Response

This clause has now been reworded to match Clause 1.6 and avoid this kind of anomaly. It now states:

1.3 Any chemicals that are prohibited in the producing or importing country shall not be used during the transport of harvested aquatic animals to processing plants. Any chemicals used shall be listed and only applied according to a documented Standard Operating Procedure.

Pillar 1 – Audit Clause 1.2

Comment

Antibiotics should not be used as a substitute for good animal welfare. BAP must clarify what happens when a facility deems necessary use of treatment beyond the scope of treatment permitted by BAP. BAP must mandate assessment by a veterinarian and emphasize preference for preventative methods over allopathic and responsive treatments.

Recognizing that such expertise is not always available in farming areas, farm owners should endeavor to secure the services of experts or consultants with training, experience and expertise in aquatic animal health, with full documentation of these efforts conforming to a BAP-established document format. In any case, the aquatic animal health professional or consultant should be identified, with qualifications or certifications held on file for review.

BAP Response

The BAP Farm standard places emphasis on prevention, the Implementation guidance for Pillar 4 opening with:

“Prevention and protection are the two general approaches to control disease pathogens and their spread. The goal of prevention is to manage the rearing environment, primarily through husbandry Best Management Practices, to minimize stress on farmed aquatic animals, thereby reducing susceptibility to disease.”

And the BAP Farm standard reinforces the role of the veterinarian in disease management:

1.2: Use of any treatment with antimicrobial agents shall be based only on recommendations and authorizations overseen by a qualified aquatic animal health specialist or veterinarian and only to treat diagnosed diseases, supported by antimicrobial agent sensitivity testing, in accordance with instructions on product labels and national regulations, as part of an Animal Health Management Plan.

The suggested addition to the Implementation guidance has not been adopted because of fears it would be overly prescriptive and bureaucratic.

Pillar 1 – Audit Clause 1.2

Comment

For aquatic animal production under this BAP standard, the use of antimicrobial agents and hormones for growth promotion is prohibited. The use of antimicrobial agents should be reserved to treat specific

diseases in sick aquatic animals. Stocking density must be decreased as necessary to avoid any increase in disease after subtherapeutic antimicrobial agents are withdrawn. BAP must specify which treatments are preferred and which are prohibited and not simply leave this up to the host country, instead establishing BAP guidelines that have a consistent standard higher than the legal minimum. Similarly, prophylactic use of antibiotics is prohibited. Prophylaxis is the treatment of healthy aquatic animals to prevent infection and disease. However, metaphylactic use of antibiotics is allowed. A primary indicator of sickness in the aquaculture setting is mortality. From an animal welfare perspective, metaphylactic treatment will usually come too late to be effective. BAP standards should instead require routine testing for diseases to thereby establish appropriate metaphylactic treatment protocols. Disease testing should be conducted 5 weekly. Killing fish for sampling must be avoided, and species specific indicators should be identified.

BAP Response

THE BAP Farm standard requires careful control of stocking practices and stocking density, but this is not covered Under Pillar 1 Food Safety. Instead, please refer to:

p22: *"The main practices for improving water quality are the use of stocking and feeding rates."*

Clause 3.35 refers to cooperation with neighboring farms on matters of stocking:

3.35: For farms located in areas with neighboring farms that are not BAP certified, or where an Area Management Agreement has not been established, the farm shall demonstrate that a good-faith effort has been made to cooperate with neighboring farms on matters of stocking, fallowing, animal health and biosecurity within an area twice the regulatory minimum separation distance to an upper limit of a 5-km radius from the farm.

And, the Implementation guidance for Animal Health and Welfare states:

"Maintaining water quality within the tolerance limits of the aquatic animals, using high-quality feeds that meet nutritional needs, and stocking at a density that will not cause stress are the key approaches. The goal of protection (biosecurity) is to limit the pathogen from entering the farm. Using disease-free juveniles or post-larvae for stocking, disease monitoring, using water that is free of pathogens, hygienic practices (e.g. disinfection), all-in, all-out stocking and harvesting, and control of vectors are some options to prevent pathogen entry."

Under Pillar 4, Animal Health and Welfare, the BAP Farm standard requires an Animal Health Management Plan that includes:

- Routine disease surveillance and characterization of the health status of the farm. Regular health monitoring is a fundamental part of the health and welfare management of aquatic animals. It provides an early warning detection system that allows rapid response to disease outbreaks. Protocols for regular observation of the behavior and welfare of aquatic animals should be described. Operational disease surveillance shall be demonstrated by a health-monitoring record-keeping program. The plan should describe the diagnostic capacity (on-farm and contracted labs) available to support infectious disease surveillance.

- Disease diagnosis techniques that will be used to evaluate prevalence of expected diseases.

- Disease control procedures that will be followed in the event of disease outbreaks. The procedures should consider a broad range of options, including vaccination, quarantine, therapeutic treatments and treatment types (e.g. medicated feed, baths or dips, etc.) and humane slaughter (euthanasia). The steps followed shall include reporting to the Competent Authority if the disease is listed by the OIE. Procedures should also consider responses in the event of a disease emergency with potential to cause mass mortality.

And, the monitoring of mortality rates to demonstrate the effectiveness of the Health Management Plan is included under Pillar 4 Animal Health and Welfare:

"To demonstrate that the Animal Health Management Plan is operational and fit-for-purpose, the farm shall maintain or have access to regularly updated records of water quality monitoring, feeding, aquatic animal health and behavior, water quality monitoring, daily mortalities, disease outbreaks, and use of veterinary drugs, therapeutic chemicals or disinfectants."

The proposal of mandating disease testing every 5 weeks is very prescriptive compared to the existing set of requirements that places emphasis on disease surveillance, which is typically less intrusive than disease testing.

Pillar 1 – Audit Clause 1.2 Implementation

Comment

(To avoid any confusion)

Clause 1.2 uses the term shall regarding antimicrobial agent sensitivity testing, whereas in the implementation guidance for antimicrobial agent sensitivity testing, the term should is used.

"Sensitivity testing of the target microorganism **should** be used to confirm the choice of treatment"

Followed by record keeping where again the term shall is used

"Records shall include date, compound used, reason(s) for use, drug sensitivity test results"

Proposed Change

In the Implementation guidance, use the term "**shall** conduct antimicrobial agent sensitivity testing "

BAP Response

The use of antimicrobial sensitivity testing remains as a recommendation because the results may not be available before a course of treatment needs to be prescribed.

Pillar 1 – Audit Clause 1.2

Comment

must define what training is acceptable.

must define AAHS.

BAP Response

Implementation guidance helps on this:

The Animal Health Management Plan, and specifically disease treatments with antimicrobial agents, shall be overseen by a veterinarian or other authorized aquatic animal health professional. Recognizing that such expertise is not always available in farming areas, farm owners should endeavor to secure the services of experts or consultants with training, experience and expertise in aquatic animal health. In any case, the aquatic animal health professional or consultant should be identified, with qualifications or certifications held on file for review.

Pillar 1 – Audit Clause 1.3

Comment

This standard should apply to all species and not exclusively tilapias.

BAP Response

Note that feedback on this requirement (1.3) has led to retention of the existing 3 treatment limit (rather than the limit of 2 in the proposed standard).

Pillar 1 – Audit Clause 1.3

Comment

This clause appears to be intended to motivate farmers to avoid repeated treatments with antimicrobials, encouraging other operational changes to reduce the need for therapeutic interventions. While laudable, this provision seems likely to result in unintended, negative welfare consequences. As noted above, the term "antimicrobial agent" is sufficiently broad to include any number of antifungals, sanitizing agents, etc., which may be appropriate to apply in a repeated fashion (e.g., an initial course of treatment and a follow-up treatment to correct bacterial gill disease). If a third treatment is needed and all treatments are overseen by a veterinarians/fish health professional, it seems unwise to prohibit needed medical intervention. If the prohibition is meant to apply only to antibiotic therapy, the clause should clearly state as much.

Proposed Change

"Any therapeutic interventions should be consistent with legal and judicious use of veterinary medications. In circumstances where repeated treatment is routinely needed to resolve infections/infestations, operational changes should be made to proactively address the incidence/severity of disease."

BAP Response

Wording 'antimicrobial agents' has been retained because of WHO usage. The intent is to reduce the spread of antimicrobial resistance.

Pillar 1 – Audit Clause 1.3

Comment

This requirement has been changed from a maximum of 3 treatments to a maximum 2 treatments, but this will impact a farmer's ability to control disease outbreaks and could impair fish welfare. The use of 'WHO critical' antibiotics is already excluded via clause 1.14

Proposed Change
Retain the limit of 3 treatments.

BAP Response
The 3-treatment limit has been retained.

The requirement (1.14) to exclude the use of antimicrobials listed by WHO as critical to human medicine already imposes a significant constraint on veterinary intervention. Workable options for disease management and maintenance of animal health and welfare need to be available to tilapia (and other) farmers.

Pillar 1 – Audit Clause 1.2-1.14

Comment
1.8: Animals should spend their entire lifecycle in BAP-certified facilities, including fry, fingerlings, and post larvae.

BAP Response
The requirement (1.14) to exclude the use of antimicrobials listed by WHO as critical to human medicine already imposes a significant constraint on veterinary intervention. However, workable options for disease management and maintenance of animal health and welfare need to be available to tilapia (and other) farmers. This tilapia specific requirement (Clause 1.3) is included in the BAP Farm standard to satisfy an environmental benchmark/rating.

Regarding 1.18, the BAP program does not require BAP certified farms to source feed and fry from BAP certified facilities. To do otherwise would be self-serving and anti-competitive. Instead, the BAP program rewards farms that do source BAP feed and fry through its star rating system. Thus 'BAP four star' signifies integrated farm, hatchery, feed mill and processing plant, and it gives market access advantages.

Pillar 1 – Audit Clause 1.4

Comment
BAP may want to consider requiring records for the weight of Active Pharmaceutical Ingredient (API) used. This may already be covered by use of the word "dose". API can be useful in tracking how much compound enters the rearing environment and, potentially, the surrounding environment. Intensity can also be easily calculated from it as kg API/MT product

Proposed Change
Records shall be maintained for every application of antimicrobial agents and other therapeutic chemicals that include the date, compound used, reason(s) for use, drug sensitivity test results, dose, required withdrawal period, amount of Active Pharmacuetical Ingreient and harvest date for treated production lots.

BAP Response
Clause 1.4 modified:

1.4 Records shall be maintained for every application of antimicrobial agents and other therapeutic chemicals that include the date, compound used, reason(s) for use, drug sensitivity test results, dose, required withdrawal period and harvest date for treated production lots. Antibiotic use shall be reported as kg API/MT product. Note: Auditors must include antibiotic use data in the audit report.

Pillar 1 – Audit Clause 1.5 Residue Testing

Comment

The paragraph indicates that residue testing should be conducted to ensure adequacy of the withdrawal period established for approved antimicrobial agents or, if producers do not wish to conduct residue testing, they can extend the established withdrawal periods by 50% (1.5x the established withdrawal period). This is an unreasonable burden on farmers and undermines the extensive work done by regulatory authorities to establish conservative withdrawal periods for approved drugs. In the case of extra-label veterinary prescriptions/directives, it undermines veterinary authority. Requiring residue testing unless withdrawal periods are extended by 50% is arbitrary and unfounded.

Proposed Change

Strike Sub-clause 1.5 in its entirety.

BAP Response

Note that Clause 1.5 requires periodic verification of the effectiveness of withdrawal periods but there is flexibility for the farmer to determine the frequency, with the Implementation guidance giving twice per year as a recommendation (rather than a requirement).

Clause 1.5 could be a burden for some farmers, but in many settings processing plants (especially BAP certified ones) already routinely test batches of incoming products for residues so feedback from the processing plant could easily fulfil Clause 1.5.

Given that the Global Aquaculture Alliance and the BAP program were launched to address fears about antibiotic residues (and habitat damage), residue testing is considered key.

Pillar 1 – Audit Clause 1.5

Comment

Withdrawal periods are established by the regulatory authority (e.g., the US Food and Drug Administration) as conservative estimates using established methodology regarding drug and metabolite excretion rates, 'worst case scenario' water temperatures, etc. Such withdrawal periods are generally not subject to "periodic" review, certainly not by the end user. If withdrawal periods are to be validated or reestablished, this should be done by the regulatory authority, not farmers.

Proposed Change

Strike Sub-clause 1.5 in its entirety.

BAP Response

Note that Clause 1.5 requires periodic verification of the effectiveness of withdrawal periods but there is flexibility for the farmer to determine the frequency, with the Implementation guidance giving twice per year as a recommendation (rather than a requirement).

Clause 1.5 could be a burden for some farmers, but in many settings processing plants (especially BAP certified ones) already routinely test batches of incoming products for residues so feedback from the processing plant could easily fulfil Clause 1.5.

Given that the Global Aquaculture Alliance and the BAP program were launched to address fears about antibiotic residues (and habitat damage), residue testing is considered key.

Pillar 1 – Audit Clause 1.8 Guidance

Comment

The sentence "Statements from seed and feed suppliers that that attest to production procedures…" has double use of the word "that".

Proposed Change

Remove duplication.

BAP Response

Corrected.

Pillar 1 – Audit Clause 1.8

Comment

(for clarity)

Statements from Seed and Feed Suppliers

Statements from seed and feed suppliers that that attest to production procedures that exclude prohibited antimicrobial agents, unsafe levels of additives or heavy metals and physical or other contaminants are required **and** maintained on file in the record-keeping system.

Proposed Change

Replace **and** with **to be.**

BAP Response

Change adopted.

Pillar 1 – Audit Clause 1.10

Comment

In the implementation guidance, please specify what are the unsafe levels of contaminants.

Proposed Change

Feed, nutritional supplements or pond additives used, manufactured, or prepared on the farm shall include product testing and evaluation procedures to ensure that these substances do not contain unsafe levels of contaminants and contain only substances permitted by the appropriate national authorities.

BAP Response

To provide such details would be a very complex task beyond the scope of this standard. This requirement is targeted at supplements, additives and farm-made feeds, so it has now been reworded slightly:

1.10: Nutritional supplements, pond additives or farm-made feeds, used, manufactured, or prepared on the farm shall include product testing and evaluation procedures to ensure that these substances do not contain unsafe levels of contaminants and contain only substances permitted by the appropriate national authorities.

Pillar 1 – Audit Clause 1.13

Comment

In the implementation guidance, need to be specific on what types of Government-Approved Chemicals are permitted to control the use of chemical additives during transport/ harvest.

Proposed Change

If used during transport of harvested aquatic animals from farms to processing plants, only chemicals approved by Government Regulatory Authorities can be applied to aquaculture products.

BAP Response

Sometimes the BAP standard does list specific products. E.g. for Prohibited Antimicrobial Agents it states:

Chloramphenicol and nitrofuran antibiotics are proactively prohibited for use in food production in all countries. Other drugs and chemicals, such as antibiotics, malachite green, heavy metals, parasiticides and hormones, may be proactively prohibited in specific countries.

However, it generally does not make lists because there is a danger that they give the false impression that if a product is not listed as prohibited it is approved. Thus, BAP does not attempt to list chemicals that are or are not approved or prohibited for use during transport.

Pillar 1 – Audit Clause 1.13

Comment

This clause refers to approved chemicals during transport, but the relevant guidance section includes additional 'shall' statements that aren't matched by corresponding clauses.

Proposed Change

For consistency across the BAP program, shall statements in the guidance need to reflect audit clauses.

BAP Response

For consistency with the 'shall' statements in the Implementation guidelines, the clause has been modified to:

1.13: Any chemicals that are prohibited in the producing or importing country shall not be used during the transport of harvested aquatic animals to processing plants. Any chemicals used shall be listed and only applied according to a documented Standard Operating Procedure.

Pillar 1 – Audit Clause 1.13

Comment

For consistency with Subclause 1.6, this Sub-clause should include both the producing and importing countries.

Proposed Change

“If used during transport of harvested aquatic animals from farms to processing plants, only chemicals approved by government regulatory authorities in the producing and importing countries (if applicable) can be applied to aquaculture products.”

BAP Response

For consistency with clause 1.6, new wording:

1.13: Any chemicals that are prohibited in the producing or importing country shall not be used during the transport of harvested aquatic animals from farms to processing plants. Any chemicals used shall be listed and applied according to a documented Standard Operating Procedure.

Pillar 1 – Audit Clause 1.15

Comment

Excluding uncooked organisms as feed prohibits live feeds.

BAP Response

This requirement comes from GSSI, to which the current standard is benchmarked. GSSI requirements are based on FAO Guidelines.

Pillar 1 – Audit Clause 1.15

Comment

The standards may exclude tuna farms or tuna fattening operations if uncooked feeds are excluded, but this is not necessarily a bad thing. E.g. Seriola is more advanced.

BAP Response

Yes, the BAP Farm Standard would not allow feeding of uncooked feeds to tuna, or any other species. And tuna fattening operations would be excluded if they used wild juveniles (as per Clause 3.46)

Pillar 1 – Audit Clause 1.15-1.20

Comment

Audit Clauses C. 1.16: This clause must be extended to ban wild animal access to production ponds. C. 1.21: When used prior to slaughter, this must extend to animal welfare hazards.

BAP Response

Regarding 1.16, the exclusion of wild animals is addressed elsewhere in the standard under Pillar 3, Section I: *Biodiversity and Wildlife Protection*

Regarding 1.21, and the suggestions provided, please note the difficulties that can arise if the standard is too prescriptive. Some farming systems do not drain ponds between production batches (and thus they have the benefit of greatly reduced water usage).

Pillar 1 – Audit Clause 1.15

Comment

Tanks and ponds must be drained and cleaned between fish batches. Cleaning must use either hydrogen peroxide or virkon aquatic disinfectant. Both these are scientifically proven to not harm aquatic animals, nor the environment. It is essential to follow the instructions provided by the disinfectant, which include cleaning the tank with clear water after usage of these disinfectants and before fish enter the tank.

BAP Response

It is difficult to be too specific on pond and tank sterilization and preparation practices. BAP tends to avoid naming specific brands. And apart from hydrogen peroxide and Virkon, some farmers use lime and a range of other products, which are chosen so that they do not negatively impact the crop or the environment.

Note that Pillar 4 Section A '*Health and Biosecurity'* requires a Biosecurity plan that will address disinfection/sanitization procedures.

Pillar 1 – Audit Clause 1.15

Comment

(as some companies have the equipment to safely remove such waste)

Human waste collected in septic tanks or portable toilets shall be removed periodically by **specialized contract haulers**.

Proposed Change

(Could this be replaced by adding) **trained individuals or** specialized contract haulers.

BAP Response

Suggestion adopted.

Pillar 1 – Audit Clause 1.15

Comment

Risk of contamination of water supply for farms by human waste needs to be assessed, and if there is a risk of contamination, measures shall be taken to pre-treat water before use in the farm.

Proposed Change

No change – requirement is needed to minimize risk of passing Antimicrobial Resistant (AMR) bacteria through the food supply chain (witness the CBC presentation of 2019)

Pillar 1 – Audit Clause 1.15

Comment

● Where possible: Slaughter shall be performed directly at the rearing facility to prevent additional handling and transport. New facilities will be required to have on-site slaughtering with effective stunning.

● The parameters set to assess health and welfare should not be set by the farmer individually but must follow objective and well documented criteria. In addition, these parameters must be included in the pre-transport evaluation. Stressed, diseased, or injured animals who are unlikely to survive transport must not be transported and must either be effectively stunned and killed or transported at a later time after improvement to their condition.

● Handling and transport shall be performed only by personnel trained in aquatic animal welfare. Training must be repeated annually. Stocking density should also be monitored and limited during transport based on species-specific welfare criteria. Water quality must be continuously monitored during transport and measures to ensure acceptable water quality such as addition of oxygen must be in place where necessary.

BAP Response

There is some overlap of coverage on welfare during transport with Pillar 4 - *Animal Health and Welfare*:

4.12: If aquatic animals are processed on-farm, the farm shall identify the humane slaughter method used, appropriate for the species.

Requiring farms to all have on-site slaughter would represent a major restriction to operations that live haul their harvest to specialized processing plants. Such processing plants and harvest stations have seen major investments in stunning equipment, so they have a role to play in the provision of humane slaughter. BAP standards would not want to discourage this positive trend.

As regards health and welfare during transport, farmers are required to follow Clause 4.11

4.11: The welfare of harvested animals that are transported live to processing facilities shall be assessed by documentation of mortality rates during transport.

The relevant Implementation guidance is:

All transport operations should be done with due consideration to aquatic animal welfare, biosecurity and potential disease transmission, and minimizing physical injuries to preserve product quality. Transport containers and vehicles should be washed and disinfected before and after use. Aquatic animals should be loaded at densities suitable for the species and for distance travelled to other production units or processing facilities. If aquatic animals are transported from one production unit to another, animals should be acclimated to new conditions prior to unloading. A transport logbook shall be maintained that includes information about the group of aquatic animals loaded to allow traceability to farm and production unit, and mortalities that occur during transport.

Thus, the BAP Farm standard spells out the welfare indicators that a farmer needs to measure (individual farmers do not choose their own):

4.6: Mortalities; body condition factor; lesions, abrasions or fin damage; and gill damage or condition shall be measured in each production unit as individual-based welfare indicators of physical health.

4.7: Water quality shall be measured in each production unit as group-based welfare indicators of environmental quality and maintained within the tolerance limits established for the species and life-stage farmed.

4.8: Feeding response and swimming behavior shall be measured in each production unit as group-based welfare indicators of behavior.

Pillar 1 – Audit Clause 1.16 Guidance

Comment

The words "in general" should be removed.

BAP Response

Under some specified, controlled conditions, this general prohibition may not be applicable or desirable. Hence the use of 'in general' seems appropriate to distinguish between the subsequent paragraph that details the specific exceptions.

Pillar 1 – Audit Clause 1.16

Comment

Asking for the livestock to be certified free of all diseases and parasites is a very high bar. To export cattle internationally you only need to be certified free of certain highly communicable diseases. We have no objection with having the cattle under veterinary supervision, but you will be hard pressed to find an honest veterinarian that will certify that the cattle are parasite free. It is much more achievable for those animals to be inspected to make sure they are not a risk to human or fish health.

Proposed Change

Terrestrial livestock and domestic pets shall not be allowed to access production ponds unless such animals are submitted to veterinary oversight and certified to be free of parasites and other diseases OF HUMAN OR FISH HEALTH CONCERN.

BAP Response

Modification adopted:

"…. of concern to human or aquatic animal health"

Pillar 1 – Audit Clause 1.18

Comment

The phrase "and their by-products" could be construed to mean that rendered animal products cannot be used (as a byproduct of uncooked whole organisms). We are certain that this was not the intent, but a bit of clarifying language is warranted here. Additionally, we assume it was not the intent to prohibit the use of live zoo-/phytoplankton during first feeding, which is a necessary step in early rearing of many species (particularly marine carnivores).

Proposed Change

"Uncooked organisms (excluding planktonic and related organisms used during early rearing) shall not be used in whole or in part as feed in any production system. This prohibition does not apply to materials subjected to rendering, ensiling, or similar processing to address microbiological safety."

BAP Response

Wording modified to clarify:

1.18: Uncooked whole organisms and their uncooked by-products shall not be used as feed in any production system.

The issue of live and fresh feeds in early rearing is addressed in the separate BAP Hatchery and Nursery Standard (they are approved).

Pillar 1 – Audit Clause 1.19

Comment

If chilled at harvest, fish and crustaceans shall be chilled rapidly to a product temperature of 4°C or less ~~that is then maintained throughout transport to processing facilities.~~

Difficult to audit once the product leaves the farm. The std is asking the farm to procure data from the transport/agents that bought the product/processing plant.

BAP Response

Deletion applied.

Pillar 1 – Audit Clause 1.21 Guidance

Proposed Change

Equipment and containers used to harvest and transport fish or crustaceans shall be cleaned, sanitized, and free of lubricants, fuel, metal fragments and other foreign material that represent an injury risk to the fish or a potential food safety hazard."

BAP Response

Agreed. Suggested wording 'an injury risk' adopted.

Pillar 2 – Audit Clause 2.1

Comment

Our global experience at Regal Springs of managing responsible aquaculture programs in countries that are at different stages of development and with the risks of misunderstanding due to a 'loss in translation' we strongly urge BAP to adopt one consistent use of Terminology for the Issue 3.0 standard and that these are then also aligned so that all BAP Standards Normative Documents, CB's and Auditors use the same terminology. To mitigate the risk of misunderstanding, perhaps a high-level Terminology Glossary should be added as an appendix.

Example: Draft Issue 3.0 of BAP Standard

Aquaculture Facility Certification BAP Farm Standard Best Aquaculture Practices Certification Standards, Implementation Guidelines

Consider: Aquaculture Facility Certification

BAP Aquaculture Standard

Best Aquaculture Practices Certification Standards & Implementation Guidelines

Finally, we recommend that all BAP Standards Documentation is only ever issued on GAA BAP corporate branded documentation.

BAP Response

We do need consistent terminology and we are working on the naming of our standards to support consistency and simplicity and to reduce errors in translation. However, it is not considered optimal to rename this standard as the 'BAP Aquaculture Standard', as proposed. This is because BAP has a suite of aquaculture standards, covering feed, farms and hatcheries/nurseries that need to be differentiated.

The recommendation to only issue BAP Standards documentation on GAA BAP corporate branded documentation is certainly the best policy and is noted.

Pillar 2 – Audit Clause 2.4

Comment

As far as we are aware, the draft BAP Farm Standard Issue 3.0 remains a generic standard and not a species-specific standard or specific standard relating to a specific farming facility location water body. We feel that this places an unrealistic demand on the BAP Farm Standard Issue 3.0 to effectively cover all real-life scenarios in every aquaculture water system or facility or location. We recommend that BAP Farm Standard Issue 3.0 has a standards 'Variance' provision to allow for special circumstances or situations not addressed by the generic nature of the BAP Farm Standard 3.0. For example: A BAP Farm Standard Issue 3.0 Variance/ XXXXXX Request would allow a potential BAP Client the provision through the CB/Auditors process to seek BAP's approval for a Variance where justified. A clear Variance Procedure would ensure that the Client, Certification Body (CB) and Auditor understand the process for applying for such a Variance, under what conditions this would apply and any additional cost that would be incurred by the Client for BAP to consider such a Variance, assuming this would require additional BAP Standards management time.

BAP Response

The approach of issuing variances in response to special circumstances has its adherents and it does allow for targeted flexibility. However, up to now, the BAP Program has not adopted this model and it endeavours to apply standards that are more universally applicable. This certainly can create difficulties for compliance in special circumstances. In response, the BAP standards are regularly reviewed to make sure they not only recognise or define best practices but also remain achievable. For example, this version of the BAP Farm Standard more effectively addresses the full range of different production systems, including RAS and coastal flow-through, with system specific requirements. Reviewing and updating standards is slower than issuing variances but it does mean that all comparable farms are held to the same standard.

Note: This comment, because it relates to the fundamentals of how the BAP program operates, will be taken to the Standards Oversight Committee for discussion.

Pillar 2 – Audit Clause 2.4

Comment

In Canada, use of the word "consult" in relations with First Nations is a legal term and is the perview of the federal government.

Proposed Change

Suggest using the term "engage".

BAP Response

Change adopted.

Pillar 2 – Audit Clause 2.4 Farm Appearance

Comment

The phrase "in keeping with local architecture and landscapes" is subjective and outside of the scope of best aquaculture practices.

Proposed Change

"It should be apparent that buildings and facilities are well-maintained."

BAP Response

This sentence in the Implementation guidance does imply subjectivity. However, note that as a 'should' statement, it is a recommendation rather than a requirement.

Pillar 2 – Audit Clause 2.6

Comment

The requirement to maintain "favorable general appearance and prevent unnecessary and excessive odors and noises" is vague and subjective. What is "favorable" or "excessive" to one person may not be to another.

Proposed Change

"Farm appearance shall reflect a dedication to cleanliness and safety and farms shall abide by all local ordinances/conventions related to odor, noise, or other nuisances."

BAP Response

There is certainly a risk of subjective interpretation, but the existing Implementation guidance provides some detail on what the auditor will look for:

Farms shall maintain a neat and attractive appearance to avoid becoming an eyesore to local residents. It should be apparent that buildings and facilities are well-maintained and in keeping with local architecture and landscapes to minimize visual intrusion. Sanitary measures shall be employed to prevent odors from affecting nearby neighbors. No obvious objectionable or foul odors should be

present. Machinery shall be maintained in good working order to avoid unnecessary noises that may disturb neighbors.

Pillar 2 – Audit Clause 2.8

Comment

Farms that use divers to clear sludge from pond bottoms or perform other underwater tasks shall develop a written Dive Safety Plan to assure safety and require directly employed or contracted divers to follow the plan. The plan shall require specialized diver safety training, maintenance records for diving equipment and procedures for diving emergencies. **If sulphites are used during harvesting, procedures shall be adopted to minimize health risks to worker**.

Proposed Change

Separate line for sulphites statement

BAP Response

Change made.

Pillar 2 – Audit Clause 2.8

Comment

Not all core international human rights conventions are ratified by each country. It is not realistic to expect that farmers are able to identify relevant international regulations; we suggest limiting the scope of ratified conventions.

A list of conventions is provided in guidance but it is a long list and it might be challenging for farmers to understand these international requirements.

Proposed Change

2.8: Farms shall operate in compliance with this standard and all local, national, and applicable ratified international conventions, rules and regulations, whichever provides the highest protection to the worker. Farms shall have in place policies and procedures pertaining to, but not limited to: worker health and safety and compliance with requirements regarding wages, benefits, hours, hiring practices, minimum age, status of workers, and good employee relations that provide the highest protection to the workers.

BAP Response

Modified wording inserted.

Pillar 2 – Audit Clause 2.9

Comment

The “living wage” concept is too challenging to apply. A challenge with the practical approach proposed is how will auditor check for compliance? Add “should” in relation to discretionary funds, and require that auditors report how farmers ensure that minimum legal wage does comply or that they pay over minimum wage, as observation.

Proposed Change

2.9: The farm shall ensure that workers are paid at least the legal minimum wage, or the wage rate established by an employment contract or collective bargaining agreement, whichever is higher. Regular wages and compensation shall cover the workers' basic expenses and should allow for some discretionary funds for use by workers and their families.

BAP Response

This is certainly a challenging topic. The requirement here marks a starting point towards a 'living wage' without requiring that a living wage be defined, and that proof be provided that this wage level is exceeded.

Pillar 2 – Audit Clause 2.11

Comment

The potential of a court order garnishing wages, for example, should be considered in this statement.

Proposed Change

"Payment of wages shall not be made to someone other than the worker or into an account not controlled by the worker, unless otherwise required by law."

BAP Response

Change adopted.

2.11: The farm shall not have inappropriate access to the worker's bank account. Payment of wages shall not be made to someone other than the worker or into an account not controlled by the worker, unless otherwise required by law.

Pillar 2 – Audit Clause 2.13

Comment

Other commonly accepted international standards consider a maximum of 6 days – as clause 2.16 states - and 48h a week (with an additional maximum 12h a week of overtime). This clause is not consistent with 2.16 and international standards. It is challenging enough to ensure a maximum of 48 h and 6 days a week without going beyond requirements of common standards.

Proposed Change

2.13: The farm shall abide by the mandatory national work week, and where that is absent, an average work week of no more than 48 hours. The specific timing and organization of the working day may be agreed in a voluntary agreement between farm owners/management and workers.

BAP Response

Corrected to 48 hours.

Pillar 2 – Audit Clause 2.20

Comment

In addition, once the job is secured, no salary, benefits, property, or documents should be withheld in order to force workers to *continue* working.

BAP Response

The full clause is:

2.20: Bonded labor shall be prohibited. The farm shall not require the payment of deposits, bonds or other financial or collateral guarantees that may result in debt bondage. This includes recruitment fees, fines, and deductions from wages, and withholding of pay that are not part of a written contractual agreement with the worker.

It is not restricted to the recruitment phase and applies to debt bondage during the term of employment too.

Pillar 2 – Audit Clause 2.27

Comment

Which international labour standards it refers to?

We think it should refer to ratified conventions. A list of international standards is provided but these are not documents and references that farmers can easily understand and implement; we need to refer to national regulations or a standard that lists specific requirements in a simple way (such as the ETI Base Code for example).

Proposed Change

2.27: The farm shall only employ workers with a legal right to work in the country, whether national citizens or migrants. Work performed and terms of employment shall be in compliance with local, national law or relevant ratified international labor standards, whichever is stricter. Records shall be collected, verified and retained to document right to work documents.

BAP Response

The proposed change would raise the question of 'ratified by whom?' Note that references to relevant ILO Conventions are given at the end of Pillar 2.

Pillar 2 – Audit Clause 2.29

Comment

The word "the" is not required. The word "contactor" is misspelled.

Proposed Change

2.29: The farm shall not use ~~the~~ contractors, subcontractors….

BAP Response

Corrected.

Pillar 2 – Audit Clause 2.31

Comment

The phrasing indicates there may be some workers who will require assistance with translation or literacy. Ideally, the employer would have the means to verify that the terms are clearly understood and fully agreed to by all workers. The employer should also evaluate the effectiveness of any training and

awareness efforts by measuring employee knowledge upon completion of training and periodically thereafter using surveys, interviews and other means.

BAP Response

Worker interviews provide an opportunity for auditors to assess whether workers are aware of this information and whether training is effective.

Pillar 2 – Audit Clause 2.31

Comment

Best to steer away from this language 'of a majority of' and not sure how this got retained here.

BAP Response

Under review

Pillar 2 – Audit Clause 2.32

Comment

In addition, labor agencies should ensure special consideration for vulnerable populations, e.g. migrant workers. For example, the hiring information and contract should be available in a language that they understand, with extra provisions made for illiterate workers, and workers should have access to independent organizations that could review hiring documents and seek independent advice on their terms and conditions of work before it is agreed.

BAP Response

Clause 2.32 does aim to protect migrants and it specifies that appropriate translations must be provided. And the standard goes some way to linking workers to independent organizations:

2.43: The farm shall have the information regarding hotlines, competent authorities, and other resources for victims of labor rights abuse displayed prominently for easy access to workers.

Pillar 2 – Audit Clause 2.33

Comment

This entire clause is redundant to clause 2.21.

BAP Response

No change made.

Pillar 2 – Audit Clause 2.34

Comment

This requirement could be strengthened by upholding no-fee recruitment as described in several of the cited conventions. No worker should pay fees to secure a job, and companies should ensure that workers are recruited into their supply chains through legal and ethical processes, with worker safe-guards and transparency built into the hiring process. What fees are deemed acceptable here?

BAP Response

The BAP program seeks to align with the requirements of SSCI, the leading benchmark for social standards. On this topic, the SSCI (which is based on ILO conventions) states:

3.04 The standard shall require that no fees or related costs are charged (directly or indirectly, in whole or in part) to applicants and workers for services directly related to recruitment that may lead to situations of forced or compulsory labour.

The BAP Farm standard meets this SSCI requirement because, in Clause 2.20, it recognises that the prime objective here is to prevent bonded labour:

2.20: Bonded labor shall be prohibited. The farm shall not require the payment of deposits, bonds or other financial or collateral guarantees that may result in debt bondage. This includes recruitment fees, fines, and deductions from wages, and withholding of pay that are not part of a written contractual agreement with the worker.

There is a danger of unintended consequences if a strict no-fee recruitment policy is adopted immediately because it could create an unfair impediment to countries like Thailand that attract large migrant workforces. Having said that, the BAP program supports a transition to a no-fee recruitment policy and Clause 2.34 serves to gather key data and understanding towards this objective.

2.34: The farm shall document the agencies used to recruit, hire, and/or employ workers, in addition to any known fees paid by or debts accrued by workers in order to secure employment.

Pillar 2 – Audit Clause 2.35

Comment

If provided or mandated by the farm or employment agency/labor agency, worker housing shall meet local and/or national standards including but not limited to safe, watertight structures, adequate Rees space as per occupational load for the facility, heating/ventilation/cooling, pest control, sink, shower and toilet provisions).

Proposed Change

Add missing bracket or remove bracket from end of clause.

BAP Response

Corrected

Pillar 2 – Audit Clause 2.35

Comment

In circumstances where a nation does not have applicable legal requirements, the standard should be clear what will satisfy this requirement.

BAP Response

The Implementation guidance adds: *Living quarters shall be well ventilated and have adequate shower and toilet facilities.* Combined with the content of clause 2.35 (which requires:

safe, watertight structures, adequate space as per occupational load for the facility, heating/ventilation/cooling, pest control, sink, shower and toilet provisions) the standard provides an outline of what the auditor needs to review. It is difficult to go into detail about precisely what would fulfil this requirement. The skill and judgement of auditors comes into play here and is critical. BAP auditors are trained to know what to look for and they undergo calibration.

Pillar 2 – Audit Clause 2.37

Comment

(for clarity)

The farm shall not engage in or permit discrimination in **all aspects** of employment,

Proposed Change

Replace **all aspects** with **any aspect.**

BAP Response

Corrected

Pillar 2 – Audit Clause 2.40

Comment

Disciplinary procedures should not include sanctions that obligate or coerce workers to work and must be effectively communicated to workers. In addition, wages should never be withheld as a form of workplace discipline.

BAP Response

Any coercion of workers to work or withholding of wages amounts to forced or bonded labour, so these actions are specifically prohibited:

2.19: The farm shall not engage in any form of forced or indentured labor. This includes human trafficking, use of prison labor, the confiscation or holding of original identity papers and other valuable possessions, prohibiting workers from leaving the premises after their shift or other means of coercion intended to force anyone to work. Where the holding of original identity papers is required by national law, such papers must be immediately returned to workers upon request and readily available to them at all times.

2.20: Bonded labor shall be prohibited. The farm shall not require the payment of deposits, bonds or other financial or collateral guarantees that may result in debt bondage. This includes recruitment fees, fines, and deductions from wages, and withholding of pay that are not part of a written contractual agreement with the worker.

Pillar 2 – Audit Clause 2.41

Comment

This is a critical area to get the implementation right, beyond establishing a procedure. In addition to the criteria stated, the grievance procedure should also include special consideration for vulnerable populations, e.g. migrant workers. For example, the grievance mechanism should be available in a language that they understand, with extra provisions made for illiterate workers, and workers should have access to independent organizations that could assess complaints. Having a procedure and process in place does not necessarily ensure that it is used. It will be key to create data or systems to track the effectiveness of grievance mechanisms are in practice used.
From an auditing perspective, how will threat of retaliation be determined? Will workers be instructed how to file complaints and what an appropriate vs. retaliatory response to the complaint looks like? What are their options if they suspect retaliation?

BAP Response

The standard does include a requirement for translation of grievance procedures for the benefit of migrant workers:

2.31: The farm shall provide to all workers, prior to hire and during employment, with written and understandable information regarding the terms and conditions of employment, worker's rights, benefits, compensation, expected working hours, details of wages for each pay period each time they are paid; and farm policies regarding disciplinary actions, grievance procedures, any authorized deductions from pay, physical work requirements, environment and housing, and workplace safety. This information shall be provided in appropriate language of a majority of workers. This requirement shall apply to all workers regardless of status, including but not limited to hourly, salary, piece rate, temporary and seasonal workers.

Also please note the provisions of clause 2.42 that identify what is needed for an effective complaints and remediation system:

2.42: The farm shall have in place an established complaints and remediation system to handle cases and allegations of sexual abuse/harassment, bullying, or discriminatory practices. This process shall, at a minimum, include a confidential reporting mechanism, information on any hotlines or other outside support services available and the possibility of calling in independent assessment/arbitration.

The standard also goes some way to linking workers to independent organizations that can potentially provide a route to redress if workers fear or experience retaliation in the grievance process:

2.43: The farm shall have the information regarding hotlines, competent authorities, and other resources for victims of labor rights abuse displayed prominently for easy access to workers.

Recognising the critical role of skilled and experienced social auditors, the BAP program is making progressively greater use of ABSCA certified auditors.

Pillar 2 – Audit Clause 2.44

Comment

As written, this should be the legal minimum. For best practice, the employer should have a policy that demonstrates respect for the rights of workers to Freedom of Association and Collective Bargaining. Workers should be trained on their rights to organize and bargain collectively. Women should participate in unions commensurate with their representation in the workforce. There should be a freely negotiated collective bargaining agreement.

From an auditing perspective, important considerations include:

- How might auditors determine a lack of discrimination or penalization? Will auditors receive a list or recently terminated staff?
- Will auditors reach out to a selection of terminated employees?
- And in what ways will former employees be incentivized to discuss if the auditor can actually find them?
- Is the employer negotiating in good faith with worker organizations?

Given the culture of fear that real threats of termination create, many labor rights experts are concerned about the ability of workers in non-union representative organizations to receive this right

and auditors to determine it is well supported. The implementation of a comprehensive and proactive anti-discrimination policy through procedures and practices is a good first step, and can be strengthened by actively training managers and workers on the policy.

BAP Response

BAP requirements are designed to meet or exceed leading benchmarks for social standards such as SSCI. In this instance SSCI Criterion 5.01:

5.01 The standard shall require that all workers have the right to join or form trade unions or other worker organisations of their own choosing – or refrain from doing so – and to bargain collectively in accordance with applicable national legal requirements.

SSCI notes:

The criterion is taken from the ILO Declaration on Fundamental Principles and Rights at Work, ILO C87, Art. 2, ILO C110, Art 59 and ILO C141, Art 3, which establish worker's and employees right to establish and join organisations of their own choosing without previous authorisation, as well as R163, Chapter II, which requires the recognizing of representative employers' and workers' organisations for the purposes of collective bargaining.

As regards discrimination, BAP is also aligned to SSCI:

5.02: The standard shall require that worker representatives or members of trade unions are not discriminated against or otherwise penalised because of their membership in or affiliation with a trade union or worker organisation in accordance with applicable national legal requirements.

To protect women from discrimination, whether trade union members or not, the BAP Farm standard requires:

2.37: The farm shall not engage in or permit discrimination in all any aspects of employment, including but not limited to recruitment, hiring, compensation, terms of employment, discipline, access to training, promotion, termination, or retirement on the basis of race, color, gender, national origin/ heritage, religion, age, nationality, social or ethnic origin, maternity, sexual orientation, political opinion, disability or any other status. Terms and conditions of employment shall be based upon the ability to do the job, not on personal characteristics or beliefs.

In response to the kind of considerations listed in this comment, the BAP program is making progressively greater use of ABSCA certified auditors.

Pillar 2 – Audit Clause 2.46

Comment

There is no reference to an Occupational Health and Safety Program

Proposed Change

2.45. The farm will develop, publish and train employees in an Occupational Health and Safety Program that covers all aspects of worker health and safety, including the farm’s OHS policies.

BAP Response

Although there is no requirement for a formal Health and Safety Program, the standard places emphasis on health and safety at work, training and effective management, through 12 compliance clauses (2.46 – 2.57) that include:

2.48 The farm shall designate a management person responsible for ensuring worker health, safety and training.

The corresponding Implementation guidance on Health and Safety states:

Workers should be provided with:

• Knowledge and skills needed to do their work safely and avoid creating hazards that could place themselves or others at risk.

• Awareness and understanding of workplace hazards and how to identify, report, and control them.

• Specialized training, when their work involves unique hazards.

Staff and workers shall be given initial orientation training as new workers as well as refresher training on safety in all areas of farm operations. Farms should take the approach that workers have a "right to know" about worker safety and hazardous conditions associated with employment. Training programs should be accurate, credible, clear and practical. Training materials should be prepared by qualified individuals and updated as needed. Trainers should have a general safety background or have practical experience in safety or be a subject matter expert. Training programs must be clear and presented in terms understandable by workers. Training programs should be useful to workers, with demonstrated application on the farm.

Workers shall be trained in first aid for electrical shock, profuse bleeding, drowning and other possible medical emergencies. A plan shall be available for obtaining medical assistance for injured or ill workers. Training should be provided on response to natural disasters such as severe floods and tropical cyclones.

Safety equipment such as goggles, gloves, hard hats, life jackets and ear protection, shall be provided when appropriate. Machinery shall have protective guards or covers where appropriate, and electrical devices shall be correctly and safely wired. Tractors should have roll bars, shields over power take-offs and other appropriate safety devices. Use of personal protective gear and equipment should align with local conditions and local dress customs. However, these conditions and customs should not preclude use of personal protective gear when the job or task requires their use.

Farms that use divers to clear sludge from pond bottoms or perform other underwater tasks shall develop a written Dive Safety Plan to assure safety and require directly employed or contracted divers to follow the plan. The plan shall require specialized diver safety training, maintenance records for diving equipment and procedures for diving emergencies. If sulphites are used during harvesting, procedures shall be adopted to minimize health risks to workers.

Workers shall also be aware of their roles in producing safe food. Workers should be provided with information about controlling hazards that could compromise food safety during production of aquatic animals. Workers should be aware of their roles and responsibilities in monitoring any critical control

points to maintain food safety during production. Workers should be aware of the role of their personal health and hygiene in maintaining the food safety of aquatic animals produced on the farm.

Pillar 2 – Audit Clause 2.46

Comment

Could not find a clause around refusal of unsafe work without penalty.

Proposed Change

2,58 The farm shall have in place a policy that a worker can refuse to work in an unsafe environment without disciplinary action being taken against the worker.

BAP Response

Under review

Pillar 2 – Audit Clause 2.47

Comment

The separate changing facilities might be too much on a farm, especially on small farms – clusters and groups? Looks like this is from the processing plant std where it makes sense but not at a farm.

BAP Response

Modification made

Pillar 2 – Audit Clause 2.48

Comment

How does the designated person "ensure" worker health, safety and training?

Proposed Change

2.48: The farm shall designate a management person responsible for managing ~~ensuring~~ worker health, safety and training.

BAP Response

Wording change adopted.

Pillar 2 – Audit Clause 2.55

Comment

Need to add a requirement for boat safety training for staff that use boats in their work on farms.

Proposed Change

Add separate clause(s) to address boat safety.

BAP Response

New Clause inserted:

2.58: If the farm requires boat usage then operators shall be trained and licensed in accordance with local and national regulations.

Pillar 3 – Audit Clause 3.1

Comment

Suggest BAP consider shifting from calculating loading rates from effluent monitoring data, to calculating from N and P added via feeds, minus N and P removed via harvested product. In the case of earthen ponds, consideration would need to be given to the ability of pond soils to retain P, which then does not get exported to the receiving environment.

Proposed Change

Possibly retain system of calculating loads from effluent concentration times water volume used, but add (especially for non-point source farms like cages) a requirement to calculate loading rates of N and P, possibly TSS also, just going by feed and harvest data.

BAP Response

Appendix A does cover how to calculate a load index based on feed and harvest data.

Pillar 3 – Audit Clause 3.1

Comment

Impacts to any nearby ecologically sensitive areas should also be identified. The significance of each impact should be evaluated and assessed. For significant, high-risk impacts, a more comprehensive impact assessment should be conducted.

Who defines significant and high risk? If sensitivity is estimated by the applicant and not known, then significance and high impact cannot be defined.

Proposed Change

Descriptors and examples need to be added here to remove ambiguity

BAP Response

This section on Environmental Impact Assessment and Management Plan is a new addition the BAP Farm standard and it provides recommendations for how to proceed with a farm specific approach to assessing and managing environmental impacts. To remove ambiguity in the actual BAP requirements, the numbered compliance clauses specify what impacts need to be addressed and what the auditor will look for to verify compliance. This is spelled out in the subsequent sections on:

- effluent management
- habitat protection
- sediment management
- efficient usage of fishmeal and fish oil,
- control of escapes
- biodiversity and habitat protection, and
- management of supplies and wastes

Pillar 3 – Audit Clause 3.1

Comment

The contribution of inputs, outputs, emissions and resource use to eutrophication, water stress, and resource depletion should be estimated.

Proposed Change

Estimation of these values is open to error and inconsistencies between certified producers. Some form of consistent parameters for measurements and data collection needs to be used.

BAP Response

To enable direct contributions to greenhouse gases to be calculated, a new clause/data collection requirement has been inserted, replicating the one in the new BAP Feed Mill Standard:

3.2 The farm shall keep records of annual direct energy (fuel + electricity) consumption (kWh/yr). Note: Auditors must include this data in the audit reports.

Pillar 3 – Audit Clause 3.1

Comment

For each impact identified, a description of actions that will be taken to reduce, mitigate or manage the impact.

• Description of the environmental monitoring and reporting system that will be followed.

How will BAP decide if these are adequate/appropriate?

BAP Response

The areas of primary concern have been identified as:

- effluent management
- habitat protection
- sediment management
- efficient usage of fishmeal and fish oil,
- control of escapes
- biodiversity and habitat protection, and
- management of supplies and wastes

The numbered clauses under each section of Pillar 3 specify what is required to address the relevant impacts.

Pillar 3 – Audit Clause 3.1

Comment

Most farm will not be able to calculate environmental loading even though the explanation is given.

Proposed Change

Simple excel spreadsheet's calculation need to be provided to applicant, and publicly accessible on BAP website.

BAP Response

Spreadsheets will be developed and made available.

Pillar 3 – Audit Clause 3.1

Comment

This clause simply suggests to calculate an environmental loading and report the result of each crop, but **no measure**. However, these is no meaning to report the result without understanding the interpretation of environmental loading, and an afford to reduce the potential pollutant.

Since, BAP already require the record of water quality, feeding, FCR, and maximum allowable loading through effluent quality. It Environmental loading might not be necessary.

BAP Response

A requirement to manage and reduce effluent loading will be introduced subsequently. The first step and the objective of Clause 3.1 is to gather the necessary data.

Pillar 3 – Audit Clause 3.1

Comment

BAP must incorporate a parallel standard for mortality rates, e.g. above 10% of batch.

BAP Response

The BAP Farm standard does not set requirements for minimum survival rates. However, indirectly it does require consistent survival rates because it sets upper limits for Fish in: Fish out ratios and these cannot be reached if there are high mortality rates.

Pillar 3 – Audit Clause 3.1

Comment

Dose BAP have requirements on minimum and maximum value?

BAP Response

Not yet. A requirement to manage and reduce effluent loading will be introduced subsequently. The first step and the objective of Clause 3.1 is to gather the necessary data.

Pillar 3 – Audit Clause 3.1

Comment

Description of an environmental quality baseline with estimation of the sensitivity of the environment to the impacts identified.

Estimation of the sensitivity is not adequate. Expert advice should be sought to provide data on likely sensitive habitats and species in the locality.

Proposed Change

Description of an environmental quality baseline based upon available science that indicates the sensitivity of the environment to the impacts identified.

BAP Response

Wording change adopted.

Pillar 3 – Audit Clause 3.1

Comment

Some farmers and processors in India were saying the incidence of AB residue in shrimp was caused by AB residues left over in the sediment in ponds that had previously been used for fish.

Has there ever been a study of that possibility?

Did the technical working group for farm standard 3.0 consider bench mark analysis for AB residue in sediment?

BAP Response

Antibiotic residues in pond sediments raise a food safety concern and the Technical Committee has addressed this type of contamination risk via Clause 1.1:

1.1: Farms shall conduct an assessment that identifies potential contamination risks from the surrounding environment with potential to affect the food safety of products from an aquaculture farm, including monitoring any changes to watershed land use practices over time. The farm shall develop a management plan that describes procedures to monitor and control those risks and provide evidence that the plan is operational and effective.

The relevant Implementation guidance gives further detail of what is expected.

BAP has not done a study specific to residues in shrimp being attributable to previous treatment of fish, but this type of contamination is possible and techniques for detecting residues can be very sensitive. E.g. one study from Indonesia:

https://www.researchgate.net/publication/304488297_Detection_of_Antibiotic_Residues_from_Shrimp_Pond_and_Their_Environment_in_East_Java_Province_Indonesia

Pillar 3 – Audit Clause 3.1

Comment

We support the inclusion of environmental loading indices to estimate the eutrophication potential posed by a farm and recognize that as per BAP's approach and core focus is on farm-level performance. However, we encourage the inclusion of clauses that account for potential cumulative impacts.

Proposed Change

Farms shall calculate environmental loading indices for total nitrogen and total phosphorus based on data collected on production system type, feed conversion ratio and water exchange. These should be used to ensure that the farm is operating within the carrying capacity of the waterbody.

BAP Response

The first step and the objective of Clause 3.1 is to gather the necessary data. A requirement to manage and reduce effluent loading will be introduced subsequently. Recommendations from Dr. Claude Boyd are for large farms to conduct studies of carrying capacity, but it is harder to require small farms to conduct such studies.

Pillar 3 – Audit Clause 3.2

Comment

BAP water quality criteria are in conflict with certain government regulations; any proposed solutions need to be specific to the site and meet local government regulation.

Proposed Change

Where effluent discharge is locally regulated, the farm will hold a discharge permit and comply with the parameters set forth by the regulatory agency.

BAP Response

Modified effluent water quality criteria have now been included to cover all production systems, including RAS (Appendix B), which typically have lower discharge volumes. Note that the BAP standard already requires valid permits, and it sets additional requirements on top of these.

Pillar 3 – Audit Clause 3.2

Comment

1. Compliance with a water use index should be required, because it would lessen pumping volume to conserve energy and lower carbon emissions. It also would lower freshwater use at facilities producing freshwater species which contribute to global water use. (Brackishwater and seawater facilities do not contribute to global water use, because saline water is not useful for most human purposes).

2. Compliance with pollutant load limits also should be required irrespective of the fact that the load limits will not assure water quality protection. They would, however, compel producers to achieve a specific level of resource use efficiency and avoid unnecessary discharge of pollutants.

3. Determination of appropriate water use and pollutant load index limits could be established for each type of production system from data available on water use and load indices reported by BAP audits. These data could reveal an average and range of the indices by production systems from which reasonable limits could be established.

4. When establishing load limits, the nature of water use by the facility should be considered. In recirculating systems where the effluent is relatively small in volume but concentrated in wastes, application of this water for irrigation, disposal by deep-well injection, or other means of avoiding discharge into surface water bodies could allow load limits to be increased or removed.

5. The size of facilities should also be considered. Very large facilities should be required to make assimilation capacity studies upon which to base load limits.

6. The BAP should begin to collect water use and pollution load index data from previous and upcoming audits. These data could then be used to establish meaningful water use and pollutant load indices for different types of facilities. There also will need to be options specified for very large facilities, and possibly for very small ones. I highly recommend that the BAP standard includes water use and pollution load limits in order to have irreputable evidence of rigorous attention to water quality protection.

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7. These limits and other information collected in BAP audits should be used to develop an indicator such as a score for rating facility environmental performance. I believe that such a scoring system is not in use by other aquaculture certification programs.

BAP Response

Data collection on water and energy use are required but no limits are set in this issue of the standard.

A new clause has been inserted to collect data on direct energy consumption:

3.2: The farm shall keep records of annual direct energy (fuel + electricity) consumption (kWh/yr). Note: Auditors must include this data in the audit reports.

This is the starting point for setting standards relating to greenhouse gas emissions.

The standard also requires:

3.4: Records and summaries of the volume of farm intake water use and effluent water quality monitoring (if applicable) shall be maintained and available. Note: Auditors must include water use data in the audit reports.

There are new provisions relating to the calculation of effluent loads. Formerly these were recommendations but, in this issue, they are now requirements:

3.1: Farms shall calculate environmental loading indices for total nitrogen and total phosphorus based on data collected on production system type, feed conversion ratio and water exchange. Note: Auditors must include this data in the audit reports.

This is the starting point for gathering the data needed to set relevant standards.

Note that there are exemptions for meeting effluent concentration limits including for:

3.3.2: Farms that demonstrate water reuse, only occasional water exchange and no intentional discharge of effluents into natural water bodies during grow-out, such that less than 1% of the culture water volume is exchanged daily on an annual basis and discharged to a receiving watershed.

3.3.6: Farms that operate within a freshwater irrigation system such that effluent water is exclusively destined to irrigate agricultural crops.

As regards special requirements regarding assimilation capacity for very large facilities, this topic will be discussed by the Standards Oversight Committee as a possible component in the BAP Vanguard program that sets standards for industry leaders.

Pillar 3 – Audit Clause 3.2

Comment

案例中 1,000,000 平米，约合 1500 亩水体，养殖产出只有 230mt（**吨**）；**在国内**实际生产中，例如跑道养殖草鱼的产量可达 3mt **一**亩，1500 亩，为 4500 **吨**，**差了近** 20 **倍。普通池塘草**鱼养殖也有 1-2 **吨每**亩的产量。

In the sample given, 1,000,000 ㎡ water only produces 230mt fish. In China, the grass carp production using raceways system can reach 4500 mt with same water area.

BAP Response

The values in this example on p56 are to provide an illustrative calculation only and they are not used to set any limits.

Pillar 3 – Audit Clause 3.2

Comment

Mixing zone debate. It's problematic.

BAP Response

Under review

Pillar 3 – Audit Clause 3.2

Comment

RAS need to be addressed - some effluent variables, P, limits are too low for workability. Big systems will struggle. Data collection needed. Set a bar and then move it, as done with FIFO levels.

BAP Response

The limit for Total Phosphorus in RAS effluents has been set at 'less than 10'

Pillar 3 – Audit Clause 3.2

Comment

Remark 1, Effluent Water Quality Criteria:

Please explain the motivation to design one global effluent water quality format for RAS farming. From both an industry and scientific perspective I do not see the point. Discharge of the above parameters have different impacts when released in e.g. (small) river systems or (large) intertidal marine water bodies. To determine effluent parameters, it is important to take into account e.g. the volume and hydrological characteristics of the receiving water body, and farm effluent volumes.

Remark 2, Soluble phosphate in effluent water:

Which (scientific) data can demonstrate a commercial scale RAS can have an effluent of soluble-P ≤1.0 mg/l? RAS is an innovative way in re-using water due to internal recirculation. By recirculating the water, a concentration of e.g. soluble-P is accumulated in the system. By reducing the use of intake water, a higher build-up of soluble-P is realized.

An easy way to reduce the amount of soluble-P in the effluent stream is by dilution before discharging into the receiving waterbody. By doing so, water must be taken from the receiving water body, to be discharged at the same speed having dilution as only purpose. This is a waste of energy and (financial)resources.

For both remark 1 and remark 2, Local authorities should manage these issues at a local scale. By taking into account local studies and scientific insights legislation for effluent parameters should be developed. During an onsite audit it should be demonstrated the farm has a minimal environmental impact on its environment, including its receiving waterbody, by complying with these legislations. In Europe e.g. it is impossible to obtain an aquaculture and/or water permit, without complying to strict (local) environmental regulations.

Remark 3, Mass balance land-based Kingfish farming

Based on farming data from 2020 a mass balance was made for land-based farming of Yellowtail Kingfish (Seriola lalandi). Table 2 shows all relevant farm parameters to conduct a mass balance, figure 1 gives an overview on how phosphate is allocated from the feed into the fish, fecal and non-fecal waste.

Over 2020 an average of 7.72 mg/l of total-P was measured from our farm effluent. Assuming soluble and total-P values do not significantly differ from each other a reduction of 87% needs to be realized to comply with the new BAP standard. From an economic point of view and considering our scale of production, this reduction seems impossible.

Proposed Change

Recommendations

Our company vision is to be a global leader in sustainable land-based aquaculture. Therefor we continuously strive to reduce amongst others our phosphate discharge. Technical possibilities to reduce the amount of phosphate in our farm effluent are:

- Lowering the FCR of our fish
- Reducing phosphate levels in the fish diet or increase digestibility of phosphate in the feed
- Improve fecal consistency to increase the retention of phosphate as a solid fraction
- Constructing a waste-water treatment unit for dephosphorization of effluent water

Table 2: Effluent data Jan-Aug 2020

Parameter	Unit	Value
FCR	[kg/kg]	1.56
Biomass produced	[ton]	444.5
P/kg feed	gP/kg feed	15
P content in fish	gP/kg feed	4.7
Water exchange	m3	787,7
Total-P effluent	g/m3	51
		7.72

By realizing the above points we can reduce the amount of Phosphate in our effluent. Reducing it to 1 mg/l seems unrealistic without additional dilution before discharge.

Figure 2: Mass balance phosphate for Kingfish farming, Jan-Aug 2020.

BAP Response

Note that there is an exemption to the BAP Effluent Water Quality criteria:

3.3.5: Farms that undertake a formal Environmental Impact Assessment, conducted by a qualified third-party, that includes a favorable assessment of assimilative capacity of the receiving water body and an Environmental Management Plan.

Note that this issue of the BAP Farm standard will gather data on effluent load indices and a subsequent issue will set limits. Note also, that the BAP Vanguard Program will set standards for leading enterprises that want to demonstrate performance beyond the requirements of the BAP Farm standard.

The limit for Total Phosphorus (mg/L) in RAS effluents has been set at 'less than 10'

Pillar 3 – Audit Clause 3.2

Comment

ระบุไว้ว่า บางฟาร์มอาจจะทำการประเมินผลกระทบสิ่งแวดล้อม จากหน่วยงานภายนอก อยากให้ทาง BAP ระบุไว้เลยว่าจะต้องเป็นฟาร์มตามเงื่อนไขอะไรบ้างที่จะต้องปฏิบัติ และอยากให้ทาง BAP ทบทวนอีกว่า หากจะระบุข้อกำหนดนี้ในอนาคตนั้น การประเมินผลกระทบสิ่งแวดล้อม จากหน่วยงานภายนอกนั้น จะมีค่าใช้จ่ายเพิ่มขึ้น จะเห็นตัวอย่างในประเทศไทย การขอรับรองมาตรฐาน ASC ที่ระบุไว้ในข้อกำหนดที่จะต้องประเมินผลกระทบสิ่งแวดล้อมจากหน่วยงานภายนอกเหมือนกัน มีสมาชิกให้ความสนใจขอรับรองระบบมาตรฐานน้อยเนื่องจากเหตุผลดังกล่าว

Some farms require to conduct environmental impact assessment (EIA) from external party. It would better to provide specific condition describe a type of farm need to conduct EIA. BAP should review this clause carefully, required EIA from external party will increase additional cost for farm. An example, ASC also require to conduct EIA. Only small number of farms go for ASC because of this particular requirement.

BAP Response

Please note that clause 3.3.5, relating to a formal Environmental Impact Assessment, is not a requirement but one of 6 compliance options that include:

3.3.1: Effluent water quality from ponds, flow-through and recirculating aquaculture systems shall comply with BAP Effluent Water Quality Criteria (Appendix B) or applicable regulations, if they are equivalent or more rigorous.

3.3.5: Farms that undertake a formal Environmental Impact Assessment, conducted by a qualified third-party, that includes a favorable assessment of assimilative capacity of the receiving water body and an Environmental Management Plan.

Pillar 3 – Audit Clause 3.2

Comment

Page 27

Any accumulated sludge removed from ponds, reservoirs or sedimentation basins shall be confined within the farm property or consolidated and used **localy** as fill material or for **or** agriculture.

Proposed Change

Spelling **locally.** Remove **or**

BAP Response

Corrections made

Pillar 3 – Audit Clause 3.2

Comment

Water quality parameters listed in the table of Appendix B are not realistically achievable for RAS facilities at their current stage of industry development nor are they necessarily protective of every receiving water body where a RAS facility may be established. Due to the nature of the concentrated waste stream of RAS facilities, it is reasonable to require advanced wastewater treatment systems that allow for reduction of these constituents. However, at present, the efficiency of the technology is less advanced, particularly in marine systems, and presents an operational and economic burden too significant to achieve the levels listed in the 85 New Hampshire Avenue, Suite 200 Portsmouth, New Hampshire 03801 GAA: 603.317.5000 BAP: 603.317.5225 www.aquaculturealliance.org www.bapcertification.org standard. In addition, having predetermined limits rather than gauging protective levels based on the remaining assimilative capacity of the receiving water body may not be protecting the water quality of that area. As an example, phosphorus is listed at a limit level of less than 1mg/L. While a significant portion of total P is removed with efficient solids removal, any remaining must be somehow captured, which, to date, has involved the incorporation of costly polymers that have only been tested on experimental scale systems. With the larger RAS facilities developing globally, the ability to implement and test in a commercial setting will be crucial; however, the expectation of farms to invest in the technology before fully developed for this application is not practical. Furthermore, if this farm was a marine RAS facility, the receiving water body of its effluent may be maintained with 1mg/L additional total P as it is not generally a limiting factor of quality in marine environments; however, a freshwater facility discharging even 1mg/L into a waterway with elevated total P already may be enough to push that balance too far and actually contribute to the failure of the water body.

Proposed Change

Proposed Change: Due to the fact that RAS facilities can be built virtually anywhere and the receiving water environment will be highly variable, we believe that instead of set values or limits, BAP's standard for certifying RAS facilities be the analysis and demonstration of receiving water quality preservation listed in the exemption 3.2.1: Farms that can demonstrate that water quality at the edge of the mixing zone (samples taken nearby and downcurrent of discharge) and outside the mixing zone (samples taken nearby and upcurrent of discharge) does not deteriorate. In addition, facilities should also be given credits or incentivized in some way for implementation or testing of new wastewater treatment technologies such as new filter types, polymers, methodologies that allow for reduced chemical

additives in the treatment process, etc (it would be required that BAP review the proposed method prior to incorporation in order to be given credit). By requiring modelling of effluent dispersion with the actual constituents of that wastewater, BAP certified farms will be actually demonstrating their lack of impact on the surrounding environment rather than simply meeting the criteria of predetermined values, which may not always be protective in every area. By incentivizing facilities to work with researchers on development of improved wastewater treatment technologies, it will encourage large scale testing, accelerating time to market of these products and processes, and driving costs of effective wastewater management down.

BAP Response

Please note that in addition to the Exemption 3.2.1 (now 3.3.2), there is another relevant exemption to meeting the BAP Effluent Water Quality criteria, i.e:

> *3.3.5: Farms that undertake a formal Environmental Impact Assessment, conducted by a qualified third-party, that includes a favorable assessment of assimilative capacity of the receiving water body and an Environmental Management Plan.*

Please note that this issue of the BAP Farm standard will gather data on effluent load indices and a subsequent issue will set limits. Note also, that the BAP Vanguard Program will set standards for leading enterprises that want to demonstrate performance beyond the requirements of the BAP Farm standard.

The limit for Total Phosphorus (mg/L) in RAS effluents has been set at 'less than 10'

Pillar 3 – Audit Clause 3.2

Comment

国内的环境监测指标一般不用 Soluble phosphorus，而是用总磷 TP 作为指标。国内淡水养殖排放标准 SC/T9101-2007 的一级标准总磷是小于 0.5。实际生产中，磷指标去除较难

The indicator used to monitor environmental impact in China is TP instead of Soluble phosphorus. The first grade requirements on TP, according to SC/T9101-2007 (Chinese regulation document), is less than 0.5. In actual production, it's difficult to lower phosphorus.

BAP Response

Soluble phosphorus has been used in BAP farm effluent standards rather than total phosphorus because it is the form that can be more economically and consistently measured directly with real time measurement devices.

The quoted total P value of less than 0.5 mg/L would satisfy the BAP effluent requirement.

Please note that there are a series of compliance options (3.3.1 to 3.3.6) that provide alternative ways of demonstrating environmental responsibility.

Pillar 3 – Audit Clause 3.2

Comment

国内环境指标一般检测总氮 TN 和氨氮 TAN，硝氮不检测。池塘养殖硝氮一般很低在 1mg/l 以下。RAS 标准 50mg/l 的硝氮，数值是否正确？

In China, Nitrate-N won't be test for environment concern, instead, we monitor TN and TAN. Nitrate-N of pond system is normally below 1mg/l. But For RAS, is 50mg/l a correct value.

BAP Response

The limits for N in RAS effluents are:

TAN 5mg/L or less (formerly 3)

Nitrate-N 50mg/L or less

Pillar 3 – Audit Clause 3.2

Comment

"Specifically, farms shall demonstrate…and no decreases in dissolved oxygen concentrations." is inconsistent with the requirements of NPDES permitting (and presumably other environmental regulations/permitting requirements) and difficult to measure/audit. Also, this statement does not recognize the fact that many permitting requirements are based on no change to receiving water quality or daily loading limits, not equality between influent and effluent composition.

Proposed Change

Strike this sentence in its entirety and replace with "Farms shall demonstrate compliance with local environmental regulations/water quality permitting requirements."

BAP Response

Please note the quoted paragraph relates to one of 6 compliance options:

Option 3.3.3: Farms that use source water with individual water quality variables that exceed limits established as BAP Effluent Water Quality Criteria. In this case, concentrations of those variables shall reflect no deterioration between intake and discharge of the relevant variable. For variables of source water that do not exceed BAP Effluent Water Quality Criteria, compliance with these effluent criteria is required. Values of influent water quality variables shall be recorded.

So, it is not a requirement.

Please also note that, overall, BAP requirements are designed to exceed regulations rather than defer to them.

Pillar 3 – Audit Clause 3.2

Comment

Standard: BAP Fish and Crustacean, Clause: 5,4
El estándar dice que las muestras de efluentes deben ser colectadas cerca del cuerpo receptor o cerca de la salida de la finca. Nuestro aporte es que los canales de abastecimiento se consideren como cuerpo

receptor de los efluentes, ya que el canal de abastecimiento recoge el agua del cuerpo principal donde descargan varias fincas a la vez y esto sesga el verdadero valor de los efluentes de cada laguna y poder medir directamente de cada laguna sin que otras variables como agua del estero y los aportes de otra fincas vecinas que descargan al mismo cuerpo receptor

[The standard says that effluent samples must be collected near the receiving body or near the outlet of the farm. Our input is that the supply channels are considered as the receiving body of the effluents, since the supply channel collects the water from the main body where several farms discharge at the same time and this biases the true value of the effluents from each lagoon and enables to measure directly from each lagoon without other variables such as water from the estuary and the contributions of other neighboring farms that discharge to the same receiving body]

BAP Response

In the specific situation described, one approach could be to take a representative effluent sample at low tide when there should be overall outward flow from the farm. (In some situations, at very low elevation farms there is minimal effluent outflow at high tide). The farm may want to consider only the lowest of the low tides that occur with the lunar cycle. A representative sample could include ponds (or combined effluents) from ponds in all stages of production; from recently stocked to those close to harvest.

Pillar 3 – Audit Clause 3.2.1

Comment

Need to consider more specific wording of the mixing zone, taking into account the input received from Dr. Boyd in connection with SPS 5.0, which would need however to be adapted to the farm standard.

BAP Response

Under review

Pillar 3 – Audit Clause 3.3

Comment

Isn't this already covered in 3.2a?

Proposed Change

Records and summaries of the volume of farm intake water use ~~and effluent water quality monitoring (if applicable)~~ shall be maintained and available.

BAP Response

Duplication eliminated.

Pillar 3 – Audit Clause 3.4

Comment

The farm shall take measures to control erosion and other impacts caused by culture unit outfalls.

Proposed Change

To be added - *These will be demonstrably effective*

BAP Response

Clause edited:

3.5: The farm shall take effective measures to control erosion and other impacts caused by culture unit outfalls.

Pillar 3 – Audit Clause 3.5

Comment

If ponds are constructed on permeable soil, measures (such as the use of pond liners) shall be taken to control seepage and avoid contamination of aquifers, lakes, streams and other natural bodies of freshwater.

Proposed Change

To be added - *These can be proven to be effective by monitoring of aquifer water for salinity and other changes from baseline data.*

BAP Response

With this risk in mind, Clause 3.6 (now 3.7) comes into play:

3.7: For inland brackishwater ponds, quarterly monitoring of neighboring well and surface water shall show that chloride levels are not increasing due to farm operations.

Pillar 3 – Audit Clause 3.7

Comment

It seems to be an unfair approach to require only intensive (>20 MT/ha/crop) Ponds, Non-Coastal Flow-through Systems and Recirculating Aquaculture Systems to settle solids, while allowing Marine Net Pen and Coastal Flow-through Farms to only monitor sediment accumulation conditions. Either both need to be required to mange solids, or both (if effluent is discharged to a high-energy marine environment) should be allowed to monitor sediment accumulations, and to take corrective actions to retain some solid wastes if negative trends are observed.

Proposed Change

Add allowance for coastal RAS farms to conduct sediment monitoring similar to flow-through coastal farms.

BAP Response

No change made.

Pillar 3 – Audit Clause 3.7

Comment

The 50% biosolids capture requirement seems arbitrary and difficult to measure/audit.

Proposed Change

"…the farm shall have and operate sufficient sedimentation basic capacity or implement other technical or engineering solutions to capture solids as needed to remain within environmental regulations/permitting requirements."

BAP Response

This requirement aims to reduce pollution risks arising due to direct discharge of effluent from intensive systems that can contain high concentrations of biosolids. Implementation guidance is provided on p26:

For farms producing more than 20 mt/ha/crop, the farm operator shall provide the auditor with mean values for fish production and sludge transfer frequency so the required sedimentation basin volume can be calculated. The auditor will verify that the farm has the required volume of basins in use and available for sludge containment.

Basins should be configured so that raw sludge enters at the surface at one end of the basin and the resulting effluent exits at the surface at the other end of the basin. Five or six calibrated poles should be installed in basins to allow the accumulation of settled solids to be monitored and ensure the available capacity can always support a minimum six-hour hydraulic retention time.

Raceways or similar flow-through systems have short retention times, and in high-intensity operations, sediment loads can often exceed acceptable limits. Therefore, such farms must incorporate suitably sized settling zones or other engineered solutions that assure removal of the majority of settleable solids. Accumulated solids must be pumped or siphoned periodically to offline sludge basins, where they can be dewatered and subsequently removed for use as fertilizer in land-based agriculture crops.

Pillar 3 – Audit Clause 3.7

Comment

Add text in red.

BAP Response

Modification made.

Pillar 3 – Audit Clause 3.11

Comment

Page 29. Allowable Wetland Transformation and Restoration

In cases where the auditor is not **been** able to inspect the restored wetlands in person, the farm shall provide the auditor with evidence.

Proposed Change

Remove **been.**

BAP Response

Corrected

Pillar 3 – Audit Clause 3.11 & 3.13

Comment

BAP Standard currently states

3.11: New farms or facilities shall not be located in mangrove forests, sensitive wetlands or any other critical or vulnerable habitats. And

3.13: If net loss of wetland habitat (delineated by evaluation of hydrological conditions and the presence of wetland vegetation) occurred on farm property since 1999, the loss shall have been due to allowable purposes.

We understand the basis for this standard originally stems from large scale mangrove destruction in the early establishment of commercial shrimp farming. We completely agree with the incorporation of this idea in responsible environmental stewardship; it is an imperative for all industries. However, in our company's recent establishment in Maine, we have observed a situation that shed light on how this is worded and how it may be adjusted. In identifying coastal sites appropriate for a marine RAS facility, Maine had a number that fit our most crucial needs. However, due to the geological features of Maine and the shallow depth in which bedrock formations are located, significant portions of the state's entire coastline are saturated soils and deemed wetlands by local regulating agencies. While many of these areas do provide habitat to critical species, there are also areas that demonstrate no presence of critical wildlife habitat or unique environmental features, (i.e., specialized plant species, vernal pools, etc). The area is just, as a result of the geology, wet. We fail to see how, in this tye of scenario, this language should apply, particularly when development of the area is permittable by local regulating authorities, whose focus is to maintain and preserve critical habitat such as wetlands. If current wording is enacted, it will be prohibitive to virtually any land based RAS facility establishing in Maine to achieve certification, which will only discourage RAS development in a state which, in many other ways, is an ideal location for it. Within the US alone, there are several other coastal areas that share this same feature, and in a time when we are focused on encouraging and growing the aquaculture sector in the US, this would be a significant setback.

Proposed Change

Proposed Change: As previously stated, we completely agree with demonstration of environmental stewardship through the preservation of wetlands and other areas of critical habitat. To that end and in the frame of the example discussed above, we would like to suggest a standard that forces new facilities to demonstrate that stewardship rather than a blanket statement that may be prohibitively exclusive. We would advocate a 3 step process to certification of a newly developed (post 1999) facility. 1. Functional Assessment: A detailed accounting of the unaltered environment of the site prior to development either based on direct survey or through accounting of historical records. This would include a characterization of any sensitive habitat, critical animal or plant species, unusual natural areas, archaeological sites etc. 2. Alternatives Analysis: The facility must provide narrative of its site selection process and detail why the site is a best fit from the perspective of minimal environmental impact on land and in water development. This should then also detail options considered for placement of buildings, equipment, and other structures and how the selected configuration minimizes disturbance to the natural environment. 3. (If Applicable) Compensation Plan: If wetland impacts are necessary, demonstrate that those areas impacted do not impact significant or critical species habitats or nursery

areas; demonstrate why the impact is critical to operation and whether it is temporary (as a result of construction) or permanent; demonstrate a compensation plan, whether actual mitigation to reestablish the area by the applicant or by a hired consultant, or through an in lieu fee or donation to a mitigation program. If impacts are temporary in nature, the applicant must make every reasonable effort to restore those areas; if unsuccessful, an additional in lieu fee or donation will be required which may be of a higher multiplier than the original (in order to incentivize restoration efforts).

BAP Response

As noted, the existing BAP requirements in this regard are designed to prevent mistakes such as the conversion of mangrove wetlands to aquaculture ponds. However, it is difficult to set the requirements so that they can address this type of risk in every setting. Note that 3.11 (now 3.12) refers to sensitive wetlands and not all wetlands. Presumably, the permitting process in Maine does protect certain sensitive wetlands. Evidence of satisfying the permit requirements would likely satisfy BAP requirements too.

Pillar 3 – Audit Clause 3.12

Comment

New farms shall not result in the loss of habitat for critically endangered species.

Proposed Change

New farms shall not result in the loss of habitat for critically endangered, endangered or vulnerable species.

BAP Response

Wording changed in clause 3.13 to include 'endangered' as well as 'critically endangered'. But there is less consensus around the IUCN 'vulnerable' designation because it may be applied too broadly. For example, in a fishery setting, it includes species such as cod and haddock, stocks of which are certified sustainable by Marine Stewardship Council and green rated by Marine Conservation Society.

Pillar 3 – Audit Clause 3.12

Comment

C. 3.12: New farms shall not result in the loss of habitat for critically endangered, endangered, and/or vulnerable species.

BAP Response

Wording changed in clause 3.13 to include 'endangered' as well as 'critically endangered'. But there is less consensus around the IUCN 'vulnerable' designation because it may be applied too broadly. For example, in a fishery setting, it includes species such as cod and haddock, stocks of which are certified sustainable by Marine Stewardship Council and green rated by Marine Conservation Society.

Pillar 3 – Audit Clause 3.14

Comment

If net loss of wetland habitat occurred on farm property since 1999, the loss shall have been mitigated by restoring an area three times as large or by an equivalent donation to restoration projects.

Proposed Change

If net loss of wetland habitat occurred on farm property since 1999, the loss shall have been mitigated by restoring an area three times as large with the equivalent divers native species or by an equivalent donation to local, active and measurably successful restoration projects.

BAP Response

More precise wording adopted thus:

3.15: If net loss of wetland habitat occurred on farm property since 1999, the loss shall have been mitigated by restoring an area three times as large with the equivalent diversity of native species or by an equivalent donation to measurably successful restoration projects.

Pillar 3 – Audit Clause 3.22

Comment

Apart from daily dissolved oxygen measurements, Appendix D mentions that a vertical profile of DO, Temperature and pH should be taken monthly at 2 meter intervals. However, they do not mention how deep. In lakes with depths greater than 70 meters, it is a bit unfeasible.

Proposed Change

Take monthly samples at 3 depths: 50 cm, 6 m and 12 m (cage bottom) for DO and Temperature. But on a quarterly basis for pH.

BAP Response

Taking samples every 2m down to 70m would certainly be unfeasible and the auditor would not expect this interpretation.

Pillar 3 – Audit Clause 3.22

Comment

Yes. It is unclear if clause 3.22 requires aquaculture sites or farms need to meet either:

- two out of the following four requirements; or
- two out of three requirements and the last dissolved oxygen requirement is mandatory

Proposed Change

Water quality in the surface mixed layer of water bodies used for cage culture shall conform to at least two out of three of the following:

BAP Response

Improved wording adopted.

Pillar 3 – Audit Clause 3.22

Comment

Water Quality Monitoring Audit clauses does not consider the varying conditions and characteristics of lake ecosystems. For example, impacts due to changing climatic patterns or seasonal fluctuations – both can affect lake water quality indicators.

Proposed Change

Measurements and limits set should be on Annual Average Value, and not Absolute Maximum Value, to factor in seasonality, climatic changes and protect historical trend analysis referencing.

i. Total Phosphorus annual average not more than 40 µg/L
ii. ii. Chlorophyll-a annual average not more than 15 µg/L
iii. iii. Secchi disk visibility annual average not less than 3 m

BAP Response

An annual average is not used here because it has the potential to conceal periods of unfavourable water quality.

Pillar 3 – Audit Clause 3.22

Comment

1. Ref DO we are unclear on why a "minimum daily Dissolved Oxygen concentration shall not be less than 4 mg/L for more than four consecutive months" mean,

Does this mean the DO levels remain below 4mg/l continuously for 4 months? Or that it cannot drop below, even this level for a short period? Or does it mean continuously below this level for 4 months?

2. Farms should be allowed to move cages to a higher dissolved oxygen (DO) content location when a Lake suffers from cold fronts due to geographical location.

Proposed Change

1. We strongly recommend a minimum annual average Dissolved Oxygen concentration where the farm operates shall not be less than 4 mg/L.

2. Provision should be made for a 'Dynamic Farming Location' provision to allow farmers to move to higher DO level that may exist in the water body at seasonal times i.e. by moving the Farming Net Open Pens Location. This could be considered as a type of a unique BAP Certification Farming Unit measure?

BAP Response

On point 1: *"minimum daily Dissolved Oxygen concentration shall not be less than 4 mg/L for more than four consecutive months"*

This is intended to avoid situations arising with chronically low DO in lakes and reservoirs. DO would not need to be continuously below 4 mg/L, but if water quality is chronically bad in a reservoir for four months, that would meet the intent of that clause.

On point 2. The response 'Dynamic Farm Location' could indeed be a corrective action to localized water quality problems.

Pillar 3 – Audit Clause 3.22

Comment

As the BAP Farm Standard Issue 3.0 is a generic standard for all finfish (except salmons) and aquaculture systems, the Water Quality Monitoring audit clauses do not appear to consider the varying conditions and characteristics of lake ecosystems which are liable to changing weather patterns and seasonal fluctuations which can affect lake water indicators. In addition, for a variety of local BAP producer

(client) management reasons such as national regulations or farming permit renewal requirements, being able to show historical trend analysis of data is important. In the case of **[XXXX]**, we are proud that our historical dataset allows the business to show responsible performance based on historical trends which are better represented by average readings.

• For these reasons, we recommend that metric measurements and limits set for Water Quality Monitoring indicators should be based on Annual Average Value, not Absolute Maximum Value, to factor in seasonality and climatic changes.

• To achieve a more representative measurement for Annual Average Values, sampling and reading should be done on a monthly basis, instead of every quarter.

• Furthermore, sampling depth should allow for a range to allow for the depth variation of different lakes.

In the tables on Page 4-7, we share our recommendations and also propose some changes to several audit clauses to help bridge the gaps highlighted above and to hopefully improve clarity and relevance for the BAP Farm Standard Issue 3.0.

BAP Response

To add clarity to the sampling requirements, the Tables in Appendices B and D, that list water quality monitoring requirements, have been modified to indicate that the sampling frequencies are minimum frequencies. Thus, more frequent sampling can be used to reveal any periodic anomalies. Note that the forms in Appendix C are suggested formats for data collection and they can be modified for increased sampling frequency.

Regarding sampling depth, it is considered appropriate to set standardized depths to allow for more consistent reference points and reflect the WQ in the zone where the fish are cultured.

(The BAP responses to the tables provided in this set of public comments are dealt with in sequence, i.e. as they appear in the Appendices and the numbered clauses.)

Pillar 3 – Audit Clause 3.23

Comment

We are in a nutrient deficient water system (Columbia River) and our measurements are near zero most of the time so any increase easily accrues a 25% increase but we are still well within acceptable limits. Ex. Phosphorous measured 0.01 or 0.02 ppm, with a 0.01ppm increase (very low amount), this would result in an increase in 50-100% which violates the percent increase threshold but is still within acceptable ranges. We are located downstream of the Grand Coulee Dam and they mitigate the flows without consideration of our farm downstream.

Proposed Change

Establish a minimum threshold. Anything over 1-2ppm increase then the 25% rule is applied.

BAP Response

Please note that the requirement relates to annual average concentrations which could correct for some periodic fluctuations due to river flow controls.

Also, the test kits typically used for demonstrating compliance with BAP effluent concentrations are not as precise as the example cited and the BAP criteria are set with this in mind (set to a precision of 1 decimal place of ppm). The cited concentrations of 0.01 and 0.02 ppm would typically yield measurements of <0.1 ppm and <0.1 ppm and would not be evidence of a significant change.

Pillar 3 – Audit Clause 3.23

Comment

We don't have a local lab that will run these samples.

Proposed Change

Remove this parameter or use another parameter to estimate this same measurement.

BAP Response

Chlorophyll a is included as a standard measure of the concentration of suspended phytoplankton.

Pillar 3 – Audit Clause 3.25

Comment

With this standard it would greatly reduce our overall production capacity by 60% making it not feasible to certify with BAP. Currently, we adhere to tribal, state and EPA requirements with no issues.

Proposed Change

Grandfather in already certified farms. Or remove the requirement completely as this will make it impossible for some existing farms to meet criteria for certification renewals.

BAP Response

Cage farms in the Columbia river would be able to make a case that they are in a river rather than in a reservoir or lake, and thus 3.25 (now 3.26) would not be applicable.

Pillar 3 – Audit Clause 3.29

Comment

Difficult to audit. Doesn't 3.30 already cover this aspect because it states after first production cycle? 3.29 is to set the stage (planning) for future monitoring.

3.31 Very arbitrary and difficult to audit the final piece. Better to delete

BAP Response

3.29 (now 3.30) Duplication removed.

3.31 (now 3.32) modified to:

The farm shall provide documents that describe local standards for benthic impacts under net pen farms or at water discharge sites from coastal flow-through facilities. These standards shall include benthic indicator "trigger levels" above which the farm would not be in compliance with local standards. In the absence of benthic trigger levels set by regulatory bodies, the farm shall define these trigger levels based on the benthic characteristics study as per 3.30.

Pillar 3 – Audit Clause 3.36

Comment

Although BAP criteria for FCR have not been established, producers should always strive to reduce FCR because it is among the best indicators of potential profitability and is direct evidence of efficient use of marine feed ingredients. Farms should always attempt to demonstrate continuous improvement after initial certification... The FCR calculation should include the number of animals, rather than simply the mass of the animals.

BAP Response

The FCR calculation uses a long-established formula common to many animal production systems. The survival rate is a related but separate calculation.

Pillar 3 – Audit Clause 3.36

Comment

FIFO- no specific measure for certain species

Proposed Change

Ensure all key species have a FIFO

BAP Response

As the BAP program compiles adequate datasets, FIFO limits are progressively set and tightened. In 2017 there were limits for *L. vannamei, P. monodon*, tilapia and *Pangasius*. This new standard adds another 3 species: channel catfish, rainbow trout and Atlantic salmon (in recirc. systems only).

Pillar 3 – Audit Clause 3.36

Comment

It is unclear why the industrial processing yield for fish oil was changed from 5% to 4.8% and whether this change is supported by citable data. This change will artificially inflate FIFO scores. Unless it is supported by high quality data, this change is unwarranted.

Proposed Change

Revert fish oil processing yield back to 5.0%

BAP Response

The 4.8% figure comes from IFFO: https://www.iffo.com/fish-fish-out-fifo-ratios-conversion-wild-feed

Calculations can be based on other, more precise data, but 4.8% is a representative default value.

Pillar 3 – Audit Clause 3.36

Comment

- Point No.4 - by it's definition, eFCR includes production losses – so not sure why it would be excluded from the calculation?
- Point No.13 – may want to look at the definition of a treatment. Again, where a standard exists limiting the number of treatments (ASC), some regions are playing fast and loose with the

definition, claiming a single 'treatment' can be consisting of multiple 'courses' of antibiotics (previously known as 'treatments'!) Happy to explain on a call.

BAP Response

Under review.

Pillar 3 – Audit Clause 3.36-3.42

Comment

The number of animals killed throughout each stage of the supply chain should be kept to a minimum, including a reduction in the use of wild-caught and farmed aquatic animals for fishmeal and fish oil (FMFO) as farmed aquatic animal feed and use of other animal-derived ingredients, including ingredients derived from insects. This should be done by (1) prohibiting the use of FMFO in the feed of herbivorous aquatic species/life stages, (2) using the lowest amount of FMFO possible in feeds for carnivorous and omnivorous aquatic animals while still ensuring good health (based on scientific evidence), (3) by maximizing the use of trimmings and alternative feed ingredients such as algal oils, while still ensuring good health (based on scientific evidence). Efforts to minimize should be quantified and reported. The average number of animals killed to feed each aquatic animal should be quantified and reported. The only meal products used should be byproducts of human consumption, as is the case in the SA aquaculture standard. Wherever possible, BAP should encourage the use of herbivorous or extractive species over carnivorous species in BAP-certified facilities.

BAP Response

The BAP standards set limits for FIFO ratios to promote efficient usage of ingredients derived from wild fish. The requirements and calculation methods incentivize the use of ingredients from fish processing by-products and from alternative sources, including insect meals and algae oils. Note that in this standard the FIFO ratios for shrimp (*L. vannamei* and *P. monodon*) have been reduced by 17% and 29%, respectively and for tilapia by 29% and *Pangasius* by 40% (compared to the existing standard, set in 2017). These are significant gains, and illustrative of a fast evolving, young industry that is adopting improved practices.

BAP standards can be applied to virtually all aquaculture species- carnivores, omnivores, herbivores and extractive species alike. In addition, the BAP Feed Mill Standard sets requirements for responsible sourcing of marine and plant-based ingredients. The diets fed to herbivorous aquaculture species need to contain plant-based diets that are responsibly sourced. Note that the availability of responsibly-sourced certified marine ingredients (at around 50% of global supply) greatly exceeds that of plant-based ingredients. So, the producers of products like wheat and soy, urgently need to catch up with producers of marine ingredients.

The SA (Soil Association) Standard referenced is an organic standard and not directly comparable to the BAP standards. But the BAP standards concur with the SA standard 13.7.1: *Feeding priorities (all species)*

1. You must feed your aquaculture animals with feed that

meets the animals' nutritional requirements at the various

stages of their development.

Pillar 3 – Audit Clause 3.36

Comment

Please clarify if the “Total Weight of the Harvested Aquatic Animals” is Live Weight, Round Weight or Processed Weight

Proposed Change

Clarify the units. As Total Weight Of Stocked Juveniles is most likely expressed as Live Weight, the Harvested Weight must also be expressed as Live Weight. Can’t subtract apples from oranges.

BAP Response

Wording adjusted to clarify ‘Live Weight’

Pillar 3 – Audit Clause 3.36

Comment

Perhaps also consider the farms to calculate Biological FCR and develop metrics around that.

Proposed Change

BFCR=Feed Use in Period/(Biomass Weight at end of Period + Weight of Harvest + Weight of Mortalities + Weight of Culls + Weight of Samples – Biomass Weight at Start of Period

BAP Response

The focus is currently around eFCR because the concern here is primarily with the overall efficiency of the system and the comparison between total inputs and outputs.

Pillar 3 – Audit Clause 3.36

Comment

The abbreviation “FFDER” and “FFER” is incorrect. J. Storage and Disposal of Farm Supplies and Wastes Implementation On-farm Processing Waste Disposal

Proposed Change

Both should be FFDR.

BAP Response

Correction made.

Pillar 3 – Audit Clause 3.36

Comment

FIFO and FFDR Calculation. Top of page 36

For calculation of FIFO and **FFDER**

Calculation of the FFDR separately compares the amount of fishmeal and fish oil provided in feed to the production system with the wet weight amount of fish produced and then uses the greater of these two values as the total **FFER** for the system.

Proposed Change

Should be **FFDR**

BAP Response

Correction made.

Pillar 3 – Audit Clause 3.36

Comment

The mentioned records are kept by feed mill companies. And its also audited by BAP inspections on feed mills. I consider its not necessary to write on this standard.

Proposed Change

Eliminate the sentence “maintains records on the species and fishery origins of each batch of fishmeal and fish oil” This sentence should be mentioned on Feed standard.

Change by: The farm shall obtain a declaration from the feed manufacturer.

BAP Response

For improved clarity, relevant clause now reads:

3.43: The farm shall obtain feed either from a BAP-certified feed mill or from a feed mill that provides declarations that it complies with BAP Feed Mill standards regarding:

A. the recording of species and fishery origins of each batch of fishmeal and fish oil, and;

B. having a written Plan of Action defining policies for responsibly sourcing fishmeal and fish oil from reduction fisheries and setting clear goals for responsibly sourcing soy ingredients.

Note that there is no requirement for BAP certified farms to source all their feed from BAP certified Feed Mills (except as related to 3- or 4-star BAP claims). Thus, it is still important for some farms to seek these declarations from their feed suppliers.

Pillar 3 – Audit Clause 3.37

Comment

“characteristics of all feeds used” how much detail or scope of characteristics of feed? Ex: size, brand, quality (dust)

Proposed Change

Provide more detail.

BAP Response

More detail now inserted:

3.38: The farm shall record the inclusion rates, as indicated in 3.37, and protein levels of all feeds used, the total amounts of each feed used each year and the total annual aquatic animal production.

Pillar 3 – Audit Clause 3.38

Comment

FCR needs to specifically be eFCR

Proposed Change

The guidance has provided an allowance that may be open to abuse, in cases where significant mortality events have occurred. Needs to be revised to ensure that the CB and BAP receive detailed explanations of ANY exclusion of biomass and feed related to mortality events, or the exclusion of mortality-related biomass and related feeds should be eliminated.

BAP Response

Under review

Pillar 3 – Audit Clause 3.39

Comment

FFDR value. Requirement significant amount of information from feedmill in which may not possible to receive entirely in order to calculate. FFDR should be regulated through Feedmill standard, not from farm itself. FIFO alone required a trained and experience personal to understand the concept. FFDR seems beyond farmer to comprehend.

Proposed Change

Require FIFO is sufficient to monitor and control the use of fishmeal. FFDR is not necessary at farm level. Unless, simpler indicator is proposed.

BAP Response

Calculation spreadsheets will be prepared and made available.

Pillar 3 – Audit Clause 3.39

Comment

If the farm will obtain its feed from a BAP certified sources, it shall calculated ONLY the FIFO index, since it will received the FFIF index from the feed mill. However, if the feed will come from a non-BAP certified feed mill, then the farmer will have to calculate both FIFO and FFDR.

In my opinion, there is no need to duplicate requirements over the farmer.

Proposed Change

When feeds were obtained from BAP certified sources, the farm shall calculate and record a final Fish-in Fish-out (FIFO) ratio. However, if the feed are obtained from non-BAP certified sources, the farm shall calculate and record the Forage Fish Dependency Ratio (FFDR) and Fish-in Fish-out (FIFO) ratio value for all completed crops in a calendar year.

BAP Response

Whether the feed comes from a BAP certified feed mill or not, the farmer is required to calculate both the FIFO and the FFDR. The former can be calculated using a FFIF value, but the latter needs the inclusion rates of both fishmeal and fish oil (derived from whole fish) to be provided by the feed maker.

Pillar 3 – Audit Clause 3.40

Comment

Moving FI:FO from 1.2 to 1.0 for Shrimp is going to make it very difficult to comply with such strict requirements.

BAP Response

With the increasing contribution of fishmeal derived from processing by-products, with evolving feed formulations, and with more efficient feed management and shrimp production systems, it is considered that a FIFO of 1.0 for *L. vannamei* is attainable.

Pillar 3 – Audit Clause 3.40

Comment

- Reducing FIFO will cause an issue with farm operation. Ideally, feed from BAP certified feedmill should provide suitable FFIF value to farm. Farm with good FCR should automatically comply with this clause. However, it is not a case anymore. Farmer who white shrimp trends to use black tiger prawn feed instead because of high protein content. In past couple years, many BAP certified feedmills provide higher FFIF then usual. It is not even close to zero at we expect. Example: farm cultured white shrimp has 1.32 FCR and an average FFIF of 0.92. FIFO results 1.21. Evidently, this farm has good management. But feed choice cause FIFO to be over requirement.

- The question is “does requirement on fish meal and fishoil use in BAP Feed Mill standard match Farm standard?”

- Another point, final FIFO value can only be calculated after harvest. Maintain good FCR and feed choice with low FFIF while shrimp growth depends on protein content feed, seem impossible for farmer who only consider protein content, not FFIF value. Although, protein content can come from plant but mostly farmer still prefer from fishmeal. Meaning, required high protein content in each shrimp stage doesn’t always match with suitable FFIF value.

Proposed Change

FIFO requirements of whiteleg shrimp and black tiger shrimp should stay the same.

BAP Response

With the increasing contribution of fishmeal derived from processing by-products, with evolving feed formulations, and with more efficient feed management and shrimp production systems, it is considered that a FIFO of 1.0 for *L. vannamei* is attainable.

Pillar 3 – Audit Clause 3.40

Comment

Can you confirm the FIFO limit for Atlantic salmon raised in marine net pens?

Proposed Change

Please clarify FIFO limit for Atlantic salmon raised in marine net pens

BAP Response

Not applicable to this standard. Please refer to the separate BAP Salmon Farm standard which applies to salmonids raised in marine net pens:

https://www.bapcertification.org/Downloadables/pdf/standards/PI%20-%20Standard%20-%20Salmon%20Farms%20-%20Issue%202.3%20-%2013-October-2016.pdf

Pillar 3 – Audit Clause 3.41

Comment

(Conflicting information)

3.41: For species not named in 3.40, the FIFO shall not exceed **3, or 4** if fish processing byproducts are included in the feed**.** (Page 36) an absolute maximum FIFO for BAP certification has been set at **four** where byproducts are excluded and **five** if byproducts are included in the FIFO calculation.

Proposed Change

Make correction to the appropriate section.

BAP Response

Correction made so that the clause is consistent with the guidance.

Pillar 3 – Audit Clause 3.41

Comment

Can you clarify if Atlantic Salmon raised in marine net pens come into this category?

Proposed Change

Please clarify FIFO limit for Atlantic salmon raised in marine net pens.

BAP Response

Not applicable to this standard, please refer to the separate BAP Salmon Farm standard which applies to salmonids raised in marine net pens:

https://www.bapcertification.org/Downloadables/pdf/standards/PI%20-%20Standard%20-%20Salmon%20Farms%20-%20Issue%202.3%20-%2013-October-2016.pdf

Pillar 3 – Audit Clause 3.41

Comment

But the percentage of inclusion is not stated. Or is this for whatever percentage of by-product inclusion?

BAP Response

No change made.

Pillar 3 – Audit Clause 3.42

Comment

- Does using feed from a BAP-certifed feedmill automatically comply on this clause?

- Clauses 4.1 on feedmill standard require the information on species use. Feedmill might not be able to identify into species. A group of species or genus is possible. Farm normally do not receive this information due to tremendous amount of information to prepare by feedmill.

Proposed Change

Clarification or scope of this requirement shall be provided to avoid confusion.

BAP Response

Clause 3.43 edited for clarity:

3.43: The farm shall obtain feed either from a BAP-certified feed mill or from a feed mill that provides declarations that it complies with BAP Feed Mill standards regarding:

A. the recording of species and fishery origins of each batch of fishmeal and fish oil, and;

B. having a written Plan of Action defining policies for responsibly sourcing fishmeal and fish oil from reduction fisheries and setting clear goals for responsibly sourcing soy ingredients.

Note that there is no requirement for the farm to keep species and fishery origin data.

Pillar 3 – Audit Clause 3.43

Comment

Surprised that there is no requirement to purchase seed stock from BAP Certified facilities

Proposed Change

To promote responsible sourcing of juveniles and seed stock, the farm shall obtain juveniles and seed stock from a BAP-certified hatchery or a hatchery that declares and documents compliance with BAP Finfish, Crustacean and Mollusk Hatcheries and Nurseries standards

BAP Response

To require exclusive use of seed from BAP certified hatcheries could be viewed as self-serving. Instead, the BAP program encourages integrated, certified supply chains via its star system. E.g. 4-star BAP signifies certified farm, hatchery, feed mill and processing plant.

Pillar 3 – Audit Clause 3.43

Comment

BAP must incorporate a welfare benchmark specifying that use of genetically modified or bioengineered organisms is prohibited where there is an adverse impact on fish welfare, including but not limited to consequent deformities or a weakened immune system.

BAP Response

Pillar 4 addresses welfare conditions for farmed fish and it applies equally to non-GM species and any GM species.

Pillar 3 – Audit Clause 3.43

Comment

"As most consumers do not seek out genetically modified foods, they should be provided with reliable information to enable informed food choices." is inconsistent with the aforementioned sub-clause 3.47, as not all countries require GMO foods to be identified by law.

Proposed Change

See previous comment and revise accordingly, preferably making this "should" statement a "shall" statement.

BAP Response

Whereas Clause 3.47 (now 3.48) refers to compliance with regulations, the statement in the Implementation guidance is a recommendation (but not a requirement) that goes on top of legal compliance. Thus, the two are compatible. In addition, the requirement in the Traceability Section (now T12) is for the farm to provide GM status information to purchasers and processors.

The Implementation guidance now states: *Consumers should be provided with reliable information regarding the BE/GMO status of farmed aquatic animals to enable informed food choices. Traceability standard T12 specifies that information regarding the BE status of harvested aquatic animals be transferred from the farm to processing plants that receive those animals.*

Pillar 3 – Audit Clause 3.43

Comment

It is not helpful for GAA to set up a standard or requirement that may be in conflict with laws in different countries. For that reason, the proposed change has been recommended.

Proposed Change

"Information regarding the BE status of harvested aquatic animals shall be provided in accordance with the regulations in producing and consuming countries regarding such organisms."

BAP Response

Requiring a farm to provide processors or purchasers with information about a product's GM or BE status is a BAP requirement that is additional to any regulations. It is designed to be applicable globally and is not intended to conflict with any legal requirements.

Pillar 3 – Audit Clause 3.47

Comment

There is a need to be more specific on the types of applicable regulations.

Proposed Change

Farms that produce genetically modified or bioengineered aquatic animals shall comply with all regulations related to the production, distribution and labelling of such organisms in the producing and countries where the product will be sold to the consumer.

BAP Response

In the BAP program, farms are required to provide reliable information to processing plants and the purchasers of their products, as detailed in the Traceability section. Traceability clauses also require BAP certified processing plants to pass on accurate information and labelling. The suggested modification to clause 3.47 would fall under the BAP Seafood Processing Standard.

Pillar 3 – Audit Clause 3.47

Comment

This clause is inconsistent with many of the aforementioned clauses related to therapeutant use, water quality, etc. Rearing of GMOs should be as big a concern as any of these other topics, but this clause is essential a requirement to comply with regulations. Either this clause should be made as substantive as the others, or the others should reflect the same perspective as this one.

Proposed Change

Revise sub-clause(s) to maintain equitable concern/oversight of GMOs, therapeutant use, water quality and other environmental issues, etc.

BAP Response

The standard also requires, in the Traceability section (T12), that farms provide GM information to processing plants or purchasers. This is because, as stated in the Implementation guidance: *Consumers should be provided with reliable information regarding the BE/GMO status of farmed aquatic animals to enable informed food choices.*

Pillar 3 – Audit Clause 3.47

Comment

Recommendation: Remove this statement. There is no factual basis for the statement that most consumers do not seek out genetically modified foods.

BAP Response

Statement in the Implementation guidance simplified thus:

Consumers should be provided with reliable information regarding the BE/GMO status of farmed aquatic animals to enable informed food choices.

Pillar 3 – Audit Clause 3.48

Comment

The motivation for this section is “economic interest of producers” and “minimizing environmental interactions between farmed and wild organisms, such as disease transfer and changes in gene frequency in wild populations.” Biosecurity and risk of disease transfer is moot when there is shared water, and barriers are such that animals cannot pass through but can still come into contact with each other. BAP should update this language to recognize the persisting risk.

BAP Response

Pillar 4 Section A (Health and Biosecurity) includes biosecurity measures to stop the spread of disease. Attention to fish health and biosecurity within a farm will reduce the risks of disease transmission to susceptible wildlife.

Pillar 3 – Audit Clause 3.48

Proposed Change

Data on escapes incidents, number of fish escaped and cause should be made publicly available.

BAP Response

The standard does require a containment plan that includes:

"Response Procedures and Escape Mitigation – recapture and recovery of stock, escape incident reporting requirements, root cause analysis of escapes or containment failure"

The BAP focus is on prevention and the implementation guidance states: *"The infrastructure and equipment used to contain aquatic animals shall be inspected according to a regular schedule. A program should be in place for regular preventative maintenance and repair of containment infrastructure and equipment. A reporting system shall be in place to indicate inspection results and preventative maintenance undertaken."*

Pillar 3 – Audit Clause 3.49

Comment

Putting a second external mesh as a method of preventing escapes is not as efficient for cultures in floating cages at more than 4000 meters above sea level. If so, there would be an increase in the presence of algae and fouling. In addition, it would affect the oxygenation of the waters inside the productive units, since the second external mesh would be covered with algae more frequently, acting as a barrier to circulation.

Proposed Change

Have an efficient and verifiable fish containment plan, with the most specific preventive and corrective measures with the culture site, its environmental characteristics and the viability of the center.

BAP Response

Clause 3.49 (now 3.50) does not specifically require the use of secondary containment netting. Primary netting may suffice.

Pillar 3 – Audit Clause 3.51

Comment

Data concerning escapes will not be provided to BAP unless wording of this clause is revised.

Proposed Change

Statistics concerning escapes of farmed animals shall be maintained, and data shall be included in the audit report.

BAP Response

Under review

Pillar 3 – Audit Clause 3.56

Comment

It is not specifically understood what an anti-jump net is.

Proposed Change

All of our growing nets protrude considerably above the surface of the water, surrounding the entire perimeter. In the present clause, would this fulfill the function of an anti-jump net?

BAP Response

Yes

Pillar 3 – Audit Clause 3.58

Proposed Change

The use of Acoustic Deterrent Devices shall only be used under license. Every effort should be made to ensure that adverse impacts on surrounding cetaceans are avoided.

BAP Response

The standard only allows legal measures - it requires that the Wildlife Interaction Plan *shall include but not be limited to the following elements:*

- *A list of relevant local laws and specific conditions of the farm's operating permits that apply to wildlife management and protection and allowed wildlife deterrent measures.*

And audit clause 3.60 (now 3.62) states:

3.62: Where applicable, government permits for predator control shall be made available for review.

Pillar 3 – Audit Clause 3.58

Comment

Lethal predator control techniques should not be used on any species, not only on endangered species. Harmful or lethal measures to control predators should be banned and the use of preventative measures like double netting to ensure wild animals cannot get into the farms should be promoted. Therefore, shooting predators, such as seals, and the use of Acoustic Deterrent Devices (ADD) should be prohibited. 3.62: This should be expanded to all species, not just those who are endangered.

BAP Response

Farmers of all types (aquaculture as well as agriculture) are legally permitted to exclude, deter and in some cases kill certain predator and competitor species. This is a basic feature of most farming systems. BAP standards define responsible practices, but they do not aim to overturn the basic features of farming systems. To do so would undermine economic sustainability. BAP considers sustainability issues in the round, i.e. economic, social as well as environmental.

Pillar 3 – Audit Clause 3.60

Comment

The implementation guidance reads “Lethal control methods must only be those allowed by applicable national laws and regulations. Lethal methods must be rapid, safe and done as humanely as possible. If firearms are used, weapons appropriate for the predator should be used, only predators actively engaged in an attack that endangers worker safety should be shot, only properly trained workers licensed to use firearms should kill the predator, and any attack and predator kill should be documented and reported properly.” The actual audit point notes that government permits are of the utmost importance but the guidance does not make any mention of when lethal take is permitted by the government. I would like to see that made explicit in the guidance.

Proposed Change

Lethal control methods must only be those allowed by applicable national laws and regulations. Lethal methods must be rapid, safe and done as humanely as possible. If firearms are used IT MUST BE WITHIN THE SCOPE OF GOVERNMENT PERMITS, weapons appropriate for the predator should be used, only predators actively engaged in an attack that endangers worker safety should be shot WITHOUT PERMITS, only properly trained workers licensed to use firearms should kill the predator, and any attack and predator kill should be documented and reported properly.

BAP Response

Wording change adopted.

Pillar 3 – Audit Clause 3.64

Comment

Concerning tilapia – this seems to be more related to the “escapes” section, rather than wildlife interactions.

Proposed Change

Shift to escapes section.

BAP Response

Clause moved.

Pillar 3 – Audit Clause 3.65

Comment

This statement should be worded to include all facilities.

Proposed Change

Blood should be stored in sealed containers for transport to an acceptable treatment facility. Unde no means shall bloodwater be released to the environment.

BAP Response

First part of this wording change adopted (Existing wording already forbids release to the environment)

Pillar 3 – Audit Clause 3.65

Comment

Bloodwater shall not be directly released intentionally to the environment under any circumstances.

Proposed Change

Blood water waste must be treated before being discharged. Under no circumstances is blood water waste to be released directly to the environment prior to being treated.

BAP Response

Wording adjusted to make this point clearer.

Pillar 3 – Audit Clause 3.65

Comment

All mortalities should be tracked and records kept, including number of individuals and cause of death. To promote consumer and industry transparency, these records should be published.

BAP Response

Farmers are required to track mortalities, with Clause 4.6 stating:

4.6: Mortalities; body condition factor; lesions, abrasions or fin damage; and gill damage or condition shall be measured in each production unit as individual-based welfare indicators of physical health.

And the Implementation guidance (p36) clarifies requirements around record keeping and survival rates:

"For each production unit (pond, tank, cage) and each production cycle, comprehensive records about the source, seed attributes and characteristics, and number stocked and number surviving shall be maintained."

There is no BAP requirement for farms to publish data on mortality beyond any legal requirements for reporting disease outbreaks, but the BAP certification status of individual farms, signifying compliance with BAP standards, is made public: https://www.bapcertification.org/Producers

Pillar 3 – Audit Clause 3.65

Comment

Feed Storage

Any spilled feed should be **collected removed** to avoid attracting rodents

Proposed Change

Top of page 45

Any spilled feed should be **collected and removed** to avoid attracting rodents.

BAP Response

Correction made.

Pillar 3 – Audit Clause 3.65

Comment

Last line in guidance

Mortality Disposal

Carcasses should never be discarded in water bodies **where cage culture is conducted.**

Proposed Change

Delete the last section. Carcasses should never be discarded in water bodies.

BAP Response

Modification applied

Pillar 3 – Audit Clause 3.75

Comment

The phrase “after removal by a competent contractor” suggests that composting/burial/ensilage/rendering/etc. on-site is not allowed. If the farm has sufficient expertise to conduct these activities on-site in accordance with applicable regulations.

Proposed Change

Delete “after removal by a competent contractor”.

BAP Response

Clause modified:

3.76: Mortalities from acute die-offs or euthanized diseased animals shall be removed from culture units promptly and disposed of responsibly by rendering, incineration, sterilization, composting, biogas production, ensiling or burial, with the assistance of a competent contractor where needed, and in accordance with applicable regulations.

Pillar 3 – Audit Clause 3.75

Comment

Finfish, Crustacean and Mollusk Hatcheries and Nurseries STD

clause 7.3:

All feed shall be stored under cover with temperature control (as needed) and enough space from the walls to allow ventilation and movement for inspection.

Proposed Change

This Clause could be added to make the Implementation, Feed Storage guidance relevant.

Feed bags should be arranged in stacks on pallets or above-ground racks. Feed should not be stored on the floor because spoilage may occur from condensation. There should be a 1-m gap between and around stacks and between stacks and storage building walls (I agree with the “Should“ in this Guidance as 1m seems a little excessive)

BAP Response

The cited implementation guidance provides the detail for the current Clause 3.65 (now 3.67):

3.67: Fuel, lubricants, feed and agricultural chemicals shall be labelled, stored, used and disposed of in a safe and responsible manner.

And in combination the clause and guidance are considered adequate.

Pillar 3 – Audit Clause 3.75

Comment

Removal from what? The farm we assume? Does removal by competent contractor only applies to burial or all possible methods of disposal? It is not clear if any disposal is allowed on site (farm).

In some areas, there is no competent (licensed) contractor which specifically collect shrimp waste. Licensed biohazard waste collectors are those who collect clinical wastes.
The way farm does is to bury onsite. An alternative is to disinfect shrimps before collected by a municipal waste collector should BAP does not allow onsite burial. However, this may pose a challenge as municipal waste collection is not done daily. Bad odour may result if left several days. Thus, in the absence of available licensed contractors in the area, disposing of mortalities on site should be accepted. With following conditions: Trained personnel, in a dedicated waste area, away from the culture units.

Define competent. We would say licensed waste handling contractor.

Proposed Change

3.75: Mortalities from acute die-offs or euthanized diseased animals shall be removed from culture units promptly and disposed responsibly by rendering, incineration, sterilization, composting, biogas production, ensiling, ~~or~~ burial ~~after~~ or removal by a ~~competent~~ licensed waste handling contractor in accordance with applicable regulations.

BAP Response

Clause modified:

3.76: Mortalities from acute die-offs or euthanized diseased animals shall be removed from culture units promptly and disposed of responsibly by rendering, incineration, sterilization, composting, biogas production, ensiling or burial, with the assistance of a competent contractor where needed, and in accordance with applicable regulations.

Pillar 3 – Audit Clause 3.76

Comment

Air-driven percussion stunners are also acceptable.

Proposed Change

Fish should be rendered unconscious by stunning with electricity, percussion stunning or other means that protects the welfare of the animal prior to exsanguination.

BAP Response

Suggested wording inserted.

Pillar 4 – Audit Clause 4.1

Comment

● The parameters set to assess health and welfare should not be set by the farmer individually, but must follow objective and well documented criteria. In addition, these parameters must be included in the pre-transport evaluation. Stressed, diseased, or injured animals who are unlikely to survive transport must not be transported and must either be effectively stunned and killed or transported at a later time after improvement to their condition. ● Welfare indicators should also be included in the registration system. 11 ● Any animal welfare risk assessment shall also be coupled with an action plan once poor welfare is detected (e.g. treat animals immediately and alleviate the risk). ● Water quality should be assessed at least once a day and additional assessments through water samples should be taken at least twice a week. The water quality risk assessment must be coupled with an action plan once poor water quality is detected. Records of each inspection must be kept and published. ● Hatchery records must include welfare assessments. ● Any mortality event which produces more than 3% mortality must be reported to BAP. Any more than 5 of these in a year will be grounds for immediate review.

BAP Response

The compliance criteria for assessing health and welfare are set by the Standard as:

4.6: Mortalities; body condition factor; lesions, abrasions or fin damage; and gill damage or condition shall be measured in each production unit as individual-based welfare indicators of physical health.

4.7: Water quality shall be measured in each production unit as group-based welfare indicators of environmental quality and maintained within the tolerance limits established for the species and life-stage farmed.

4.8: Feeding response and swimming behavior shall be measured in each production unit as group-based welfare indicators of behavior.

But it is not considered feasible at this stage to set precise targets for all possible combinations of species and production systems.

Regarding water quality, the Implementation guidance states: *In each production unit, temperature, salinity, dissolved oxygen concentration, pH, ammonia and nitrite concentrations, and some index of solids concentration – transparency, turbidity or total suspended solids concentration – shall be measured regularly, as determined by culture system type and production system intensity (i.e. stocking density). For finfish and crustacean species grown in flowing, tidal or turbulent water, current speed should be measured and not exceed limits defined by species and life stage.*

For transport, Clause 4.11 applies:

4.11: The welfare of harvested animals that are transported live to processing facilities shall be assessed by documentation of mortality rates during transport.

Please note that BAP has a separate standard for hatcheries and nurseries.

https://www.bapcertification.org/Downloadables/pdf/standards/PI%20-%20Standard%20-%20Finfish,%20Crustacean%20and%20Mollusk%20Hatcheries%20and%20Nurseries%20-%20Issue%201.0%20-%2001-September-2014.pdf

The proposal for mortality events above 3% to be reported to BAP is not considered feasible. The BAP program is committed to collecting data on direct energy usage, water use, loading indices for nitrogen and phosphorus, antibiotic use, FIFO ratios and FFDRs.

Pillar 4 – Audit Clause 4.1

Comment

Should the word “Animal” be included here?

Proposed Change

The farm shall have in place an operational Animal Health Management Plan or manual, reviewed and approved by an aquatic animal health specialist, that includes the components described in the Implementation Guidelines.

BAP Response

Now inserted here and elsewhere

Pillar 4 – Audit Clause 4.4

Comment

Verification by protein hydrolysates at <10,000 daltons might not be sufficient. It should be through a series of testing whether or not the product has potential active source of disease. The number of virus or bacteria cells found on most procedure does not indicate the risk. Only procedure that determine an active cells is appropriate.

Proposed Change

Reconsideration on other indicator or prove protein hydrolysates on case by case basis.

BAP Response

This threshold is used because it aligns with EU regulations, which are among the strictest regarding this type of risk.

Pillar 4 – Audit Clause 4.5

Comment

- Does this measure go into specifics of what criteria and limits are needed for a good plan?

Proposed Change

If not, it should as too arbitrary otherwise

BAP Response

The Implementation guidance aids in interpreting the intent this clause:

Area Management

Although most BAP standards address farm-level impacts, they do not often address the cumulative impact of multiple farms. Cumulative impacts are especially critical with respect to disease transmission among neighboring farms, irrespective of certification status. Aquaculture zones or areas should be disease-free. To achieve area management of disease risks, farms are required to make a good-faith effort to initiate or participate in an Area Management Plan to harmonize and coordinate biosecurity activities. An exception is provided where farms can demonstrate, through a formal disease risk assessment by qualified and independent experts in aquatic animal diseases, that concludes that there is a low risk of disease transmission among farms.

Pillar 4 – Audit Clause 4.5

Comment

"Farms located in an area with more than three aquaculture farms per 10 km_2 sharing the same surface water body" - Better wording needed

- What is scope of biosecurity activities? What form of coordination?(CSO, group, CoOp)

Ideally, area management plan in good practice. But it is not feasible to archive in many area.

Proposed Change

Better wording needed. Area management Plan and actives should be in separate guideline.

BAP Response

The Implementation guidance aids in interpreting the intent of this clause:

Area Management

Although most BAP standards address farm-level impacts, they do not often address the cumulative impact of multiple farms. Cumulative impacts are especially critical with respect to disease transmission among neighboring farms, irrespective of certification status. Aquaculture zones or areas should be disease-free. To achieve area management of disease risks, farms are required to make a good-faith effort to initiate or participate in an Area Management Plan to harmonize and coordinate biosecurity activities. An exception is provided where farms can demonstrate, through a formal disease risk assessment by qualified and independent experts in aquatic animal diseases, that concludes that there is a low risk of disease transmission among farms.

Pillar 4 – Audit Clause 4.5

Comment

[commenter] disagrees with the area coverage of 10 km2 for lake aquaculture systems as the surface area of lakes are not that big to begin with. We suggest a different area coverage to be applied to different type of aquaculture systems. Monitoring, control and surveillance of an area the size of 10 km2 can realistically only be managed by government or state authorities for example. We agree that working with neighboring fish farms or cooperatives is responsible aquaculture management practice.

Proposed Change

Farms located in an area with more than three aquaculture farms per 10 km2 sharing the same surface water body shall initiate to develop or participate in an Area Management Plan that coordinates and harmonizes biosecurity measures with neighboring farms, irrespective of BAP certification status.

Such an Area Management Plan would not needed if a formal disease risk assessment determines that there is a low risk of disease transmission among farms.

BAP Response

The wording in this Clause has been modified partially as suggested but one sentence retained.

4.5: Farms located in an area with more than three aquaculture facilities (farms, hatcheries, processing plants) per 10 km2 sharing the same surface water body shall initiate or participate in an Area Management Plan to coordinate biosecurity measures with neighboring ~~farms~~ sites, irrespective of BAP certification status, unless a documented disease risk assessment determines that there is a low risk of disease transmission among ~~farms~~ these sites.

Pillar 4 – Audit Clause 4.5

Comment

10 km^2 from which side of the farm?

To also include other facilties as well, and not just aquaculture farms.

"Formal" is an unclear wording – Documented would be clearer, but can it be done internally or by a third party? Simple and flexible guidance on how farmers are supposed to work together should be provided with a list of criteria (perhaps identifying some basic elements of the Biosecurity Area management standard).

Proposed Change

4.5: Farms located in an area with more than three ~~aquaculture farms~~ aquaculture facilties (farms/hatcheries, processing plants) per 10 km^2 from farm's perimeter sharing the same surface water body shall initiate or participate in an Area Management Plan to harmonize and coordinate biosecurity activities with neighboring ~~farms~~ sites, irrespective of BAP certification status, unless a formal disease risk assessment determines that there is a low risk of contamination or disease transmission among ~~farms~~ these sites. Guidance is provided in Annex…

BAP Response

Proposed new wording partially adopted:

4.5: Farms located in an area with more than three aquaculture facilities (farms, hatcheries, processing plants) per 10 km^2 sharing the same surface water body shall initiate or participate in an Area Management Plan to coordinate biosecurity measures with neighboring ~~farms~~ sites, irrespective of BAP certification status, unless a documented disease risk assessment determines that there is a low risk of disease transmission among ~~farms~~ these sites.

Pillar 4 – Audit Clause 4.6

Comment

- Is there a certain sample size that is being proposed for this measure?

- How will these be measured or quantified per species?

Proposed Change

Clear measures set for each species.

BAP Response

The BAP program does not currently have adequate datasets to support setting precise targets for these welfare indicators.

Pillar 4 – Audit Clause 4.6

Comment

- is there a minimum survival rate for grow- out as a welfare outcome measure?

BAP Response

The BAP program does not currently have adequate datasets to support setting precise targets for these welfare indicators.

Pillar 4 – Audit Clause 4.6

Comment

They indicate that it would be preferable for the fish condition factor to be measured "weekly".

Proposed Change

Measure the condition factor on a monthly basis.

BAP Response

The Implementation guidance indicates a preference for weekly sampling for body condition and physical abnormalities but not an absolute requirement for this frequency.

Pillar 4 – Audit Clause 4.6

Comment

We cannot measure body condition factor (acutal quantitative values) weekly for 3 sites (20 cages each), for a total of 60 cages. This would require 2-3 more teams of 3 people each (9 people total) to accomplish this.

Proposed Change

We could accomplish this monthly via visual (qualitative not quantative) assessments.

BAP Response

The Implementation guidance indicates a preference for weekly sampling for body condition and physical abnormalities but not an absolute requirement for this frequency.

Pillar 4 – Audit Clause 4.6

Comment

It is unclear how production units are defined and whether it would be practical/feasible/valuable to track all of the parameters listed. Certainly tracking of mortalities, infections/treatment is relevant, but the practicalities of assessing fin condition, abrasions, etc., might result in reduced welfare because of additional handling. Further, 'individual-based welfare' indications is generally inconsistent with population-based fish health management.

Proposed Change

Replace these three sub-clauses with the following: "Mortalities and function-based indicators of welfare (e.g., feed intake, growth, health status, general behavior, water quality) shall be monitored regularly for all production lots/units in accordance with a fish health management and animal welfare plan."

BAP Response

Note that the standards do not set precise frequencies for these observations of welfare indicators to be made. Farms are expected to set their own, workable schedules.

Pillar 4 – Audit Clause 4.6-4.12

Comment

4.6: Mortalities; body condition factor; lesions, abrasions or fin damage; and gill damage or condition shall be measured in each production unit as individual-based welfare indicators of physical health and full records should be kept and published.

Farms should have a contingency plan ready in case of technical failure or other emergency event, including alarms to alert available, trained personnel outside of regular working hours.

Implementation Group – Water Quality

Water quality should be assessed at least once a day and additional assessments through water samples should be taken at least twice a week. At a monthly interval, water should be sampled at a gradient across the breadth and depth of the enclosure to identify quality cold spots. The water quality risk assessment must be coupled with an action plan once poor water quality is detected. This action plan shall require immediate action to improve water quality. Oxygen levels should be monitored and 12 adjusted to species-specific optimal levels. A full accounting of water quality records is required to pass an inspection.

Implementation Training:

Training shall be required for farmworkers at all stages, not just at slaughter. Workers need to be able to identify indicators of poor health and welfare including but not limited to: diseases, parasites, physical damage, behavioral abnormalities, morphological abnormalities, and altered production parameters.

Workers should be trained upon hire and re-trained annually, and also after any and all updates to applicable BAP standards.

Implementation Live Transport: Handling and transport shall be performed only by personnel trained in aquatic animal welfare. Training must be repeated annually. Stocking density should also be monitored and limited during transport based on species-specific welfare criteria. Water quality must be continuously monitored during transport and measures to ensure acceptable water quality such as addition of oxygen must be in place where necessary. Once inadequate conditions (e.g. poor water quality or inappropriate stocking density) are registered, workers need to address these issues immediately to ensure animal welfare. Where possible: Slaughter shall be performed directly at the rearing facility to prevent additional handling and transport. New facilities will be required to have on-site slaughtering with effective stunning. All cases of handling and transport should be minimized. Sufficient anaesthetic must be applied when removing aquatic animals from the water for more than fifteen seconds. Post-transport mortality must be recorded and reported if in excess of 1%.

Implementation On-farm Processing: Effective stunning prior to slaughter is required. The method used for stunning shall render the aquatic animal immediately and fully unconscious (i.e. within one second by a scientifically validated method), and not just immobilize the animal. Death must be induced without consciousness recovery, and ideally onsite. In particular, the use of ice slurry without prior stunning is not an acceptable form of slaughter because it has been shown that animals remain conscious for 15-20 minutes after immersion in ice slurries (Giuffrida et al. 2007). Literature shows that there are no significant product quality differences between percussive/electrically stunned animals and animals killed in ice slurries (e.g. Özogul & Özogul 2004; Tejada & Huidobro 2002). Unconsciousness must persist up to the point of death. (For further information on assessing unconsciousness, see p.157-159 of Lines & Spence 2011). ● 26.1 Casualty slaughter: Animals shall be effectively stunned and killed to limit their suffering. ○ For example animals accidentally dropped shall not be left in the air to die. ○ Sick and injured animals need to be effectively stunned and killed without delay. ● Fish must be anaesthetized or killed with effective stunning before stripping and sperm collection.

Implementation

For aquatic animals in aquaculture, welfare can be defined simply as an animal that is healthy and whose needs are met by the farmer.

Within the aquaculture industry, the term “welfare” has historically been used to refer to animals’ physiological health and producers’ husbandry practices. However, the scientific animal welfare community has long known that welfare also encompasses psychological well-being and the ability to choose to engage in natural behaviors. We believe welfare standards should not only prevent the most harmful practices but also provide a positive environment where healthy aquatic animals can express their species-specific behavioral needs and preferences, and experience positive affect. ● These standards must apply to both the animals directly used for human consumption and those animals not directly used for human consumption, including but not limited to broodstock, those used in fish stripping, cleaner fish, feeder animals, and others. ● B.A.P must prioritize timely updating of standards in response to new research on species- and life stage-specific welfare. ● We believe that B.A.P should enforce these standards with thorough record-keeping of implementation and quantification of all welfare standards, including consequent producer response and alterations to protocol when standards

are not satisfied. ● No surgical mutilations (including ablation) or invasive marking: Fin clipping and other mutilations must not be allowed.

● Aquatic animals must have the opportunity to express their behavioral needs and preferences in captivity (e.g. water currents and opportunities to hide, where they do not increase territoriality or competition). ● Species, context and life stage-specific environmental enrichment shall be provided at all stages of life and production and the forms of enrichment shall be updated in response to new research. Welfare training both upon hire and as continuing training must include up-to-date information on environmental enrichment. These selected forms of environmental enrichment must not result in increased territoriality and competition. Environmental enrichment can reduce stress levels, which can lead to improved resistance to infections and lowered metabolism, as well as lowered aggression levels, and thus reduced incidence of fin damage. In addition, environmental enrichment affects the development of the brain and improves the ability to learn in salmon (Näslund et al. 2013, Rosengren et al. 2017, Karvonen et al. 2016, Millidine et al. 2006, Arndt et al. 2001, Salvanes et al. 2013, Kihslinger et al. 2006). ● Steps shall be taken to ensure adequate enrichment in the following five categories: 1. Social enrichment. 2. Occupational enrichment (which can encompass psychological enrichment such as devices that provide animals with control or challenges, as well as enrichment encouraging exercise such as mechanical devices) 3. Physical enrichment (which can imply an alteration of the size or the complexity of the animal's enclosure. This includes the addition of objects, substrate etc. -) 4. Sensory enrichment (which could include visual, auditory, olfactory, tactile or taste stimuli) 5. Nutritional enrichment (involving the type, frequency and delivery of food. The type of food can be varied or novel, etc.) Where concrete and demonstrable steps to provide enrichment in each of these 5 areas have not been taken, the producer must provide adequate justification to B.A.P and report their plan to address environmental enrichment. Such reports must include specific steps they will take in each category (e.g. consulting with a veterinarian or of their implementation timeline). For species in which there is strong scientific consensus around environmental enrichment, the burden of proof to explain why the farm has not provided adequate environmental enrichment shall be higher. Cost/and or convenience alone are not sufficient justifications. Precautions must be taken to ensure selected forms of environmental enrichment do not result in increased territoriality and competition. ● The number of animals killed throughout each stage of the supply chain should be kept to a minimum, including a reduction in the use of wild-caught and farmed aquatic animals for fishmeal and fish oil (FMFO) as farmed aquatic animal feed and use of other animal-derived ingredients, including ingredients derived from insects. This should be done by (1) prohibiting the use of FMFO in the feed of herbivorous aquatic species/life stages, (2) using the lowest amount of FMFO possible in feeds for carnivorous and omnivorous aquatic animals while still ensuring good health (based on scientific evidence), (3) maximising the use of trimmings and alternative feed ingredients such as algal oils, while still ensuring good health (based on scientific evidence; e.g. see (Hodar et al. 2020) (Hua et al. 2019) . Efforts to minimize should be quantified and reported. The average 3 number of animals killed to feed each aquatic animal should be quantified and reported.

The Standard Operating Procedures shall include frequency and methods of welfare assessment. Welfare indicators shall be assessed weekly during regular production and more often before, during, and after procedures involving stress, disturbance, and/or handling for all species kept, including cleaner fish. Where possible, continual assessment should be used. Welfare indicators shall be specific to species and life-stage. There should be a distinction between mere health indicators and welfare

indicators, with the latter also assessing the psychological health of the animal. ○ Examples of methods for assessing aquatic animal health (additional methods should be incorporated to create a full welfare assessment that includes psychological aspects of welfare): ■ Welfare indicators for Atlantic Salmon ■ Welfare indicators for Rainbow Trout ■ Welfare indicators for Lumpfish ■ Welfare indicators for Ballan Wrasse ● On-farm protocols also evaluating the psychological aspects of welfare must be required as soon as they become available through scientific validation. ● Underwater cameras should be installed on-farm to allow for accurate and comprehensive welfare assessment. ● The parameters set to assess health and welfare should not be set by the farmer individually, but must follow objective and well-documented criteria. In addition, these parameters must be included in the pre-transport evaluation. Stressed, diseased, or injured animals who are unlikely to survive transport must not be transported and must either be effectively stunned and killed or transported at a later time after improvement to their condition.

Implementation: Feeding should be managed to avoid stress caused by underor over-feeding.

Administration of feed needs to avoid competition and aggression. Feeding operators need to ensure that all aquatic animals obtain equal amounts of feed. ● Any animal welfare risk assessment shall also be coupled with an action plan to implement upon detection of poor welfare (e.g. treat animals immediately and alleviate the risk). 17 ● Fasting shall not exceed 72 hours. Records must be kept about why, when, and for how long aquatic animals were fasted. Seventy-two hours is an absolute maximum and should be adjusted down per species. Fasting should only be allowed for animal welfare purposes, and not due to e.g. logistical concerns or off-flavor issues. ○ There is no scientific evidence that for example fasting salmon longer than 72 hours has any additional benefits (Robb 2008; Lines & Spence 2012). ● Parasite management including sea lice: ○ Ensure adequate monitoring and preventative measures to limit sea lice and the subsequent use of parasite management methods that are harmful to the aquatic animal or to the cleaner fish. ○ The use of cleaner fish shall be banned, given the welfare considerations of the cleaner fish themselves. The use of cleaner fish has not been found to be an efficient method of removing sea lice (Barrett et al 2020), and cleaner fish face poor welfare, high disease rates, deformities, predation by salmon, and very high mortality rates (Fjelldal et al 2020, Hjeltnes et al 2019). Until a ban on cleaner fish is implemented, there must be appropriate enrichment, shelters, and feed for the cleaner fish, and the cleaner fish must be effectively stunned immediately prior to slaughter. ○ Methods used for removal of parasites, such as sea lice, must provide rigorous, scientific documentation and reduce the adverse effects on the welfare of the fish; until the ban on cleaner fish is implemented, this must also apply to any cleaner fish present. Any adverse effects caused by delicing methods or other parasite management must be reported, as must steps taken to keep these adverse effects to a minimum. ○ For new facilities, the farming location shall be chosen so as to minimize parasite (such as sea lice) presence and spread.

Handling Operations: Handling and transport shall be performed only by personnel trained in aquatic animal welfare. Training must be repeated annually. Stocking density should also be monitored and limited during transport based on species-specific welfare criteria. Water quality must be continuously monitored during transport and 18 measures to ensure acceptable water quality such as addition of oxygen must be in place where necessary. ● Handling: Animals must not be out of water for more than 15 seconds if conscious and not anesthetized (consistent with RSPCA standard). ● Vaccination: Shall be done with minimal distress, with the animal anesthetized, and only by certified veterinarians or aquatic animal health professionals (consistent with RSPCA standards).

BAP Response

Note that the BAP farm standard includes Animal Welfare as one of 4 pillars and it is not just an animal welfare standard. This has implications for the optimal number of targeted compliance clauses that an auditor can reliably cope with in the duration of a typical farm audit. BAP standards are designed to focus the auditor's attention on the key aspects of responsible aquaculture rather than spread attention across a very broad set of indicators.

Thus, for example, direct comparisons with RSPCA standards (largely welfare focused) are not always appropriate.

The Implementation guidance confirms that the relevant measurements of welfare indicators are to be recorded but there is no BAP requirement for farms to publish data on welfare indicators. Instead, the BAP certification status of individual farms, signifying compliance with BAP standards, is made public: https://www.bapcertification.org/Producers

The Animal Health Management Plan is required to address how the farm will maintain water quality within tolerance limits. BAP standards do require formal emergency response plans, but these are for employee safety rather than animal welfare:

2.50: An Emergency Response Plan shall be prepared for serious illnesses, accidents, natural disasters or other incidents.

The BAP standards place great importance on training, including staff training on animal welfare. The Implementation guidance states:

*The Animal Health Management Plan should designate a member of the farm staff as health plan manager that will be responsible for implementing health plan elements, maintaining the recordkeeping system and **training** staff.*

And the audit clause states:

*4.10: Farm workers shall be **trained** in their roles and responsibilities in maintaining the welfare of farmed aquatic animals.*

Implementation guidance states:

*Operational welfare indicators can be measured by farm workers **trained** to recognize normal and abnormal physical health, water quality and behavior.*

And:

***Trained** farm workers shall regularly inspect each production unit, noting the behavior of aquatic animals in each unit. Through training and experience, farm workers learn and can assess normal behavior.*

For animal health and biosecurity there is a paragraph (p48) outlining training requirements:

Training

The biosecurity plan manager will be responsible for training farm workers in 1) aquatic animal husbandry practices that provide a low-stress environment conducive to good growth and survival, 2)

identification of abnormal behavior and external clinical signs of diseases likely to be encountered on the farm, 3) disease reporting and notification procedures, 4) worker responsibilities in the event of disease outbreaks, and 5) role of worker movements in transmitting diseases. Training logs should be maintained by the biosecurity plan manager and will be reviewed during the audit.

Training extends to any lethal control methods for predators, p42:

*The individual designated to carry out lethal control measures should be adequately **trained** to implement humane and effective lethal control methods.*

New wording inserted into the Implementation guidance to explicitly exclude fin clipping and other mutilations, p50, and modified Clause 4.9 :

Fin clipping or other mutilations are not permitted.

4.9: The farm shall have Standard Operating Procedures for aquatic animal handling operations, including crowding, transfer among production units, grading, vaccination and chemical treatment, that limit the stress experienced by farmed aquatic animals during these operations. Fin clipping and other mutilations are not permitted.

Some of these comments and suggestions relate to other sections of the BAP Farm standard or other BAP standards. E.g. ablation is relevant to shrimp broodstock and the BAP Hatchery and Nursery standard. Fishmeal and Fish oil conservation and FIFO requirements are included in Pillar 3.

BAP farm standards do not currently include requirements for environmental enrichment. Successful aquaculture species are gregarious and, with good husbandry and feed management (required by BAP), not aggressive. Domestication and selective breeding are reinforcing such characteristics.

Pillar 4 – Audit Clause 4.6 Group – Water Quality

Comment

Again, it's not clear how production units are defined (individual tanks vs. systems, individual raceways vs. decks, etc.), but more importantly not all of these parameters are relevant for all rearing systems. For example, it makes little sense to monitor nitrite in rearing systems that do not incorporate some level of biofiltration, measuring TSS in RAS, etc.

Proposed Change

Revise list to indicate these are examples, not all required parameters.

BAP Response

Please note that the list of water quality variables to be measured is to be determined by culture system type and intensity, p50:

In each production unit, temperature, salinity, dissolved oxygen concentration, pH, ammonia and nitrite concentrations, and some index of solids concentration – transparency, turbidity or total suspended solids concentration – shall be measured regularly, as determined by culture system type and production system intensity (i.e. stocking density).

E.g. there would be no expectation to measure salinity in freshwater systems

Given the multitude of aquaculture systems in operation, it is difficult, and probably not helpful, for BAP to be absolutely specific in defining what a culture unit is. BAP uses experienced auditors who can be expected to make reasonable interpretations of systems and justifications provided by farms.

Pillar 4 – Audit Clause 4.6 Individual – Physical Health

Comment

Subsampling for condition factor, physical abnormalities, etc., on a weekly basis is an unnecessary and burdensome request. Further, weekly handling of fish—even as subsampling—is likely to create substantial welfare issues related to stress, handling, etc.

Proposed Change

Revise this section to reflect population-based fish health management and delete "weekly" recommendation.

BAP Response

The Implementation guidance indicates a preference for weekly sampling for body condition and physical abnormalities but not an absolute requirement for this frequency.

Pillar 4 – Audit Clause 4.6 On-Farm Processing

Comment

Several methods for killing fish are not allowed in this version of the standard, as it is the case for chilling with ice in holding water.

Chilling with ice and water as a killing method is a very common practice in many farms for several species of fish, as there is not yet a well-established alternative designed for all types of fish.

As this is a new requirement, with significant impact in the way farms operate, there should be a reasonable transition period to allow for suitable planning and implementation.

Proposed Change

Clause 4.12 ("4.12: If aquatic animals are processed on-farm, the farm shall identify the humane slaughter method used, appropriate for the species.") should include a transition period to allow farms to plan and implement the necessary changes.

For flat fish, the transition period required would be at least of 2 to 3 years, to accommodate large-scale trials and incorporation of their results in the farms operations.

BAP Response

Modified wording has been inserted in the Implementation guidance to reflect these realities and indicate that BAP requirements on thermal shock for fish will be reviewed within 3 years:

If aquatic animals are processed on-farm, the choice of stunning and killing method should be appropriate for the species and life stage. Stunning should be sufficient to render fish unconscious rapidly, as indicated by lack of opercular movement or other indicators. The following methods are considered humane: percussive or mechanical stunning, including spiking or pithing, and electrical stunning and killing in water. The following methods are not allowed for killing fish: carbon dioxide (CO_2)

in holding water, chilling with ice and CO_2 in holding water, salt or ammonia baths, asphyxiation by removal from water (anoxia) and exsanguination without stunning. Rapid chilling in an ice bath, i.e. thermal shock, is considered sub-optimal but is permissible for on-farm processing of crustaceans and tropical fish species. Technology for the stunning of certain fish types, such as flat fish, is not widely available, so the use of thermal shock is still permissible in specific cases. Note however that the BAP requirements limiting the use of thermal shock will be revised within the three years following the release of this issue (3.0).

Pillar 4 – Audit Clause 4.7

Comment

Production unit not defined (pen or site). We have 3 sites with 20 cages each. This clause would require us to hire another team of individuals to accommodate it. Our team believes this clause is excessive based on the type of parameters needing to be measured and the weekly frequency.

Proposed Change

Water quality can be measured per site (one set of measurements for each site location) monthly. Specify what a unit is.

BAP Response

Given the multitude of aquaculture systems in operation, it is difficult, and probably not helpful, for BAP to be specific in defining what a culture unit is. BAP uses experienced auditors who can be expected to make reasonable interpretations of different systems and justifications provided by farms.

Pillar 4 – Audit Clause 4.8

Comment

- There are no specific measures noted but the standard suggests that farms may develop custom indices that may be qualitative or semi-quantitative (e.g., percentage range of group exhibiting a certain behavior).

Proposed Change

Confirmation of measures

BAP Response

The BAP program does not currently have adequate datasets to support setting precise targets for these welfare indicators.

Pillar 4 – Audit Clause 4.12

Comment

Thermal shock is not good for fish welfare (and quality). If it must be tolerated (take note of the context in 7.3.6 of the OIE where they use the term ‘feasible’) then it should only be allowed as a killing method for tropical fish (hypoxia and thermal tolerance) and there is a right way of going about it e.g. ensure water temp is zero Celsius, brine at correct salinity and mixing to prevent establishment of a thermocline. It is not a good method for killing any species but if it must be used then it is necessary stipulate best practice which is hard given there is so little peer reviewed data on this. At this point in

time there is some work going on in the barramundi industry here looking at thermal shock because it is a method that is used on the farms to kill fish exclusively and I will pass on any information that arises from that research.

I remember the first time I watched and ice slurry kill and I saw it as a peaceful method but it's all superficial, there are psychological things we can't see of course and the fish are killed by asphyxiation while they are conscious and this practice does not reduce their ability to feel pain prior to this suffocation.

It is necessary to look at other methods, including cost-effective stunning and to provide a lead in time for farms of several years to get this change. But a good way to tackle it is to prove that quality is better with stunning.

On or off farm slaughter it's necessary to consider how farms make the change to methods that are more humane.

BAP Response

Modified wording has been inserted in the Implementation guidance to reflect these realities and indicate that BAP requirements on thermal shock for fish will be reviewed within 3 years:

If aquatic animals are processed on-farm, the choice of stunning and killing method should be appropriate for the species and life stage. Stunning should be sufficient to render fish unconscious rapidly, as indicated by lack of opercular movement or other indicators. The following methods are considered humane: percussive or mechanical stunning, including spiking or pithing, and electrical stunning and killing in water. The following methods are not allowed for killing fish: carbon dioxide (CO_2) in holding water, chilling with ice and CO_2 in holding water, salt or ammonia baths, asphyxiation by removal from water (anoxia) and exsanguination without stunning. Rapid chilling in an ice bath, i.e. thermal shock, is considered sub-optimal but is permissible for on-farm processing of crustaceans and tropical fish species. Technology for the stunning of certain fish types, such as flat fish, is not widely available, so the use of thermal shock is still permissible in specific cases. Note however that the BAP requirements limiting the use of thermal shock will be revised within the three years following the release of this issue (3.0).

Pillar 4 – Audit Clause 4.12

Comment

The humane slaughter requirement, as stated, looks OK but the guidance gets too specific with its listing of acceptable/unacceptable methods with no allowance for different approaches depending on upon species requirements. OIE's recommendations only related to carp, salmonids, tuna, and eels.

Proposed Change

Re-word the guidance to remove allow greater flexibility while still promoting improvements in animal welfare, and set a future date at which stricter approaches (such as banning certain methods) will become a requirement.

BAP Response

Guidance modified:

If aquatic animals are processed on-farm, the choice of stunning and killing method should be appropriate for the species and life stage. Stunning should be sufficient to render fish unconscious rapidly, as indicated by lack of opercular movement or other indicators. The following methods are considered humane: percussive or mechanical stunning, including spiking or pithing, and electrical stunning and killing in water. The following methods are not allowed for killing fish: carbon dioxide (CO_2) in holding water, chilling with ice and CO_2 in holding water, salt or ammonia baths, asphyxiation by removal from water (anoxia) and exsanguination without stunning. Rapid chilling in an ice bath, i.e. thermal shock, is considered sub-optimal but is permissible for on-farm processing of crustaceans and tropical fish species. Technology for the stunning of certain fish types, such as flat fish, is not widely available, so the use of thermal shock is still permissible in specific cases. Note however that the BAP requirements limiting the use of thermal shock will be revised within the three years following the release of this issue (3.0).

Pillar 4 – Audit Clause 4.12

Comment

- the guidance is pretty clear: "The following methods are not allowed for killing fish: chilling with ice in holding water…"

As indicated, the clause also refers to only on farm 'processing'. If the wording is changed, it should also consider what happens if fish are neither slaughtered at the farm or at the SPS plant i.e. use of a separate slaughter station?

BAP Response

The requirements here are farm specific. To be BAP compliant, a slaughterhouse would need to comply with the requirements in the Seafood Processing Standard, which include animal welfare.

Traceability – Audit Clause T1 Implementation

Comment

Farms should be encouraged to align their data collection practices with the Global Dialogue on Seafood Traceability Standard 1.0 *in addition to* considering electronic traceability systems such as blockchain.

Proposed Change

Farms are encouraged to consider implementation of the Global Dialogue on Seafood Traceability Standard 1.0 using an electronic supply chain traceability system such as blockchain.

BAP Response

Modified wording inserted in the Implementation Guidance:

Farms are encouraged to consider implementation of the Global Dialogue on Seafood Traceability Standard 1.0 using an electronic supply chain traceability system such as blockchain.

These comments regarding traceability have been noted. Beyond its own BAP traceability requirements, GAA intends to endorse key traceability initiatives to promote interoperability.

Traceability – Audit Clause T1 Implementation

Comment

Recognizing that paper records are still common in the seafood industry, updated language in this standard offers a prime opportunity to suggest transitioning to electronic systems - an industry best practice that not only will help for record-keeping and auditing purposes, but verification of legality and regulatory compliance purposes (e.g. SIMP, EU IUU Regulation).

Proposed Change

Change the text from suggesting that paper-based systems be transferred into computer files, and instead encourage companies to transition to internal and/or third-party electronic traceability systems using GDST data recommendations for interoperability.

BAP Response

New sentence added to Implementation Guidance:

Transition to internal and/or third-party electronic traceability systems is encouraged, e.g. using GDST data recommendations for interoperability.

Traceability – Audit Clause T1 Product Identity Preservation

Comment

It's not clear where the new 4-hour limit is coming from, if it reflects a change in traceability regulations, etc.

Proposed Change

Delete 4 hour time limit or justify its inclusion with a citable source of data, regulation, etc.

BAP Response

Deleted

Traceability – Audit Clause T1

Comment

Perhaps the BAP needs to Consider a 5th Pillar for Product Traceability, although I think traceability could be added to the Community section as it is the community that is demanding traceability of products at the consumer level.

Proposed Change

New Pillar 5. Or include in Pillar 2. Community. It is not appropriate to hang it out on its own the way it is, it appears to be an afterthought.

BAP Response

New section inserted at the beginning of the standard on BAP Structure to stress the critical role of the Traceability Requirements:

BAP Structure

The BAP program has four pillars and an overarching set of Traceability Requirements. The pillars comprise the first four sections of the standard:

1. *Food Safety*
2. *Social Accountability*
3. *Environmental Responsibility*
4. *Animal Health and Welfare*

The fifth section defines the Traceability Requirements that are essential to preserve product identity and to verify the validity of any BAP claims.

Traceability – Audit Clause T4

Comment

This entire clause is same as 3.43. So it is not appropriate here as it is already covered.

BAP Response

T4 now cross references Clause 3.43 (now 3.44)

Traceability – Audit Clause T5

Comment

"Records regarding feed manufacturer" should include specifications about the type of information required in addition to BAP certification status (e.g. company name, location, feed harvest documentation, etc.).

Proposed Change

Feed manufacturer records should include owner/business identification, location, feed origin and harvest information where applicable.

BAP Response

Implementation guidance expanded:

- *Feed sources, types and quantities, feed mill owner/business identification, location*

Traceability – Audit Clause T9/T10

Comment

The information listed in T10 should include, but not be limited to, the key data element list within the Global Dialogue on Seafood Traceability (GDST) Standard 1.0 Basic Universal List of KDEs.

Proposed Change

The farm shall provide to all processing plants or purchasers the following chain of custody information, as applicable and in alignment with the Global Dialogue on Seafood Traceability (GDST), concerning the harvested products:

BAP Response

References to GDST have been inserted in the Implementation guidance but GDST alignment is not yet a BAP requirement.

Traceability – Audit Clause T13

Comment

Required audit tracebacks should include an assessment of feed harvest information for full-chain traceability to mitigate risk of illegal and unethical practices in the harvesting of feed sources. One-up, one-down traceability audits do not provide sufficient transparency into the certified supply chain.

Proposed Change

One full-chain traceability audit should be conducted annually. Full-chain traceability audits shall include sourcing information back to the harvested feed and follow chain of custody to the end buyer.

BAP Response

The traceability and marine ingredient sourcing requirements in the BAP Feed Mill standard are better positioned than the BAP Farm Standard to address IUU concerns.

https://www.bapcertification.org/Downloadables/pdf/standards/PI%20-%20Standard%20-%20Feed%20Mill%20Standard%20-%20Issue%203.0%20-%2015-June-2020.pdf

Traceability – Audit Clause T13

Comment

The results of trace-forward and trace-back exercises and their mass balance shall be recorded for each eligible star designation. For all trace tests, 100% accountability shall be achieved within 4 hours. The auditor shall record the traceability and mass balance data in the audit report.

It must be kept in mind that often the main contact for the audit is also the one to be conducting any trace studies and adding more trace studies to the audits will in most cases lengthen the time required to complete the audit.

Proposed Change

Please include a review of this material at the October 19th, 2020 online auditor training.

BAP Response

Under review.

Traceability – General

Comment

We recommend adding one more Traceability clause to enhance the integrity of BAP trademark on product packaging. Suggestion on the left.

Proposed Change

The use of BAP label on product packaging is only permitted for farms that have attained 100% compliance of the Traceability requirements in this section.

Farms must sign a BAP traceability license agreement for the use of BAP trademarks on any materials that will be seen by the end by business customers for promotional purposes.

In addition, farms need to submit product packaging designs and information about the product to BAP for prior approval. The same approval is also required for B2B business-to-business trading.

BAP Response

BAP agrees with these recommendations. Usage of BAP logos and claims is tightly controlled and covered in a special, online document:

https://www.bapcertification.org/Downloadables/pdf/BAP%20-%20Policy%20-%20BAP%20Logo%20Use%20Requirements%20-%20Issue%202.3%20-%2010-January-2020.pdf

Spanish version:

https://www.bapcertification.org/assets/resources/translated/BAP%20-%20Policy%20-%20BAP%20Logo%20Use%20Requiremnts%20-%20Spanish%20-%20Issue%202.3%20-%2010-January-2020[3].pdf

Appendix A

Comment

1. The requirement for reporting the TSS load index should be removed from the BAP Farm Standard, because the limit on TSS concentration provides sufficient protection of water quality in receiving water bodies.

2. Load limits for TAN, SP, and BOD_5 should be included in the BAP Farm Standard. But, there was great variation in loads calculated from the audit data and used in arriving at suggested limits of 15 kg/t of TAN, 1 kg/t of SP, and 200 kg/t BOD_5. At present, the reporting of these loads should a strict requirement, but compliance should be delayed until the veracity of the limits are confirmed from new and more reliable data from audit records.

3. The auditors should be reminded rather strongly of the necessity to calculate farm water intake volumes by the equations given in the BAP Farm Standard. They also should be reminded of the importance of carefully recording the details of system type and water management method (see comments in beginning of the Discussion section). More attention to details and accuracy in the auditing procedure are essential for continual improvement of BAP certification.

4a. Farm water use should be used to calculate water use index values, and a limit on the water use index should be established for each major type of production system.

4b. Note: An exemption for calculating water use and water use index would be made for pond supplied water by tidal action.

4c. Water use rules should also include the following:

- Water exchange in excess of 10% pond volume per day should be prohibited in ponds for both fish and shrimp.

— Once a water use index limit is established, this rule can be waived for farms in compliance with the water use index limit.

— In arid regions, an exception can be given where necessary to exchange over 10% daily to avoid excessive salinity.

- Water exchange in freshwater production systems by applying groundwater from wells (but not from springs) should be prohibited.

— Exemption would be allowed for super-intensive, water recirculating systems.

5. Suggested FCR limits for BAP certified farms are as follows: whiteleg shrimp, 1.2; black tiger shrimp, 1.5; tilapia, 1.5; *Pangasius* catfish, 1.5; channel catfish, 2.0; rainbow trout, 1.2; Atlantic salmon, 1.1. However, compliance should not be mandatory until examination of audit records confirm that these limits are not unreasonably low and that conformity with those limits will not result in noncompliance with the FIFO limits for these species presently in the BAP Farm Standard.

6. In consideration of the proposed "Plus-level" certification option, an important limit would be more than 500 kg shrimp and most fish species per horsepower of aeration applied. The limit could probably be increased to 800-1,000 kg tilapia or *Pangasius* per horsepower aeration applied.

7. The current BAP method for calculating FIFO appears to underestimate the FIFO for species for which feeds have a fish meal/fish oil ratio less than 4.69.

8. Some consideration should be given to the best method calculating FIFO in BAP certification.

BAP Response

1. The illustrative calculations for TSS load and TSS index have now been deleted
2. Targets for these indices have been inserted
3. In this version of the BAP Farm standard there is a requirement to both calculate and report annual water intake volume.

4a. Future data collected on water use, in combination with new requirement to specify the production system type in the application form, will enable water use limits to be set for each system type.

4c. There is currently a limit on shrimp pond exchange rate, set at 10%:

> *3.59: The mean water exchange rate of shrimp ponds shall not exceed 10% per day (i.e., on an annual basis, 36.5 x total pond volume) unless necessary to maintain salinity within physiological limits to support shrimp welfare.*

Further limits, based on water use indices and production system types, will be set for both fish and shrimp in future versions of this standard.

The standard currently restricts groundwater usage through these two clauses:

3.21: If a farm extracts groundwater, water levels in nearby wells shall be monitored at least annually during the dry season to establish that aquaculture does not result in reducing the water table below historical levels of normal seasonal variation.

3.22: Use of water from wells, lakes, streams, springs or other natural sources shall not cause ecological damage or land subsidence in surrounding areas.

5. Proposed FCR limits have now been inserted into the Guidance thus:

Proposed FCR targets, which may become limits in future versions of this standard, are: L. vannamei, 1.2; P. monodon, 1.5; tilapia, 1.5; Pangasius catfish, 1.5; channel catfish, 2.0; rainbow trout, 1.2; Atlantic salmon, 1.1.

6. This standard now requires collection of energy usage data. When this is analysed in connection with production system type, it will be possible to set energy use targets for multiple species and systems.

7. This standard now includes FFDR calculations, which avoid such underestimates. However FIFO calculations are still retained because the FFDR method is subject to overestimations.

8. There is no perfect solution to the difficulty of calculating a FIFO ratio but the overriding consideration for BAP is that FIFO values should be progressively reduced to make more efficient use of marine ingredients.

As the BAP program compiles adequate datasets, FIFO limits are progressively set and tightened. In 2017 there were limits for *L. vannamei, P. monodon*, tilapia and *Pangasius*. This new standard adds another 3 species: channel catfish, rainbow trout and Atlantic salmon (in recirc. systems only).

Note that in this standard the FIFO ratios for shrimp (*L. vannamei* and *P. monodon*) have been reduced by 17% and 29%, respectively and for tilapia by 29% and *Pangasius* by 40% (compared to the standard set in 2017). These are significant gains, and illustrative of a fast evolving, young industry that is adopting improved practices.

Appendix B

Comment

The BAP effluent water quality criteria for RAS systems needs to be revised, to account for the vastly reduced effluent volumes of RAS vs. flow-through systems.

Proposed Change

Soluble P limit for RAS is far too restricted – possibly needs to be closer to 5, or 7.5, or??? Suggest possibly allowing different effluent limits for different RAS facilities depending upon the extent of water recirculation.

BAP Response

Total P level for RAS now set at <10mg/L

Appendix D

Comment

This standard should Include monthly measures of cortisol level in the water.

BAP Response

Cortisol measurements in water are being considered by BAP but will not be included in this version of the farm standard.

Appendix D

Comment

To achieve a more representative measurement for Annual Average Value, sampling and reading should be done on a monthly basis, instead of every quarter.

Furthermore, sampling depth should allow for a range to cater for the depth variation of different lakes. Instead of setting the sample depth at 50cm, a range can starts from minimum 50cm.

Proposed Change

Proposed Changes by Regal Springs (in red font)

BAP Water Quality Monitoring – Cages and Net Pens in Lakes and Reservoirs

Variable	Sample Depth	Collection Frequency
Secchi disk visibility	---	Weekly
Temperature	Vertical profile, 2-m intervals	Monthly
Dissolved oxygen	Vertical profile, 2-m intervals	Monthly
pH	Vertical profile, 2-m intervals	Monthly
Chlorophyll a	At least 50 cm depth	Monthly
Soluble phosphorus	At least 50 cm depth	Monthly
Total phosphorus	At least 50 cm depth	Monthly
Total nitrogen	At least 50 cm depth	Monthly
Phytoplankton abundance and species (% blue-green algae)	At least 50 cm depth	Monthly

BAP Response

These proposed modifications have not been adopted. It is difficult to set a standard that is adapted to each possible setting. The 50cm sampling depth is considered generally appropriate for measuring surface water quality, regardless of the depth of the lake or reservoir.

Appendix E

Comment

This standard should include outbreak mortality.

BAP Response

Such a requirement would be overly prescriptive for a sample product traceability form.