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TO: USDA / ARS / NIFA

TROUTLODGE COMMENTS TO USDA/ARS/NIFA
IN RESPONSE TO THE SALMONID STAKEHOLDER LISTENING SESSION

Troutlodge thanks USDA, ARS and NIFA staff for the presentations this week discussing the federal operations supporting the US aquaculture industry. Troutlodge has benefited from federal agency scientific and technical support (directly and indirectly) in the past and we hope to continue the good relations moving forward.

We have compiled some input from our perspective and hope that it will help with upcoming 5 year priority plan.

Industry Topics:

Aquaculture Training Programs & Development:

We support comments made regarding the need for development of aquaculture training programs. For example, development of regional aquaculture training centers, or increased support of existing centers.

Shifting Public Perception of Aquaculture:

How can the USDA and industry work together to improve public perception of aquaculture? Can we put together a program of gathering information about specific areas of negative perception and work to address those? We believe there is a need for much more information on the public's perception of aquaculture and aquaculture products. We also believe, that USDA can and should help correct misperceptions about aquaculture.

Faster Drug Regulatory Approval:

The process to get new drugs, chemicals approved for use is astonishingly slow and costly, and has been a hindrance to aquaculture. The prime example is methyl testosterone which is used in minute quantities to achieve sex-reversal in trout and other species. This process has taken upwards of 20 years [and is still incomplete]. Other chemicals such as clove oil that are widely

used outside the US are not allowed, and would take large investments in time and money to bring forward.

Research Topics:

Sterility:

Achieving sterility in trout and salmonids is a high priority objective for us for many reasons. Currently, triploidy is the standard method to achieve sterility. However, triploidy is attended by other issues including egg viability losses, performance issues (higher relative mortality) in some environments and the expression of secondary sexual characteristics which can adversely affect market value. While triploidy is an option, it is not suitable in all conditions. Troutlodge and our industry would benefit from an alternative that would produce diploid sterile fish. While chemical sterility methods have some promise, the approval process for use in production settings would likely require decades of research and evaluation and the outcome uncertain. Troutlodge, as described below, believes that gene editing could offer a viable alternative to achieving sterility.

Gene Editing:

Wide scale adoption of gene editing in animal breeding programs is not yet underway, but as a genetics and breeding company, Troutlodge believes that it could hold significant potential. We would encourage, and participate in research involving gene editing technology, even for proof of concept studies; particularly, with regard to production of sterile animals. If the USDA were involved with gene editing projects, it may help ease public perception (fears) and promote public education around technology and it's potential to achieve highly efficient protein production and good environmental outcomes – less risk to the environment should an escape of organisms occur. These are areas that must be addressed prior to implementation.

Genomics Technology:

Troutlodge is modifying its breeding programs in order to, among other objectives, improve the economics of applying genomics technologies. Pathogen resistance (IHNV) is the prime objective, but other traits are also of interest, e.g., fillet yield, fillet quality, etc.

Reducing Risk of Release in Net Pens:

It is apparent that large-scale losses from marine (and freshwater) net pens have been one of the major weaknesses of commercial aquaculture. This not only affects the economics of operations but does lasting damage to the reputation and perception of “aquaculture”. As a result it is our

opinion that research into the most suitable open water aquaculture systems should be amongst the research topics. Whilst RAS systems have a local effect on the supply of fresh fish and offer a marketing perspective, the setup cost is significant, they use land which might be otherwise put to better use and they have a significant impact in energy use.

In contrast, open water net pens offer a scale of production which may ultimately decrease the seafood trade deficit which the US faces.

Humane Slaughter:

Public perception on how we treat the animals in our care is increasing, and a large part of welfare (as well as product quality) can be made or lost in the final acts of the farming process. Stress at harvest of finfish can produce significant downgrades and affect profitability. As this is the case we suggest that some government funding become available for the development of systems which kill in the most humane method possible, as well as establishing correlation between methodology and product quality.

We would be happy to expand on these topics, so please contact us for further details.

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