USDA Aquaculture Salmonids Stakeholder Listening Session
July 24, 2018
1:00 pm – 4:00 pm EDT
Notes

Co-Hosts:

- Gene Kim, USDA National Institute of Food and Agriculture, National Program Leader, Aquaculture
- Caird Rexroad, III, USDA Agricultural Research Service, National Program Leader, Aquaculture

Guest Speaker, Graham Young, Executive Director, Western Regional Aquaculture Center

51 attendees: producers, industry, academia, federal, and ARS scientists – see list

Genetics, Breeding and Broodstock:

- Breeding and genetics is a priority.
- Produce a sterile fish possibly using CRISPR or Yoni (sterile, but not triploid) OR Produce triploid fish but not produced by methyltestosterone but by gynogenesis or another technique and then evaluating the performance of that triploid or sterile fish when cultured to food size to see what effects that has on production.
- Develop new production technologies for sterility, estimating biomass, slaughter, to count fish.
- Genetic selection for disease and parasite (PKD) resistance.
- Tetraploids vs pressure shock triploids is an area of interest so that can produce trout without methyltestosterone.
- Trout with no pin bones.
- Interested in an all-female line.
- Delaying sexual maturity for fish.
- Want a Genotype x Environment study using resources already in place for Atlantic salmon - Orono, The Conservation Fund Freshwater Institute, and Riverence (has breeding program with Atlantic salmon).
- Want breeding program for net pen strains strengthened; Genotype X Environment study.
- Need breeding program for Recirculating Aquaculture Systems (RAS).
- Interested in adding a GxE study to develop a strain for RAS.
- Genetic selection for RAS line.
- Seeing big differences in performance and quality of fish in two different strains at Superior Fresh and also between the strains at Freshwater Institute.
- Need a better way to get germplasm to industry.

Fish Health:

- Fish health, role of microbial communities in raceway systems.
- Microbial ecology research is a priority. Disease dynamics - Flavobacterium and how they interact with biofilm dynamics.
- Interested in disease strategies. Pathogens - point to work at University of Connecticut - where are pathogens in water column. How can the microbiome be modified to reduce probability of disease? Work on fish health. Detect and control diseases in Recirculating Aquaculture Systems (RAS).
- Interested in vaccine development.

- Want new antibiotic for aquaculture. Someone needs to shepherd thru regulatory approval process.

Nutrition:

- Fish meal and fish oil replacement, microalgae might be answer but economics don't work out today. Interested in algae sources.
- Importance of fish oil alternatives. Develop gm crops that produce DHA and EPA. Work that dovetails with regulatory approval process.
- Feed technology - fish oil replacement.
- Look at other byproducts - what comes with those – heavy metals contaminants, PCBs, high levels of vitamin A, economical sources of fish oil for modern feeds.
- Better understanding of somatic growth and how impacted by alternative or novel feed ingredients.
- Positive and negative interactions between traditional and novel ingredients.
- Feed ingredients that improve animal health, especially in Recirculating Aquaculture Systems (RAS) – non-antibiotic and non-drug technologies, feed delivery.
- Feed technology – better ways to implement functional ingredients to have impact on salmonid animal health.
- Need for local sustainable ingredients; sustainable feeds.
- Regulatory streamlining for feed and disease ingredients. Drugs, vaccines, and feed ingredients that align with the regulatory process so that producers can use the technology.
- Feed digestion and nutrient updates.

Production Systems:

- Role of biofilms in production facilities and raceways. What can we do to modify these biofilms? How production practices affect biofilm.
- How maturation is affected: clarify of water, density. Water studies need to be strengthened.
- Off-flavor purging technology developed at the Freshwater Institute needs to be strengthened
- To reduce off flavor in RAS.
- Need RAS Prototypes with low energy footprint. RAS prototypes that are commercially viable, simple, low energy footprint RAS that can be produced at low cost.
- Reduce phosphate in discharge.
- Like to see research in MIB and Geosmin in RAS; prevention and reduction in systems.
- Moving toward EU protocols for Recirculating Aquaculture Systems (RAS) systems.

Additional Priorities:

- Traceability – having the story behind the fish.
- Workforce development (academic partnership: high school, vocational, undergrad)
    - Agree with previous comments on workforce development.
- Need to counteract misinformation/negative media on farm raised fish.
- Flesh quality issues post harvesting of fish (soft flesh, gaping of flesh).
- Evaluation of labeling and standards to distinguish U.S. based products.
- Better collaboration among trout facilities in ARS and other trout facilities.
- Comments about the Regional Aquaculture Center (RAC) funding structure.
    - For RACs, Extension-specific projects as a discrete type of project.
    - Extension requirement in RACs, funding extension infrastructure rather than projects.

- Funds limited and should be reserved for project funded by industry (not to fund programmatic elements to USDA programs). RACs should be for projects that industry identifies.

LIST OF WEBINAR ATTENDEES

Name	Affiliation
Anthony Dellinger	Kepley BioSystems
Andrew Richard	Florida Department of Agriculture and Consumer Services
Brian Shepherd	USDA Agricultural Research Service
Brian Peterson	USDA Agricultural Research Service
Brittanie Gloyd	Florida Department of Agriculture and Consumer Services
Bryan Plemmons	Virginia Trout Company/Casta Line Trout Farms
Carter Cyr	Nordic Aquafarms
Catherine Purcell	National Oceanic and Atmospheric Administration
Cheng Sheng Lee	Hawaii Pacific University
Chris Good	The Conservation Fund Freshwater Institute
Damien Claire	Atlantic Sapphire, LLC
Dave Straus	USDA Agricultural Research Service
David Scarfe	Aquatic Veterinary Associates International, LLC
Eric Silberhorn	Food and Drug Administration
Idaho Aquaculture Association	Idaho Aquaculture Association (IAA)
Janine Bryan	Whooshh Innovations LLC
Jennifer Fortier	Whole Oceans, LLC
Jesse Trushenski	Evaqua Farms
Jessica Fox	RALCO
Jimmy Avery	Mississippi State University
Joe Hankins	The Conservation Fund Freshwater Institute
Joe Morris	Iowa State University
Joel Bader	USDA Agricultural Research Service
John Bielka	Pacific Seafood
John Bland	USDA Agricultural Research Service
John Dentler	Hendrix Genetics
Julie Hahn	Western Regional Aquaculture Center
Kathleen Hartman	USDA Animal and Plant Health Inspection Service
Keshun Liu	USDA Agricultural Research Service
Kristen Gruenthal	National Oceanic and Atmospheric Administration
Kurt Rosentrater	Distillers Grains Technology Council
Kyle Martin	Troutlodge
Laura Hoberecht	National Oceanic and Atmospheric Administration
Lidia Beka	University of Connecticut
Margaret Parker	USDA Animal and Plant Health Inspection Service

Name	Affiliation
Maggie Ma	Hawaii Pacific University
Max Mayeaux	USDA National Institute of Food and Agriculture
Melanie Sturm	TwoXSea
Moh Salem	Middle Tennessee State University
NCWMAC	USDA Agricultural Research Service
Paula Galloway	Cargill
Portia Sapp	Florida Department of Agriculture and Consumer Services
Rich Clayton	USDA Animal and Plant Health Inspection Service
Rod Getchell	Cornell University
Scott Snyder	Zeigler Bros., Inc.
Sebastian Belle	Maine Aquaculture Association
Serina Rocco	Florida Department of Agriculture and Consumer Services
Steve Summerfelt	Superior Fresh, LLC
Todd Testerman	University of Connecticut
Warren Hess	American Veterinary Medical Association
Yniv Palti	USDA Agricultural Research Service