



In Depth Interviews on INTRANEMMA SURVEY RESULTS

(Translated by Javier Ojeda - APROMAR)

1. NAME:	Rocio Robles Arozarena
2. COMPANY:	CTAQUA
3. POSITION:	Technical director

4. Do you think that there are areas we missed in the initial survey of the areas where innovation could be required in Mediterranean mariculture?

- **The first survey is very comprehensive.**
- **But I believe two extra areas should be considered.**

If YES please indicate which:

- (1) Improvement in the engineering of aquaculture technology in general.**
- (2) Improvement of recirculation technologies.**

5. What is your opinion on the category average scoring?

- **From my perspective the following categories should rank higher: Nutrition, Husbandry-Management and Fish Health.**
- **On the other hand, Policies and Training should rank lower.**

6. What is your opinion on the overall priorities?

- **As a general comment, the categories are wide and cover all aspects of aquaculture, but the areas are too detailed and precise. This means many important areas can easily be missed.**
- **Regarding the particular areas:**
 - **Areas in the field of “Training” rank too high.**
 - **For me the most relevant priority area for innovation is “Improvement of yield per fish”.**

7. How do you feel on the priorities identified in Greece? How you explain it?

- **Important areas such as “Improved Feed performance based on alternative protein sources” ranks too low.**
- **The ranking of areas in Greece seems to signal the need in that industry to improve quality and image of their aquaculture fish, and not so much the increase of production.**

8. How do you feel on the priorities identified in Turkey? How you explain it?

- **Also here, “Improved Feed performance based on alternative protein sources” ranks too low.**

9. How do you feel on the priorities identified in Spain? How you explain it?

- **Fish processing isn’t given enough importance.**

10. Do you agree on the areas of Mediterranean mariculture identified as those that require innovation?

- **Yes, although fish genetic improvement programmes are important and not mentioned as high on the list.**



11. Do you agree on suggestions regarding product quality, consumer and market issues?

- Yes. Very good.

12. Do you agree on suggestions regarding Policies and Regulations?

- Yes.

13. Do you agree on the identified areas for training? Do you suggest alternative areas for training?

- Yes. But a precautionary approach to fish health should be prioritized on innovative training. Better than curative practices.

14. What are the most important characteristics of effective training to maximize impact to the industry?

- On-farm training should be more important than theoretical lessons.

15. Any other comment on the initiative?

- This is an interesting project. But I see difficulties for reaching common conclusions for innovation in the whole Mediterranean.



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| <ol style="list-style-type: none">1. NAME: Juan Manuel Fernández Aldana2. COMPANY: Independent consultant3. POSITION: |
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4. Do you think that there are areas we missed in the initial survey of the areas where innovation could be required in Mediterranean mariculture?

- **The list is very good. However, I feel there is a need to include more on fish processing, product development and the arrival of GMO ingredients into fish feeds.**
- **Innovation on new sources of fish oils (DHA & EPA) is of more importance than alternative protein sources.**

5. What is your opinion on the category average scoring?

- **Training is far too high on the list (it should be at the bottom).**
- **Policies should be in the middle.**
- **In top I place “Quality-consumers-markets”.**

In the first stages of the aquaculture industry productions used to be the main (only?) field of interest and innovation. But today it's our efforts on the market that require maximum interest and innovation (and training).

- **Other categories that drive directly to lower production costs are also important (but below), such as “Nutrition”.**

6. What is your opinion on the overall priorities?

- **They seem Ok to me. Nevertheless, the main interest of consumers is not only nutritional values or health benefits of fish but freshness, taste, low calories...**

7. How do you feel on the priorities identified in Greece? How you explain it?

- **For a mature and large industry the priorities in Greece do not show much interest on post-processing issues (from slaughtering till the consumers plate). Mediterranean aquaculture (sea bass, sea bream, meagre...) is today a commodity producer with very low margins. But it has to begin adding value to its products and diversifying.**

8. How do you feel on the priorities identified in Turkey? How you explain it?

- **It's very difficult to believe that “Improved consumer perception on health benefits from aquaculture fish” is the main innovation priority area for Turkish aquaculture producers!**
- **The same for “Spawning induction and control fish broodstock sexual cycle”.**
- **The rest seems Ok to me.**

9. How do you feel on the priorities identified in Spain? How you explain it?

- **Ok.**
- **But “Automated estimation of fish number in cage farms” isn't as much of a technological bottleneck as the automatic calculation of total fish biomass in sea cages.**
- **The rest seems Ok to me.**



10. Do you agree on the areas of Mediterranean mariculture identified as those that require innovation?

- I mainly agree.

- The future of feeding aquaculture fish (at least carnivorous ones) will come through the use of GMO products. These can be from terrestrial agriculture or from more productive marine microalgae, but the genetic improvement of both through transgenic technologies is the only way forward in the midterm.

- And as I said before fish processing & product development issues should appear more strongly in the list.

- The rest of the list is very good.

11. Do you agree on suggestions regarding product quality, consumer and market issues?

- Yes. This chapter is good. What I want to emphasize is the importance of increasing the importance of this chapter as a whole (with respect to the rest).

- I would like to establish a difference between the importance of disposing of a "scientific info pack for the industry" from the importance of having a "COMMUNICATION info pack for the industry". Consumers do not decide on a rational way. Having accurate scientific knowledge is good and necessary but not enough. We, as consumers, behave as emotional beings. Not as rational beings. This principle is VERY important when thinking marketwise.

12. Do you agree on suggestions regarding Policies and Regulations?

- Yes.

13. Do you agree on the identified areas for training? Do you suggest alternative areas for training?

- Yes. However, perhaps differentiation should be made between the different levels of training, from the most basic skills for low level employees to highly specialised tasks for managers. They probably need different approaches for innovation.

14. What are the most important characteristics of effective training to maximize impact to the industry?

- Matching them to the industries' needs.

15. Any other comment on the initiative?

In my opinion when this type of surveys come to me I have the feeling that me, as any other aquaculture professional, will bias our answers (and prioritizations) attending to our own experience and background. These surveys should be addressed mainly (only?) to persons with a really broad knowledge in aquaculture. For example, my capacity to assess the innovation need in policies and regulations is limited.



1. NAME:	Ignacio de la Rosa
2. COMPANY:	CULMASUR
3. POSITION:	General Manager

4. Do you think that there are areas we missed in the initial survey of the areas where innovation could be required in Mediterranean mariculture?

- **Very complete list.**
- **But areas specific to land based aquaculture are missing, such as predator control (e.g. prevention of cormorants damage). It's not one of the most important areas needed of innovation, but reasonably important.**
- **Also the need to improve recirculation systems, both intensive (indoors) and extensive (outdoors).**

5. What is your opinion on the category average scoring?

- **In general Ok, but "Fish health", "Husbandry-Management" and "Genetics" are relatively more important than innovation in "Training", for example.**

6. What is your opinion on the overall priorities?

- **"Improved consumer perception on health benefits from aquaculture fish" is important, but to be the top priority it should be shortened to "Improved consumer perception on aquaculture fish". This would make it very similar to "Improved image of Mediterranean mariculture sector products", and to "Improved sector presentation tools and strategies to the society". Perhaps worth merging all three.**
- **"Improved work safety conditions" is too high in the priority list, at least in Spain.**

7. How do you feel on the priorities identified in Greece? How you explain it?

- **For a country with the largest marine fish farming industry there seems to be not much concern about innovation on fish processing (new products, new presentations,...).**
- **Adding value to the fish is also missed.**

8. How do you feel on the priorities identified in Turkey? How you explain it?

- **Reasonable. Ok.**

9. How do you feel on the priorities identified in Spain? How you explain it?

- **"Improvements in FCR" should be number one or two.**
- **"Improved sector presentation tools and strategies to the society" should be out of top 5.**

10. Do you agree on the areas of Mediterranean mariculture identified as those that require innovation?

- **Yes. It's a good list.**
- **"Development of effective treatments against fish parasites" would better be "Development of effective treatments against fish diseases".**



11. Do you agree on suggestions regarding product quality, consumer and market issues?

- **This is a very broad area.**
- **But in general, Mediterranean aquaculture needs to improve a lot its practices in these fields. Innovation needed indeed.**
- **Product development is perhaps under-considered in this project.**

12. Do you agree on suggestions regarding Policies and Regulations?

- **Yes. But more importance should be given to governance than to specific wording of policies or regulations.**
- **Instead of “Minimisation of potential conflicts with other coastal zone stakeholder” a more positive attitude would include the search for synergies between stakeholders for mutual benefit (!!).**

13. Do you agree on the identified areas for training? Do you suggest alternative areas for training?

- **Yes. Training on feed management is crucial as the control of feeding costs make the difference for aquaculture companies’ profitability.**

14. What are the most important characteristics of effective training to maximize impact to the industry?

- **The integration of the industry in the official training programmes. Universities in Spain offer many aquaculture courses from which students leave with too little practical knowledge. When a recently graduated student arrives to our farm he has too little practical experience.**

15. Any other comment on the initiative?

- **No.**



1. NAME:	Peter Coutteau
2. COMPANY:	NUTRIAD
3. POSITION:	Business Development Manager

4. Do you think that there are areas we missed in the initial survey of the areas where innovation could be required in Mediterranean mariculture?

- **Not many, but some could be added.**

If YES please indicate which:

- **Long term effects on the fish of alternative ingredients in their diets.**

- **Evaluation of the precise requirements of nutritional contents of fish diets with great reductions in fish meal (diets in which fish meal won't cover the unknown nutrient needs).**

5. What is your opinion on the category average scoring?

- **The "Training" and "Policies" priorities are too high.**

- **"Genetics", "Quality/Consumers" and "Fish health" are to be higher.**

6. What is your opinion on the overall priorities?

- **The top ones should be "Development of effective genetics selection program" and "Improved Feed performance based on alternative protein sources". Also long term genetic programmes.**

- **Priorities having to do with "workers safety" and "training" require a lesser degree of innovation and are not a bottleneck for Mediterranean aquaculture, at least in Greece, Spain and Turkey.**

7. How do you feel on the priorities identified in Greece? How you explain it?

- **They are understandable. Greece produces a lot of cheap fish that require not only to reduce production costs but mainly to improve quality and image.**

8. How do you feel on the priorities identified in Turkey? How you explain it?

- **Ok.**

- **The very high ranking of "Improvement in workers safety conditions" signals cheap labour conditions for achieving cheaper production costs. But it's a matter of better implementing known safety measures more than innovating in workers safety systems or management.**

9. How do you feel on the priorities identified in Spain? How you explain it?

- **Reasonable. Ok.**

10. Do you agree on the areas of Mediterranean mariculture identified as those that require innovation?

- **"Improved consumer perception on health benefits from aquaculture fish" is given a too high importance, considering the sustainability of Mediterranean aquaculture, and when compared to the rest of areas.**

- **The rest looks reasonable.**

11. Do you agree on suggestions regarding product quality, consumer and market issues?



- Yes.

12. Do you agree on suggestions regarding Policies and Regulations?

- Yes, but they aren't as important as other areas (the former have considerably lower interest).

13. Do you agree on the identified areas for training? Do you suggest alternative areas for training?

- Ok. No suggestions.

14. What are the most important characteristics of effective training to maximize impact to the industry?

- Training should include working directly in farms and also in the ancillary industry (feed manufacturers, equipment producers, consultants...) for a more complete view of the sector.

15. Any other comment on the initiative?

- Interesting project.



1. NAME:	Lázaro Rosa Jordán
2. COMPANY:	CUPIMAR
3. POSITION:	President

4. Do you think that there are areas we missed in the initial survey of the areas where innovation could be required in Mediterranean mariculture?

- **The list is very complete.**

If YES please indicate which:

5. What is your opinion on the category average scoring?

- **It looks good.**

- **The idea of prioritizing categories is risky as they are very different matters. Perhaps a different presentation is required for not giving wrong impressions. For example, the importance of innovation in policies is enormous but not comparable to the great need of innovation in nutrition. Both are equally important, but not comparable.**

6. What is your opinion on the overall priorities?

- **I miss something dealing with the most effective use of oxygen (liquid oxygen) in land based fish farms. It's in many occasions a technological and economical bottleneck.**

- **Even though there are many important issues in the list I want to emphasize the reality that fish production is far behind other animal producing industries in respect of biological production efficiency. The means to achieve progress in this field are several, but genetic improvement through long term working programmes are essential for aquaculture in the long term. These efforts must be done (logically) at hatchery level.**

7. How do you feel on the priorities identified in Greece? How you explain it?

- **It strange to see perception issues as of top importance in both Greece and Turkey.**

8. How do you feel on the priorities identified in Turkey? How you explain it?

9. How do you feel on the priorities identified in Spain? How you explain it?

- **Good. They seem reasonable.**

10. Do you agree on the areas of Mediterranean mariculture identified as those that require innovation?

- **Yes, but for us in land based aquaculture the oxygen issue I mentioned before is crucial for improving production yields and costs.**

11. Do you agree on suggestions regarding product quality, consumer and market issues?

- **Basically yes.**

12. Do you agree on suggestions regarding Policies and Regulations?



- I like the idea of improving “soft laws” and governance more than innovating on “hard laws” (policies and regulations), but this is a very personal perspective. In any case aquaculture is over regulated and simplification is required.

13. Do you agree on the identified areas for training? Do you suggest alternative areas for training?

- Ok.

14. What are the most important characteristics of effective training to maximize impact to the industry?

15. Any other comment on the initiative?

- It seems good, but I’ve seen many similar works providing no feedback to the profession. I hope this one makes a difference.

- I like the idea of having Turkish, Greek and Spanish experts working together for the future of our industry. We need to collaborate

INTRANEMMA in DEPTH SURVEYS – SPAIN (APROMAR)

