

INTRANEMMA Courses evaluation
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LEONARDO DA VINCI
Project No : 2010-1-GR1-LEO05-03986
Vocational Training modules (EN, ES, GR TU)
Content: sea bass/sea bream culture
Sectoral Competencies/Learning Outcomes course design

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INTRANEMMA – Vocational courses Evaluation

Background

At the request of the INTRANEMMA Consortium, Mrs Margaret Eleftheriou, AQUALEX Multimedia Consortium Ltd, Dublin, Ireland (see footnote * below) has carried out an evaluation of the presentation, pedagogic content and design of the vocational courses of this project.

Aims and objectives¹

The aim of the INTRANEMMA project is to identify vocational skill needs in the Mediterranean mariculture industry and in response, to develop and pilot a training programme specifically for the Mediterranean region, aimed towards improving vocational skills and ensuring sustainability in sea bass and sea bream aquaculture. Identification of training needs was based on the WAVE Master list of aquaculture competencies, from which training courses were drawn up using a learning outcomes approach as advocated by EC policy and best practice methodologies.

The partnership linked relevant Mediterranean Producer Associations from Greece (FGM), Turkey (MFFA) and Spain (APROMAR)) with important Mediterranean research centres (HCMR, CCMAR, IRTA), Universities/ Technological Institutes (National Technical University of Athens, Un. of Crete, Un. of Thessaly, Norwegian School of Veterinary Science and TEI of Messolonghi) and companies (Norway Seafoods S.A, Dibaq-Diproteg, Perseus Special Food Products S.A, Tethys Aquaculture Ltd. and AQUARK), thus ensuring that the needs of the industry would be met in those areas critical for its sustainability. The participation of the Dublin-based company, AQUATT also ensured a common sectoral approach relevant to skill requirements as well as learning outcomes; AQUATT developed the extremely relevant WAVE Master List of skills and competences in aquaculture.

The project outcomes which will be reviewed in this evaluation are training tools/modules designed to provide learners with the required competences, by means of three training events in different partner countries. These modules must also take into account specific national curriculum or accreditation structures and be capable of being assessed using a learning outcomes (LO) approach.

A further aim of the project was to make an impact on both existing national (NQFs) and international (EQFs) accreditation procedures.

Initial and significant characteristics

- The appropriate range of short course materials, focusing on innovative subjects of real relevance to the Mediterranean sea bream/sea bass industry
- The range of course materials chosen from the results of a survey based on the WAVE Master List of competences, which identified training gaps and thus training needs
- The selection of a transnational pool of users as the most significant Mediterranean aquaculture players, who subsequently participated in the INTRANEMMA courses
- The high post-survey ratings, particularly concerning the quality of the trainers and the organisations of the courses (see below for further details)

¹ * Mrs Eleftheriou's qualifications for undertaking this role are her many years of experience in the UK and Greece as a teaching professional in tertiary and secondary education, with more than twenty year's experience in handling, coordinating and evaluating EU education and training programmes.

- The use of multiple languages and trans-national partners, reflecting the Mediterranean sea bream/bass industry (Greece, Turkey, Spain) representing the most important languages in European aquaculture, but also involving other leading aquaculture partners from Norway and Ireland

These characteristics make the project one of real significance to the training dimension of the European aquaculture sector. The assessment was therefore approached with the concepts of appropriateness and relevance to industry requirements in mind, both for VET and HE students, but also for workers at all levels, including managerial.

Overview

Courses

INTRANEMMA contains five training courses carried out over nine training events, culminating in the Med-Aqua CEO event providing, as can be seen by the titles below, innovative solutions to various previously identified training gaps/needs. These courses were rolled-out during September and October 2012 in Athens, Bodrum and Valencia. The courses were designed and developed based on an extensive needs analysis of the Mediterranean sea bass and sea bream mariculture sector. By specifically targeting knowledge gaps and sector bottlenecks, the courses helped to transfer the latest knowledge, updated and upskilled workers and also provided a forum for sharing experiences.

- The courses were broadcast live over the internet and recordings are available through on the website (apart from the CEO Event)
- Courses that were delivered in Turkey were translated into Turkish prior to delivery or were translated during the delivery
- Statistics for all courses:
 - 9 courses run in 3 countries
 - 202 participants from 5 countries
 - 23 experts involved from 7 countries
 - 89 companies/organisations received training from Greece, Turkey, Spain, Croatia, Cyprus and Israel (108 companies/organisations were involved)
 - 37 senior executives attended the CEO event

Course 1: Innovative solutions in Feeding Management Strategies for sea bass and sea bream (Bodrum, Turkey, 12th Sept. 2012, Valencia, Spain, 20th Sept. 2012)

Course 2: Innovative Vaccination strategies for sea bass and sea bream (Bodrum, Turkey, 12th Sept. 2012, Valencia, Spain, 20th Sept. 2012)

Course 3: Innovative solutions in increasing predictability in sea bass and sea bream hatcheries (Athens, Greece, 17th Oct 2012)

Course 4: Innovative solutions in processing technology and creation of added value products and services for sea bass and sea bream (Athens, Greece, 17th Oct 2012, Bodrum, Turkey, 19th Oct. 2012)

Course 5: Innovative solutions in genomics applications for sea bass and sea bream (Athens, Greece, 11th Oct 2012)

Course 6: Mediterranean Mariculture Vision for 2020 (Athens, Greece, 13th Dec 2012)

Timing

All courses were run from September, 2012, to December, 2012. It was not possible to run these courses on a different timescale, since INTRANEMMA is a 2-year project, with a challenging set of interlocking deadlines: identification of training needs analysis based on competencies list; choice of subjects; choice of expert trainers to construct relevant course materials; translation of materials; choice of appropriate venues for parallel courses; preparation of learning outcomes for each part of each course.

As all courses are pilot courses, and took place for the reasons stated above, after the beginning of the 2012 autumn semester, it is clear that there has been little time for involvement with the relevant national accrediting agencies, even though each course is clearly presented in terms of units, with Learning Outcomes, Knowledge/Skills requirements, Evidence Requirements and proposed assessment instruments.

Furthermore, of the three countries concerned, only Spain has at present the necessary educational infrastructure to deal with this aspect, and that is fragmentary. Greece's VET accreditation system is not yet firmly established in its NQF, and the VET situation of Turkey is in a state of flux, as revealed in its November 2012 report on its educational system.

Recommendation

It is recommended that the Coordinator contact the Greek State Scholarships Foundation- IKY (the Agency which runs LEONARDO and ERASMUS as well). There are two contacts

- Irene Ntroutas (LDV coordinator) edroutsa@iky.gr
- Alexandra Baka (LDV Mobility coordinator) abaka@iky.gr.

The Turkish partner should contact the Turkish Vocational Qualifications Authority, which has published a paper on its progress towards a complete reform of its vocational educational system. Contact as follows:

Ministry of National Education
DG for VET
Ataturk Bulvari No:98 1. Kat A Blok
Bakanliklar/ANKARA
Tel: 90-312-4131257
Fax:90-312-425 2967
<http://mtegm.meb.gov.tr>

This will enable INTRANEMMA to verify whether the learning outcome approach taken in the INTRANEMMA courses is both appropriate and feasible.

Course structures and learning content :

Despite the complexity of the various subjects tackled, the courses can be described as helpful, focused and effective, with increasing demands on the user at the content level

- Generally excellent and wide-ranging
- Material preparation, organisation and communication :
 - Generally very good
 - Well organised, with detailed and illuminating explanations; clearly explained and very suitable for distance learning (very important for a dispersed industry such as aquaculture).

In brief, these on-line courses should provide a useful addition to the overall European aquaculture training and education portfolio.

Website presentation

The INTRANEMMA website is excellent, very professionally designed and user-friendly with very good accessibility. General information about the project is clear and useful. All courses are presented in a distinctive house style, and conform to a similar pattern comprising information about the experts involved (along with their CVs), course outlines (which I shall use below), the course materials (which are downloadable mostly as PPT presentations), with dates of training courses and photogallery of proceedings). The course lectures are uploaded as videos and are made available on the website for free use.

Feedback from participants

Each training event was followed with a post-survey evaluation, which revealed some interesting conclusions (based on a general summation of participants' views, and using only the top two ratings of 4 'high' and 5 'very high'). The quality of the tutors in the ranges 4-5 was 91%; course organisation rated at 87%, and the pace and amount of material rated at just over 70%. This is remarkable, given the geographic spread of the training events, and the non-native language (English) of the course delivery. The ability to make use of course information (rated at 48.3%) is also an indicator of success, since these courses were aimed at providing innovative solutions to present problems or difficulties; and it is clear from the responses, which rated the quality of the material highly, that the proposed solutions are yet to be put in place.

Summary

The courses enjoy a variety of approaches, different structures and differing balances between text and illustrative images. Nevertheless, there are common characteristics of comprehensiveness and 'density' of information, with a successful combination of necessary detail and essential over-arching breadth of review.

The 'portion size' approach to learning units is another common characteristic, which will facilitate distance learning. Though the actual lectures were quite long, the participants could brush up on their content acquisition and learning from the online powerpoint presentations.

Recommendations

- As this project is now in its final stages, these recommendations may be viewed largely as suggestions for a follow-up project to build on the excellent 'platform' that INTRANEMMA has created.
- There should be an increased effort (because there has clearly been an attempt to do so) to standardise course presentation in a 'house style' or 'brand'. Not necessarily a standard template for all courses, but sufficient commonality of presentation so that an 'INTRANEMMA' recognition factor becomes more clearly visible.

- Relevant images should be added where they are lacking – visual explanation or support is invaluable, particularly for web-based and distance learning material (a picture can be worth a thousand words).
- The courses should be described in terms of credits and levels in order to locate them within available Qualification Frameworks, and to seek their inclusion in national accreditation structures; again this is particularly important in the present state of development of the European Qualifications Framework, in the allocation of credits to vocational qualifications and the search to find alternate learning pathways for the adult learner.
- Although it is not in the original remit, consideration should be given to the design of an appropriate assessment strategy and appropriate assessment instruments.
- There should be an analysis of the potential market for the products, both within Europe and beyond (in particular in Asia, where these English language courses – supported, for example, in the Chinese or Vietnamese market, prove popular with Universities, colleges and industry).

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23rd February 2013

Part 2 Technical Review-Course 1

Innovative solutions in Feeding Management for sea bass and sea bream Bodrum, Turkey,
12th Sept 2012 | Valencia, Spain, 20th Sept 2012

The following general comments can be made, firstly, on the group of units and then more specific comments are presented on the Learning Outcome component elements:

- There are 5 inter-linked Modules in this material and they appear to present, in sequence and content, an actively inter-linked package that extends from latest scientific and research information, to practical techniques, including techniques useful to both industrial and scientific staff.
- The basic scientific information is factually and technically correct and is a concise natural grouping of terms and techniques that have a natural complementarity.
- The structure and content of the language medium used is not overly technical, and all have been translated into the hosting country language, an important issue. The unit is provided with adequate reference lists.

Learning outcomes component

- The structure and content of the unit is well constructed, according to the chosen methodology:
- unit purpose, defined
- prior knowledge required; these seem to be the target users, rather than a clear description of the prior knowledge needed before embarking on the course
- learning outcomes are relevant and well-chosen, though a little too general even for this stage of course construction and piloting;
- teaching and learning methods well-tackled
- knowledge and skills not really detailed enough, but adequate for this stage of course construction
- evidence requirements and assessment method- this was not adequate, with only one multiple choice questionnaire based on content
- there is also no indication of the NQF or EQF level, which is something about which the accrediting agencies should be able to give advice.

Course Outline

Description:

Training course with case studies on the current state of the art, identification of the bottlenecks and improvements on the current situation in the field of Feeding Management

Contents:

- Key facts of Fish Nutrition
- Feeding Strategies, Economics of fish feeding on farm

Tutors:

- Dr. Yiannis Nengas, GR
- Mr. Eloy Meseguer Hernandez, ES
- Mrs. Giorgos Petropoulos, GR
- Dr. Nikos Papandroulakis, GR

Language(s) of instruction: English,

Language(s) of material: English, Turkish

Key facts on Fish nutrition - Feeding strategies for sea bass and sea bream

[Unit 1 Name: Innovative Feeding Strategies for sea bass and sea bream](#)

Unit 1 Purpose: To understand innovative new technologies developed and applied in sea bass and sea bream feeding strategies.

Unit 1 Recommended prior knowledge and skills:

Fish Nursery Managers

Fish Production Managers

Fish Feed company Technical Manager

Unit 1 Learning Outcomes:

1. Improve understanding of fish nutrition
2. Improve understanding of feeding strategies
3. Improve understanding of the economics of fish feed management

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website
- Translated Printed abstracts in English, Turkish, Spanish and Greek
- Downloadable pdf presentation material in English

Unit 1 Knowledge and/or Skills:

1. Being able to understand the basics in fish nutrition
2. Being able to validate different feeding strategies
3. Being able to evaluate benchmark fish feeds in different feeding strategies
4. Being able to evaluate the economics of fish feeds (feed characteristics vs. costs)
5. Being able to decide on feeding strategies based on tangible indicators

Unit 1 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Self evaluation

Unit 1 Assessment method:

- Post meeting questionnaire for self-evaluation
- Post meeting survey on the training impact
- Multiple-choice set of questions

Part 2 Technical Review-Course 2

Innovative Vaccination strategies for sea bass and sea bream

Bodrum, Turkey, 12th September 2012 | Valencia, Spain, 20th September 2012

General comments on the unit

- There is one unit in this material which presents its content in two parts, strategies and best practice, set out in four distinct parts, extending from latest scientific and research information, to practical techniques
- The factual information, strategies and best practice are dealt with in a very comprehensive way, with some novel ideas
- The structure and content of the language medium used is not overly technical, and all have been translated into the hosting country language, an important issue. The unit is provided with an excellent online abstract as well as extensive ppt records.

Learning outcomes component

- The structure and content of the unit is well constructed, according to the chosen methodology:
- unit purpose, defined
- prior knowledge required; ; these seem to be the target users, rather than a clear description of the prior knowledge needed before embarking on the course
- learning outcomes are relevant and well-chosen, though a little too general even for this stage of course construction and piloting;
- teaching and learning methods well-tackled
- knowledge and skills not really detailed enough, but adequate for this stage of course construction
- evidence requirements and assessment method- this was not adequate
- there is also no indication of the NQF or EQF level, which is something about which the accrediting agencies should be able to give advice

Course Outline

Description: Training course on Vaccination strategies for sea bass and sea bream.

Contents: Development of Vaccination strategies, Best practices at farm level

Tutors:

- Prof. Patrick Smith, UK
- Dr. Panos Christofilogiannis, GR

Language(s) of instruction: English,

Language(s) of material: English, Turkish

Unit 1 Name: Innovative Vaccination strategies for sea bass and sea bream

Unit 1 Purpose: To understand innovative vaccination strategies

Unit 1 Recommended prior knowledge and skills:

Fish Production Managers

Fish Vets

Fish Health Managers

Unit 1 Learning Outcomes:

1. Improve understanding of different vaccination strategies
2. Improve understanding of vaccination methods
3. Improve understanding of the economics of fish vaccination

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website
- Translated Printed abstracts in English, Turkish, Spanish and Greek.
- Downloadable pdf presentation material in English.

Unit 1 Knowledge and/or Skills:

1. Being able to develop and evaluate appropriate vaccination strategies
2. Being able to evaluate different vaccination method characteristics
3. Being able to estimate cost benefit from different vaccination strategies

Unit 1 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Self evaluation

Unit 1 Assessment methods:

- Post meeting questionnaire for self evaluation
- Post meeting survey on the training impact

Part 2 Technical Review-Course 3

Innovative solutions in increasing predictability in sea bass and sea bream hatcheries

Athens, Greece, 17th September, 2012

General comments on the unit

- There are four units in this material which are quite disparate though linked of course to the main course title, with presentations reflecting the latest scientific and research information, but also practical techniques to get around bottlenecks and specific problems
- The factual information is well-presented
- The structure and content of the language medium used is not overly technical, and all have been translated into the hosting country language, an important issue. The unit is provided with a downloadable pdf as well as extensive ppt records.

Learning outcomes component

- The structure and content of all units are well constructed, according to the chosen methodology:
- unit purpose, defined
- prior knowledge required; these are more clearly defined, partly because the material covered is quite wide-ranging and can be more clearly targeted.
- learning outcomes are relevant and well-chosen, though a little too general even for this stage of course construction and piloting;
- teaching and learning methods well-tackled
- knowledge and skills not really detailed enough, but adequate for this stage of course construction
- evidence requirements and assessment method- this was not adequate
- there is also no indication of the NQF or EQF level, which is something about which the accrediting agencies should be able to give advice

Course outline

Course Description: Training course in identifying the bottlenecks in sea bass and sea bream hatchery production, the critical time points and the way different biotic and abiotic factors affect production. This includes case studies on the current state of the art, identification of the bottlenecks and improvements on the current situation in the field of hatchery production of sea bass and sea bream.

Participants:

Production Managers

Hatchery Managers

Research and Development Managers

Expert Panel:

- Koumoundouros - GR
- Moutou - GR
- Aguilera –ES

Language(s) of instruction: English,

Language(s) of material: English

Units

- Current status of sea bass – sea bream hatchery production methods
- Bottlenecks and critical time points

- Abiotic and Biotic factors that affect production (mode of action)
- Economics of sea bass – sea bream hatchery production and scope for improvement

Unit 1 Name: Current status of sea bass – sea bream hatchery production methods

Unit 1 Purpose: To understand the current status and characteristics of the hatchery production methods

Unit 1 Recommended prior knowledge and skills:

Production Managers

Hatchery Managers

Research and Development Managers

Unit 1 Learning Outcomes:

1. Improve understanding of the current production systems
2. Improve understanding of the current production methods

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website
- Translated abstract material in English, Turkish, Spanish and Greek
- Downloadable pdf presentation material in English.

Unit 1 Knowledge and/or Skills:

1. Being able to identify pros and cons of different production systems
2. Being able to evaluate (compare and contrast) the characteristics of different hatchery production methods

Unit 1 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Self evaluation

Unit 1 Assessment method:

- Post meeting questionnaire for self evaluation
- Post meeting survey on the training impact

Unit 2 Name: Bottlenecks and critical time points

Unit 2 Purpose: To understand the Bottlenecks and critical time points in sea bass and sea bream hatchery productions

Unit 2 Recommended prior knowledge and skills:

Production Managers

Hatchery Managers

Research and Development Managers

Unit 2 Learning Outcomes:

Improve understanding of the Bottlenecks and critical time points in sea bass and sea bream hatchery production.

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website
- Translated abstract material in English, Turkish, Spanish and Greek

- Downloadable pdf presentation material in English.

Unit 2 Knowledge and/or Skills:

1. Being able to identify Bottlenecks and critical time points in broodstock management
2. Being able to identify Bottlenecks and critical time points in live feed management
3. Being able to identify Bottlenecks and critical time points in larval stages
4. Being able to identify Bottlenecks and critical time points in nursery

Unit 2 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Self evaluation

Unit 2 Assessment method:

- Post meeting questionnaire for self evaluation
- Post meeting survey on the training impact

Unit 3 Name: Abiotic and Biotic factors that affect production (mode of action)

Unit 3 Purpose: To be informed on Abiotic and Biotic factors that affect hatchery production

Unit 3 Recommended prior knowledge and skills:

Production Managers

Hatchery Managers

Research and Development Managers

Unit 3 Learning Outcomes:

1. Improve understanding on impact of biotic and abiotic factors on the predictability of hatchery production

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website
- Translated abstract material in English, Turkish, Spanish and Greek
- Downloadable pdf presentation material in English.

Unit 3 Knowledge and/or Skills:

1. Being able to identify different biotic factors that influence hatchery production
2. Being able to identify different abiotic factors that influence hatchery production
3. Being able to evaluate their mode of action and optimal ranges to increase predictability

Unit 3 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Investment Evaluation spreadsheet
- Self evaluation

Unit 3 Assessment method:

- Post meeting questionnaire for self evaluation
- Post meeting survey on the training impact

Unit 4 Name: Economics of sea bass – sea bream hatchery production and scope for improvement

Unit 4 Purpose: To understand the economics of sea bass and sea bream hatchery production (resources required and input at each stage to produce a target production) the differences in sea bass and sea bream culture and the impact of each sector of the hatchery

production as cost centre in terms of cost of production, impact on quality and impact on profitability.

Unit 4 Recommended prior knowledge and skills:

Production Managers

Hatchery Managers

Research and Development Managers

Unit 4 Learning Outcomes:

1. Improve understanding of the economics of sea bass and sea bream hatchery production (resources, inputs)
2. Improve understanding of the differences in the economics of sea bass and sea bream hatchery production
3. Improve understanding of the impact of each sector of the hatchery production as cost centre in terms of cost of production, impact on quality and impact on profitability.

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website
- Translated abstract material in English, Turkish, Spanish and Greek
- Downloadable pdf presentation material in English.

Unit 4 Knowledge and/or Skills:

Being able to identify the economics of sea bass and sea bream hatchery production including differences in inputs and resources

Being able to quantify the impact of each stage of the hatchery production in terms of contribution in the unit cost, unit quality and unit profitability.

Unit 4 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Self evaluation

Unit 4 Assessment methods:

- Post meeting questionnaire for self evaluation
- Post meeting survey on the training impact

Part 2 Technical Review-Course 4

Innovative solutions in Processing technology and creation of added value products and services for sea bass and sea bream

Athens, Greece, 9h October 2012 | Bodrum, Turkey, 11th October 2012

General comments on the unit

- There are four very precisely-targeted units, set out in four separate but interlinking parts: Innovative solutions in processing of sea bass and sea bream; innovative added value products; innovative solutions on improvements of product shelf life; traceability and cold chain quality indicators. Each of the units is important, in itself, but their adoption overall could be of immense benefit in today's financial crisis. The two Norwegian presentations should be particularly useful to the Mediterranean participants
- The information is dealt with in a very straightforward way, with some excellent ideas with regard to marketing, and essential information with regard to the traceability issue.
- The structure and content of the language medium used is not overly technical.

Learning outcomes component

- The structure and content of the unit is well constructed, according to the chosen methodology:
- unit purpose, defined
- prior knowledge required; ; these seem to be the target users, though a clear description of the prior knowledge and experience needed is given, which is helpful
- learning outcomes are relevant and well-chosen, though a little too general even for this stage of course construction and piloting;
- teaching and learning methods well-tackled
- knowledge and skills: detailed and adequate for this stage of course construction
- evidence requirements and assessment method- this was not adequate
- there is also no indication of the NQF or EQF level, which is something about which the accrediting agencies should be able to give advice

Course Outline

Description: Training course with case studies on the current state of the art, identification of the bottlenecks and improvements on the current situation in the field of processing and added value product creation for sea bass and sea bream.

Contents: Processing Technology – Lengthening of self life — Added value products – Traceability

Expert Panel:

- Theofania Tsironi – EL – Shelf life, Traceability, Hurdle technology
- Kriton Grigorakis - EL – Food science
- Henri Hellin - FR – Fish processing technologies

Language(s) of instruction: English,

Language(s) of material: English, Turkish (one presentation in Bodrum)

Units · Innovative solutions in processing of sea bass and sea bream

- Innovative added value products
- Innovative solutions on improvements of product shelf life
- Traceability and cold chain quality indicators

Unit 1 Name: Innovative solutions in processing of sea bass and sea bream

Unit 1 Purpose: To understand innovative new technologies developed and applied in fish processing, the investment required, the productivity, the product range and characteristics.

Unit 1 Recommended prior knowledge and skills:

Fish Processing Station experience of at least 1 year

Unit 1 Learning Outcomes:

1. Improve understanding of processing technologies
2. Improve understanding of investment costs and return on investment
3. Improve understanding of system productivities
4. Improve understanding of product characteristics

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website
- Translated Printed abstract material in English and Turkish
- Downloadable pdf material in English

Unit 1 Knowledge and/or Skills:

1. Being able to identify types of processing technologies, countries and major suppliers, pros and cons
2. Being able to evaluate the economics of aquaculture fish processing (investment/return on investment/funding schemes and business models)
3. Being able to compare processing systems in term of productivity and operational characteristics
4. Being able to evaluate the product characteristics and market segments from different processing systems.

Unit 1 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Investment Evaluation spreadsheet
- Self evaluation

Unit 1 Assessment method:

- Post meeting questionnaire for self evaluation
- Post meeting survey on the training impact

Unit 2 Name: Innovative added value products

Unit 2 Purpose: To understand innovative added value products, their characteristics and their markets.

Unit 2 Recommended prior knowledge and skills:

Fish Processing Station experience of at least 1 year

Quality Assurance managers

Marketing Managers

Unit 2 Learning Outcomes:

1. Improve understanding of type of added value products
2. Improve understanding of product presentations

3. Improve understanding of different market segments

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website
- Translated Printed material in English and Turkish
- Downloadable pdf material in English and partially in Turkish.

Unit 2 Knowledge and/or Skills:

1. Being able to identify types of value added products and their characteristics
2. Being able to evaluate the different product presentations
3. Being able to compare product types and characteristics of different market segments

Unit 2 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Investment Evaluation spreadsheet
- Self evaluation

Unit 2 Assessment method:

- Post meeting questionnaire for self evaluation
- Post meeting survey on the training impact

Unit 3 Name: Innovative solutions on improvements of product self life

Unit 3 Purpose: To understand innovative new technologies developed and applied in lengthening product self life

Unit 3 Recommended prior knowledge and skills:

Fish Processing Station Managers

Quality Assurance Managers

Research and Development Managers

Marketing Managers

Unit 3 Learning Outcomes:

1. Improve understanding of technologies used to lengthen self life
2. Improve understanding of operational costs
3. Improve understanding of the effects on organoleptic characteristics

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast for registered users via the INTRANEMMA website
- Translated Printed material in English and Turkish
- Downloadable pdf material in English and partially in Turkish.

Unit 3 Knowledge and/or Skills:

1. Being able to identify types of technologies utilized
2. Being able to evaluate the economics of lengthening of shelf life
3. Being able to evaluate the product organoleptic characteristics

Unit 3 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Investment Evaluation spreadsheet
- Self evaluation

Unit 3 Assessment method:

- Post meeting questionnaire for self evaluation

- Post meeting survey on the training impact

Unit 4 Name: Traceability and cold chain quality indicators

Unit 4 Purpose: To understand innovative new technologies developed and applied in cold chain quality indicators

Unit 4 Recommended prior knowledge and skills:

Fish Processing Station Managers

Quality Assurance Managers

Research and Development Managers

Marketing Managers

Unit 4 Learning Outcomes:

1. Improve understanding of cold chain and logistics
2. Improve understanding of quality indicators applied

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website
- Translated Printed material in English and Turkish
- Downloadable pdf material in English and partially in Turkish.

Unit 4 Knowledge and/or Skills:

1. Being able to identify innovations in cold chain and logistics of farmed fish transport
2. Being able to evaluate the quality indicators applied

Unit 4 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Investment Evaluation spreadsheet
- Self evaluation

Unit 4 Assessment method:

- Post meeting questionnaire for self evaluation
- Post meeting survey on the training impact

Part 2 Technical Review-Course 5

Innovative solutions in genomics applications for sea bass and sea bream

Athens, Greece, 18th October 2012

General comments on the unit

- There are five very precisely-targeted units, set out in some detail, ranging from a general background overview, to current research findings and state-of-the-art, with the salmon studies playing a central and catalytic role in the possible adaptation to the Mediterranean species of farmed fish, which should be particularly useful to the Mediterranean participants
- The information is dealt with in a very straightforward way, though the final unit would need some specialized background knowledge.
- The structure and content of the language medium used is fairly technical but this cannot be avoided.

Learning outcomes component

- The structure and content of the unit is well constructed, according to the chosen methodology:
- unit purpose, defined
- prior knowledge required; ; these seem to be the target users, but overall this needed to be more clearly defined
- learning outcomes are relevant, but certainly too general even for this stage of course construction and piloting;
- teaching and learning methods well-tackled
- knowledge and skills: detailed and adequate for this stage of course construction
- evidence requirements and assessment method- this was not adequate
- there is also no indication of the NQF or EQF level, which is something about which the accrediting agencies should be able to give advice

Course Outline

Description: Training course with case studies on the current state of the art, identification of the bottlenecks and improvements on the current situation in the field of genomics applications for sea bass and sea bream.

Contents: Genomic tools; Practical implications; Salmon case studies; Differences and special conditions in sea bass and sea bream farming; Future of Genomic Tools

Expert Panel:

Professor Adelino V. M. Canario Prof. of Cell Biology and Physiology, University of Algarve
Dr. Costas Tsigenopoulos, Researcher, Population Genetics – Genomics , Hellenic Centre for Marine Research, Institute of Marine Biology and Genetics

Dr. Joan Cerdà - Senior Scientist, Institut de Recerca i Tecnologia Agroalimentàries (IRTA)- Institut de Ciències del Mar (CSIC)

Dr. Costas Batargias - Assistant Professor of Applied Genetics at the Department of Aquaculture and Fisheries Management, School of Agricultural Technology, Technological Educational Institution of Messolonghi

Dr. Bjørn Høyheim (b. 1955) Associate Professor Norwegian School of Veterinary Science; Department of Basic Sciences and Aquatic Medicine, Section for genetics.

Language(s) of instruction: English

Language(s) of material: English

Units

- Current status of Genomic tools and technologies
- Practical implications at farm / group level
- Salmon case studies
- Differences and special conditions in sea bass and sea bream farming
- Future evolution of genomics tools – what to expect?

Unit 1 Name: Current status of Genomic tools and technologies

Unit 1 Purpose: To understand the current status and characteristics of the Genomic tools and technologies

Unit 1 Recommended prior knowledge and skills:

Production Managers

Hatchery Managers

Research and Development Managers

Unit 1 Learning Outcomes:

1. Improve understanding of the current genomic tools and technologies
2. Improve understanding of the characteristics (timeframe, cost, resources, impact)

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website
- Printed abstract material in English
- Downloadable pdf presentation material in English

Unit 1 Knowledge and/or Skills:

1. Being able to identify types of Genomics tools and technologies
2. Being able to evaluate (compare and contrast) the characteristics of different tools and technologies

Unit 1 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Self evaluation

Unit 1 Assessment method:

- Post meeting questionnaire for self evaluation
- Post meeting survey on the training impact

Unit 2 Name: Practical implications at farm / group level

Unit 2 Purpose: To understand the practical implications of new genomics tools and technologies at farm / group level.

Unit 2 Recommended prior knowledge and skills:

Production Managers

Hatchery Managers

Research and Development Managers

Unit 2 Learning Outcomes:

1. Improve understanding of the practical implications/ applications at farm/group level

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website

- Printed material in English
- Downloadable pdf material in English

Unit 2 Knowledge and/or Skills:

1. Being able to identify practical implications of genomics - farm level
2. Being able to identify practical implications of genomics - group level
3. Being able to identify practical implications of genomics - national level

Unit 2 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Investment Evaluation spreadsheet
- Self evaluation

Unit 2 Assessment method:

- Post meeting questionnaire for self evaluation
- Post meeting survey on the training impact

Unit 3 Name: Salmon case studies

Unit 3 Purpose: To be informed on applied salmon genomics case studies

Unit 3 Recommended prior knowledge and skills:

Production Managers

Hatchery Managers

Research and Development Managers

Unit 3 Learning Outcomes:

1. Improve understanding on applied genomics in Atlantic salmon

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website
- Translated Printed abstracts in English, Turkish, Spanish and Greek
- Downloadable pdf presentation material in English

Unit 3 Knowledge and/or Skills:

1. Being able to identify types of technologies utilized in Atlantic salmon
2. Being able to evaluate the economics of genomics application in Atlantic salmon
3. Being able to evaluate the benefits from genomics application in Atlantic salmon

Unit 3 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Self evaluation

Unit 3 Assessment method:

- Post meeting questionnaire for self evaluation
- Post meeting survey on the training impact

Unit 4 Name: Differences and special conditions in sea bass and sea bream

Unit 4 Purpose: To understand the differences in sea bass and sea bream culture that affect the application of genomic tools and strategies as well as their impact.

Unit 4 Recommended prior knowledge and skills:

Production Managers

Hatchery Managers

Research and Development Managers

Unit 4 Learning Outcomes:

1. Improve understanding of the adaptations required in sea bass and sea bream culture in order to maximize the benefit from the application of genomics tools and strategies

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website
- Translated Printed abstracts in English, Turkish, Spanish and Greek
- Downloadable pdf presentation material in English

Unit 4 Knowledge and/or Skills:

Being able to identify the practical implications of sea bass and sea bream culture characteristics in the application of genomics tools

Being able to evaluate the adaptations required (including the associated costs / time and resources implications).

Unit 4 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Self evaluation

Unit 4 Assessment methods:

- Post meeting questionnaire for self evaluation
- Post meeting survey on the training impact

Unit 5 Name: Future evolution of genomics tools – what to expect?

Unit 5 Purpose: To be informed on genomics upcoming technologies and tools and on the expected benefits in sea bass and sea bream culture in the next 3-5 years.

Unit 5 Recommended prior knowledge and skills:

Production Managers

Hatchery Managers

Research and Development Managers

Unit 5 Learning Outcomes:

Improve understanding of the upcoming genomics tools and technologies in sea bass and sea bream culture in the near future.

Teaching and Learning methods:

- Expert Panel Presentations focused on case studies
- Photo and video material to assist the case study presentation
- Web –Broadcast live for registered users via the INTRANEMMA website, recordings now available to access freely on website
- Printed abstract material in English.
- Downloadable pdf presentation material in English

Unit 2 Knowledge and/or Skills:

Being able to understand the characteristics of imminent technologies under development (costs, resources, needs they will meet, benefits)

Being able to evaluate the impact of these novel technologies in sea bass and sea bream culture in order to facilitate uptake.

Unit 5 Evidence requirements:

- Multiple choice survey – self assessment vs expert score
- Self evaluation

Unit 5 Assessment methods:

- Post meeting questionnaire for self evaluation
- Post meeting survey on the training impact

Part 2 Technical Review-Course 6

Course 6: Mediterranean Mariculture Vision for 2020 (CEO EVENT)

Athens, Greece, 13th December 2012

General comments on the unit

This event is of a different nature to the other training events, as attendance was strictly limited and by invitation only. This evaluation will take a different format. However, judging by the post-evaluation responses, and the resulting (confidential) report, it constituted a genuinely valuable learning experience for these top-level CEOs, albeit one that would resist all effort to categorise the learning outcomes (although Benjamin Bloom's 'Peak Learning Experience' does come to mind).

37 senior executives from Greece, Turkey, Spain, Cyprus, Croatia, Israel, Norway, Ireland and Chile attended the event. In total, they represented more than 70% of Mediterranean Sea Bass and Sea Bream production in terms of juveniles, final product and fish feed. It should be noted that more than 90% of attendees rated event organisation at more than 90%, and the general satisfaction of the attendees with the event is also revealed in the very detailed conclusions arrived at within each group.

The event was designed to stimulate peer-to-peer interactions between leaders across all areas of the Mediterranean Aquaculture value chain by highlighting four especially important and/or sensitive thematic areas:

- (i) the impact of diseases, environmental issues and farm management
- (ii) Fish feed cost evolution and the effects on industry profitability
- (iii) Effective data collection, analysis and utilisation in improving strategic planning,
- (iv) The Norwegian salmon story – a capabilities perspective on industrial development and downstream organisation.

Teaching and Learning methods:

Expert Panel Presentations focused on case studies

Photo and video material to assist the case study presentation

Downloadable pdf presentation material in English

Round Table participative peer group discussion, focusing on participants' experiences, views and challenges as well as their ideas and visions for the future of the sector.

Course Content

The European economy is under pressure and the effects are being felt in all areas of Mediterranean aquaculture. Additionally, the funding landscape has become strained, with funds available for both industry and public RTD being reduced. There is a need to join forces to address both internal and external challenges. The sector needs to continue to develop and professionalise its operations, increase value in products and services, and enhance its reputation. There must be a move away from the boom and bust trend to one of stability and growth. The Med-Aqua CEO Event is timely given the unprecedented level of political and financial support for aquaculture in Europe (e.g. the new Common Fisheries Policy and the European Fisheries Fund). Stakeholders from across the sector are joining forces and working together through the European Aquaculture Technology and Innovation Platform (EATiP) as well as regional initiatives such as AQUAMED and national initiatives such as mirror platforms in Greece, Spain and Italy. The EATiP recently published a Vision document and Strategic Research and Innovation Agenda (SRIA) for European aquaculture, setting out key goals for the sector and targets for growth. Mobilisation of stakeholders at a

regional, national and trans-European level is required in order to secure investments, overcome challenges and achieve the targets set for 2030. To realise the ambitions of the sector, cooperation and collective action to respond to the key challenges facing the industry is required. Individuals in leadership positions must work together to ensure a future for the sector.

The Med-Aqua CEO Event has been designed to stimulate peer-to-peer interactions between leaders across all areas of the Mediterranean Aquaculture value chain. The programme includes Presentations on FOUR THEMATIC AREAS that are considered important for the sustainability of the industry to stimulate open discussions: (i) The impact of diseases, environmental issues and farm management (ii) Fish feed cost evolution and the effects on industry profitability (iii) Effective data collection, analysis and utilisation in improving strategic planning, and (iv) The Norwegian salmon story – a capabilities perspective on industrial development and downstream organisation. In addition to presentations, the majority of the event will be participative and focused around the participants' experiences, views and challenges as well as their ideas and visions for the future of the sector. A facilitator will be used to help frame discussions.

Presentation 1: Carlos Diaz, Vice President Continental Europe and Global Business Development at Biomar Group A/S, Århus Area, Denmark

The Impact of diseases, environmental issues and farm management – the Chilean salmon industry

Group conclusions

Suggested Roadmap – Actions

- Develop a fast track approach to develop an effective VNN vaccine
- Develop a comprehensive health map in Mediterranean mariculture to monitor the evolution and impact of diseases to the sector through open communication at Country and region level
- Communicate with the authorities to develop together an effective framework that will be supportive on future health management actions

Presentation 2: Pedro Ramos Rodriguez, Managing Director of Skretting, Southern Europe & Skretting, Spain

Fish feed cost evolution and the effects on industry profitability

Group conclusions

Suggested Roadmap – Actions

- Benchmarking on fish feed performance with the adoption of new raw materials
- Applied Strategy to improve average industry FCR
- Development of a marketing strategy to address the changing raw materials and the impact on our products

Presentation 3: Lars Liabø, Founder, Chairman Kontali Analyse AS, Industrivn.18, 6500 Kristiansund, Norway

Effective data collection, analysis and utilization in improving strategic planning

Group conclusions

Suggested Roadmap – Actions

- Establish a system of local data recording and cross checking in each country to feed a sector wide high quality reporting system

Presentation 4: Arne Sørvig, PhD. fellow in industrial economics and strategy, University of Stavanger, Oslo, Norway

The Norwegian salmon story- a capabilities perspective on industrial development and downstream organisation

Group conclusions

Suggested Roadmap – Actions

- Evaluate the options for creating a platform for a generic marketing promotion for Mediterranean Sea bass and Sea bream

Overall Suggested Next Steps

- The Fish farmers Associations have to create a task force to follow the key principles recorded in the MED AQUA CEO Event and to take them forward with Special reference to effective data reporting on production and markets as well as on health status.
- A joint platform has to be developed in order to propose an applied strategy against VNN
- The MED AQUA CEO Event was proposed to be organised annually.

Learning outcomes component

As stated above, this type of event is not conducive to VET methodology. However, judging from the various roadmaps and ways forward which emerged after the peer-group discussions, it would seem that this could be a very useful method for finding viable solutions.