Innovative Quality Mentoring program for development of a Blue Competence Framework in fin-fish production

Output 4 - Fin-Fish work based pilot delivery testing

D4.3 - Norwegian aquaculture work-based learning pilot

Author: Dag Willmann (Guri Kunna) informed by the consortium.

Version: Final

Innhold

Introduction

Guri Kunna VET School has implemented a work-based aquaculture pilot with 33 unskilled participants from farming companies in Mid Norway with the aim of obtaining a diploma in Aquaculture. The participants completed a national joint theoretical exam in June 2022.

Competence Units

CURRENT REGULATIONS IN AQUACULTURE

FEEDING THEORY

NUTRITION AND GROWTH

PRODUCTION PLAN IN AQUACULTURE

FISH DISEASES

WATER TREATMENT, WATER TRANSPORT AND CONSTRUCTION OF FACILITIES

ENVIRONMENTAL CHALLENGES

SALMON LICE AND LICE CONTROL

CONSTRUCTION OF FACILITIES AND THE ROAD TO A FACILITY CERTIFICATE

HEALTH SAFETY AND ENVIRONMENT

EXAM PREPARATIONS

Teaching methodology

Kunna VET Skole has, through several previous EU-funded projects, partly also together with partners in Scotland and Iceland, developed a methodology that streamlines learning for the participants and also helps the teachers get an overview of the participants' knowledge so that they can adapt which part of the teaching they place the most emphasis on in the course.

RPL methodology:

Industry Pathways have this definition of the term, RPL: "Recognition of Prior Learning (RPL) means an assessment process that assesses an individual's formal, nonformal and informal learning to determine the extent to which that individual has achieved the required learning outcomes, competency outcomes, or standards for entry to, and/or partial or total completion of a VET qualification". Prior learning can be recognised through various 'formative assessment' processes, in order to provide the learner guidance regarding any gaps in their knowledge and understanding. This allows them to target their studies, thereby improving their focus and the time efficiency of their studying as they prepare for summative (final) assessment within their NQ. Through the ASK for BEST PRACTICE project a practical approach to the concept has been implemented. Two RPL methods have been developed / further developed connected to vocational training in aquaculture

and the use of interactive student response systems; Pretesting methodology using web quiz tools and the use of word cloud tools to generate subject-specific keywords promoting interaction and discussions among aquaculture course participants. You also get a significant element of peer learning through this practical RPL process. The methodology will thus be useful for both teacher and course participant. There are many such web tools available, and the methodology works regardless of which tool producer that is chosen.

Pre-testing methodology:

Pre-testing upfront of a course program or a single session aims to, through course participants responses to a test, provide teachers with a quick overview of the course participants level of previous knowledge in a special subject program or a sub-theme of the program. The teachers may then set up their plan for teaching in the same subject in relation to this. In this way, teachers may spend less lecture time on areas within the subject that the participant group already has good knowledge of and rather pay more attention to areas where the knowledge is weaker. In this way, teaching sessions is made more time efficient. There is also our experience that such pre-tests should not contain too many questions. Then the participants are less likely to respond to the pre-test. Maximum around twenty questions for pre-test upfront of a course program and no more than ten questions upfront of a single session are our experience. This may sound as to few questions, but this can be solved by making the quizzes more intricate in terms of few questions and alternative answers. For some questions, several answer alternatives (maybe even all) may be considered as correct. The fact that some course participants then fail to answer one or several correct alternatives may provide the teacher with valuable information about the level of knowledge for setting up a lecture for the specific subject or subtheme. Among the course participants from the industry, it may be enough for the teachers to know if the participants have completed special courses that are common in the aquaculture industry, for instance a fish health course that are quite common in the industry. The pre-test that is run before the subject program itself may then contain "yes", "no" or "do not know" questions. These are questions that it obviously not contains a correct answer. This is more of 5 a self-assessment from the course participants, but are still useful for the teacher to know before he determines a course syllabus.

Word cloud methodology:

The word cloud methodology is about challenging the course participants to "deliver" keywords or key sentences for solving a task or a specific problem using their smartphones and promoting interaction and discussions in the process. This can be done on several levels of thoroughness. In the simplest sense, you can only generate a simple word cloud for a simple question. At the other end of the thoroughness scale, we have used this methodology to analyse old exam assignments to help the course participants solving the exam. An typical exam assignment for aquaculture VET in Norway is usually about solving a case. You start the RPL process by analyzing a key phrase in the problem using a word cloud. This can, when all course participants answer, trigger very many keywords in the word cloud and all the words are of course not equally relevant to solve the problem. You can then divide the course participants into groups where the first word cloud can be discussed to extract the most relevant keywords so that a more accurate word cloud is created. The teacher finally summarizes the results and explains what is most relevant and what is less relevant. This process is repeated until you are satisfied with the result. The methodology with word cloud has been well

received by our course participants and they express that these is a useful process for them. It would be very time-consuming to alternatively ask each individual course participant in plenary for such keywords. Usually, it is also the case that it will easily be the same few course participants who answers every time. By using this methodology, you get answers from all course participants, including those who are often too shy to answer in plenary. The course participants say that these word clouds actually serve as a disposition for solving exam assignments.

Results:

While the pre-test methodology is perhaps most beneficial to the teachers, the word cloud methodology is perhaps most beneficial to the course participants.

Guri Kunna VET School carried out, after the aquaculture exam in June 2022, an analysis of the exam results in Trøndelag county. Of those who took this exam in Trøndelag county, there were approximately the same number who did not participate in Guri Kunna's course as the number who participated in this course. The average grade for those who did not participate in this course was 2.71 (6 as top grade), while those who participated in the course received an average grade of 3.45. In other words, our course participants scored not too far from a whole grade above. Then we think we must have done something right? In addition, at the annual national conference for aquaculture and fisheries education in December 2022 (the FosFor conference), the Norwegian Directorate of Education provided information about the average grade for this exam nationally. Here, too, Guri Kunna's participants score approx. half a grade above.

Facsimile from the newspaper Hitra/Frøya

Co-funded by the
Erasmus+ Programme
of the European Union

Annexes:

Appendix 1 – Examples of Pre-testing

Har du gjennomgått fiskevelferdskurs?

Mentimeter

- 81% Ja
- 19% Nei
- 0% Vet ikke
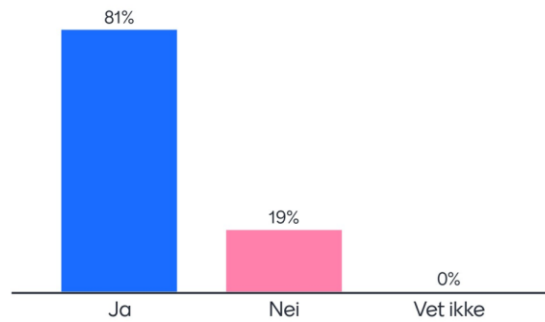
Er du godt kjent med hele livssyklusen til laks?

Mentimeter

- 64% Ja
- 9% Nei
- 27% Vet ikke
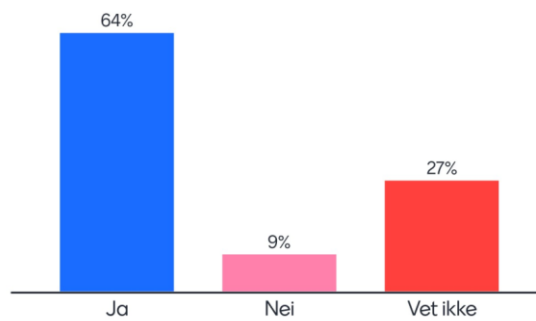
Hva kalles fasen hos laksefisk rett etter klekking?

Mentimeter

- 86% Plommesekkyngel
- 0% Parr
- 10% Yngel
- 0% Smolt
- 5% Vet ikke
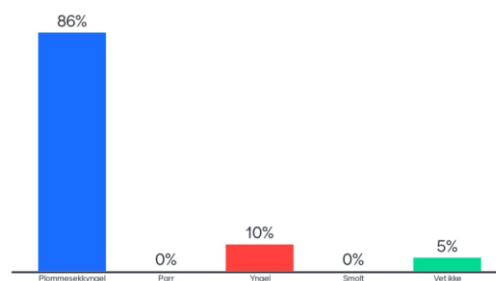
Kan du forklare forskjellen på et gjennomstrømningsanlegg og et RAS-anlegg?

Ja	76%
Nei	19%
Vet ikke	5%
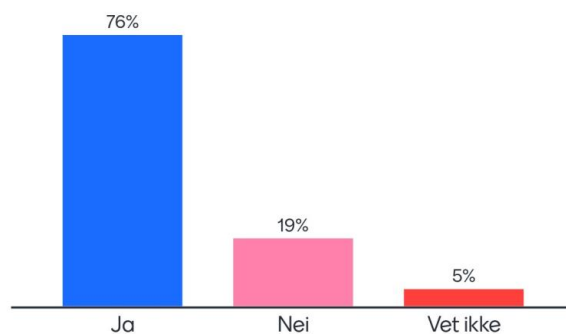
Kan du beskrive vannbehandlingstiltak på et RAS-anlegg?

Ja	43%
Nei	43%
Vet ikke	14%
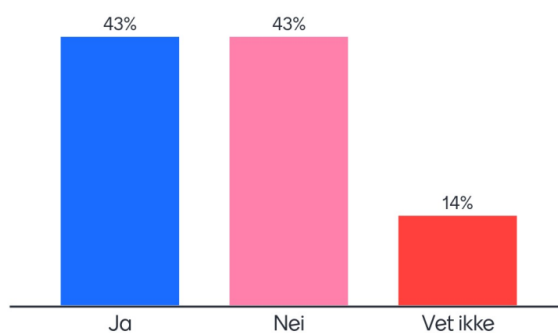
Har du god kjennskap til hvordan man skal røkte rensefisk?

Ja	57%
Nei	33%
Vet ikke	10%
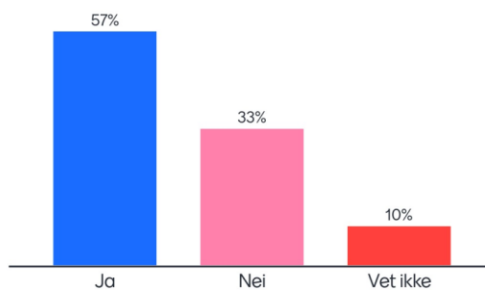
Hvilke av disse artene vil sannsynligvis fungere best som lusespiser på kalde temperaturer?

67%

33%

0%

Rognkjeks   Berggylte   Vet ikke
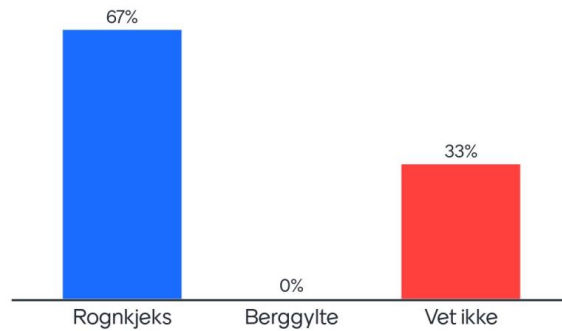
Hvilken av disse sykdommene er IKKE en virussykdom?

43%

33%

19%

5%

0%   0%

ILA   Pnkreas   Yersiniose   IPN   Hjertesprekk   Vet ikke
       sykdom
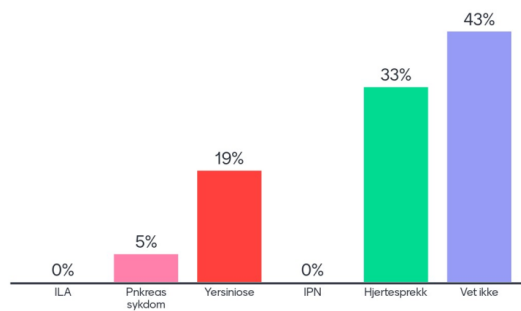
Kjenner du kravene til frekvens på lusetelling?

65%

25%

10%

Ja   Nei   Vet ikke
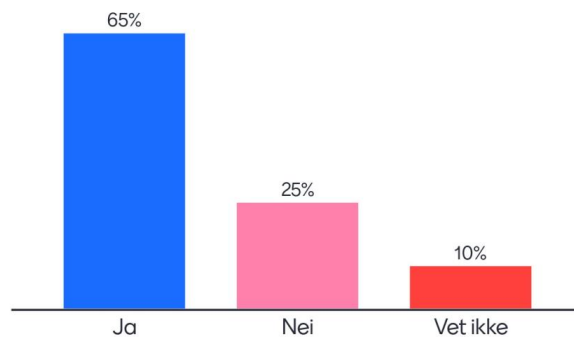
Kjenner du grenseverdiene for avlusing?

	67%	29%	5%
	Ja	Nei	Vet ikke
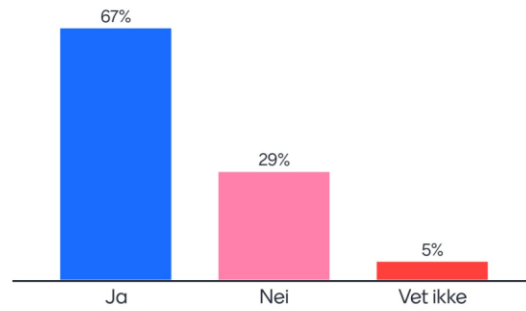
Hva er høyeste tillatte antall fisk i en merd?

5%	0%	76%	5%	14%
500000	300000	200000	150000	Vet ikke
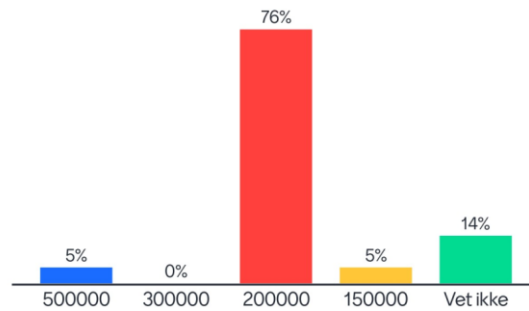
Hva er høyeste tillatte tetthet i en merd?

5%	0%	67%	29%
10 kg pr. m3	100 kg pr. m3	25 kg pr. m3	Vet ikke
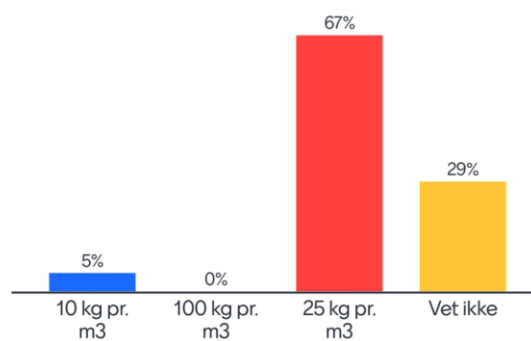
Er du i stand til å regne utforingsprosent?

Ja 38% — Nei 33% — Vet ikke 29%
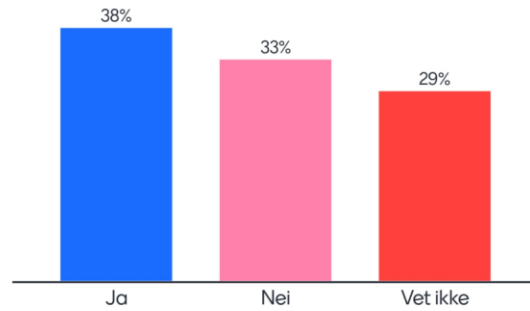
Hvilken av disse utforingsprosentene er mest sannsynlig i startforingsfasen?

0,50% 5% — 1,50% 43% — 4,50% 10% — 5,00% 0% — Vet ikke 43%
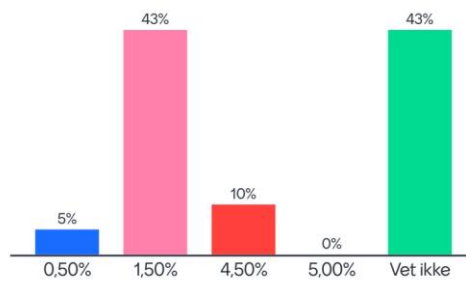
Kan du beregne tilvekst på fisk ut fra veksttabell?

Ja 14% — Nei 52% — Vet ikke 33%
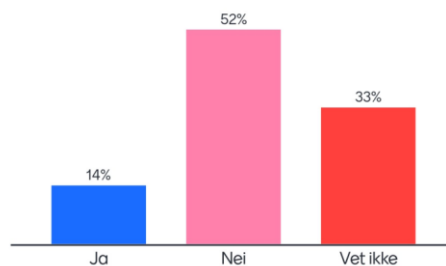
Hva er den viktigste energikilden i vårt kosthold?

Karbohydrater	Fett	Proteiner	Mineraler	Vet ikke
50%	10%	25%	0%	15%

Aminosyrer bygger opp?

Proteiner	Karbohydrater	Fett	Mineraler	Vet ikke
65%	0%	0%	0%	35%
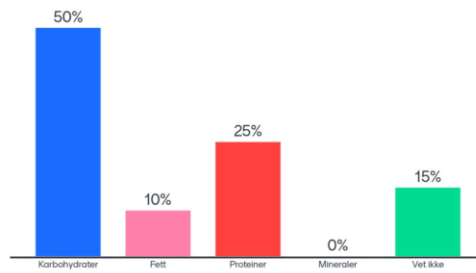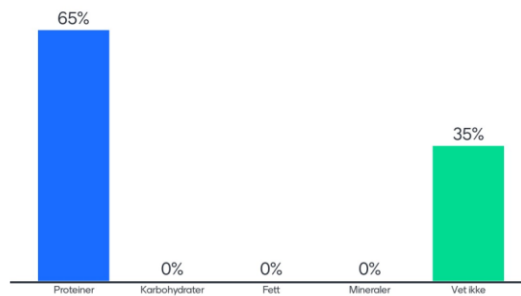
Appendix 2 – Examples of Word clouds

Gi en kort beskrivelse av hvordan produksjonen foregår i anlegget i dag. Beskriv også kort hvordan dere gjennomfører og dokumenterer

2.driftsregistreringer?

3.miljøregistreringer i anlegget.

5.Hva er uønskede hendelser?

stor dødelighet
ulykke med ansatte
skade på personell
oksygendropp
utstyr i not
dårlig fiskevelferd
strømstans
gjengroing av not
forhøyet dødlighet
svikt på utstyr
sykdomsutbrudd
klemskade
fiskedød
skade på utstyr
skade på fisk
hms avvik
vannlekkasje
personskade
h2s
skade utstyr
utstyrs havari
høy dødlighet
høye lusetall
rømming
brudd på kar
kjemikaliesøl
fall
personskader
skader
dødlighet
miljøforrurensing
sykdom
hull i not
rømning
feil på utstyr
kutt
ulykke
skade på not
avlusning
massedød
dårlig miljø
dødt vann
stress
dårlig velferd
manglende sikkerhetsutsyr
sluseavvik
personellskade
fortøyning som ryker
stans under operasjon
feil fórtype
sykdommer
noe som fører til avvik

18

6.Hvordan kontrolleres disse (overvåkes)

riktig utstyr til jobben
forebyggende arbeid
fórsenter - appetitt
oksygenregistrering
avviksbehandling
daglig røkting
målinger
kameratsjekk
notinspeksjoner
inspeksjon av not
kamerasystem
håndbøker
gode rutiner
sjekklister
sja
god komunikasjon
erfaring
ns9416
sensorik i kar
overblikk
sikringer
sop
prosedyrer
utstyrskontroll
prøvetaking
overvåking
miljøkontroll
nivåsenor
risikovurderinger
god hms
kvalitetssystem
instrukser
morgenmøte
sjekking av utstyr
vedlikehold
lusetelling
overvåkning
styresystem
vannprøver
inspeksjoner
vedlikeholdssystem
inspeksjon av ramme
daglig rrr
brukerhåndbok
registrering
aggregattesting
daglig runde
nøtlogger
daglig sjekk

16

7.Forebyggende tiltak

avvikshåndtering
integrert notovervåkning
ordentlig runde på ring
god kontroll på båter
god komunikasjon
brukerhandbok
kvalitetssystem
lusetelling
avvikhåndtering
risikovurderinger
kommunikasjon
god opplæring
ns9415
sja
opplæring
risikovurdering
gode hms-holdninger
ta det rolig
vær nøye
hms
god hygiene
gode rutiner
ikke stress
vernerunder
sjekklister
rutiner
automatisk hull deteksjon
vedlikehold
prosedyrer
brukerhåndbøker
renhold
kontroll av utstyr
vernerunder
instrukser
ns9416
sha
sikker jobb analyse
kunnskap
kontrollmålinger
utvikle ny teknologi
internkontroll

14