



# Dynamic use of preventive measures in Mowi

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## Why preventive tools?

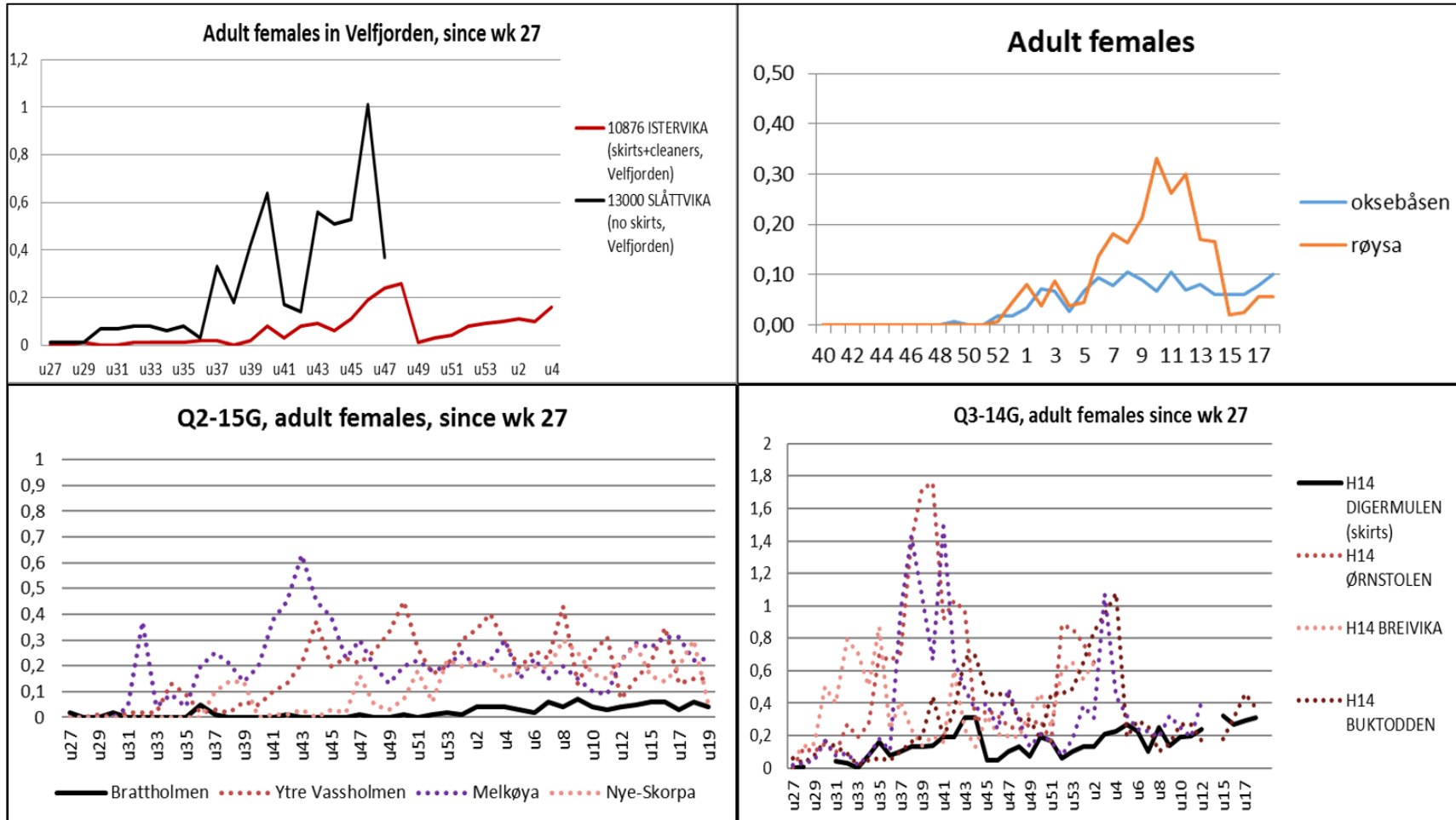
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### Introduction

- We of course have and need different tools for lice, but..
- Treatments come with certain challenges, including
  - Handling, stress, risk of mortality
  - Feed withdrawal and growth impacts
  - Potentially development of resistance
  - Significant costs
- We aim to transition from a treatment and «fire fighting» approach to a strategy of pro-active prevention and reducing lice infestations in all cages on the suitable farms



## Many good results with skirts...

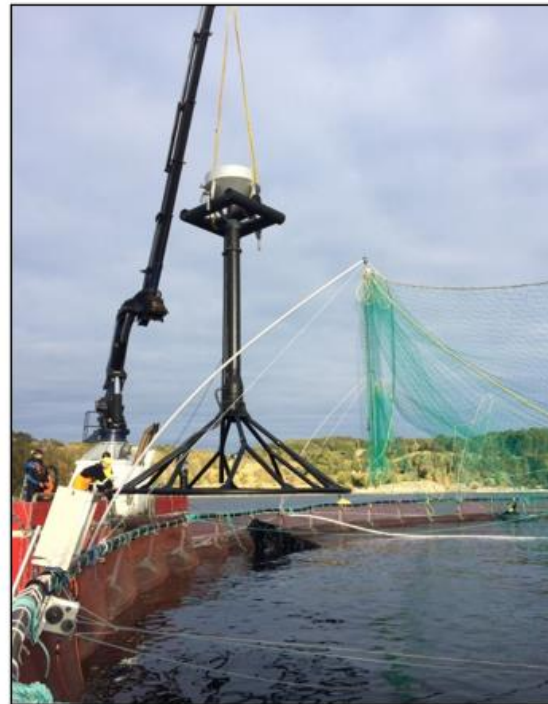


### In summary;

- Skirts have given better lice control in periods
- No significant negative impacts on welfare seen in our trials
- Water quality is key

## ... and deep lights and/or deep feeding

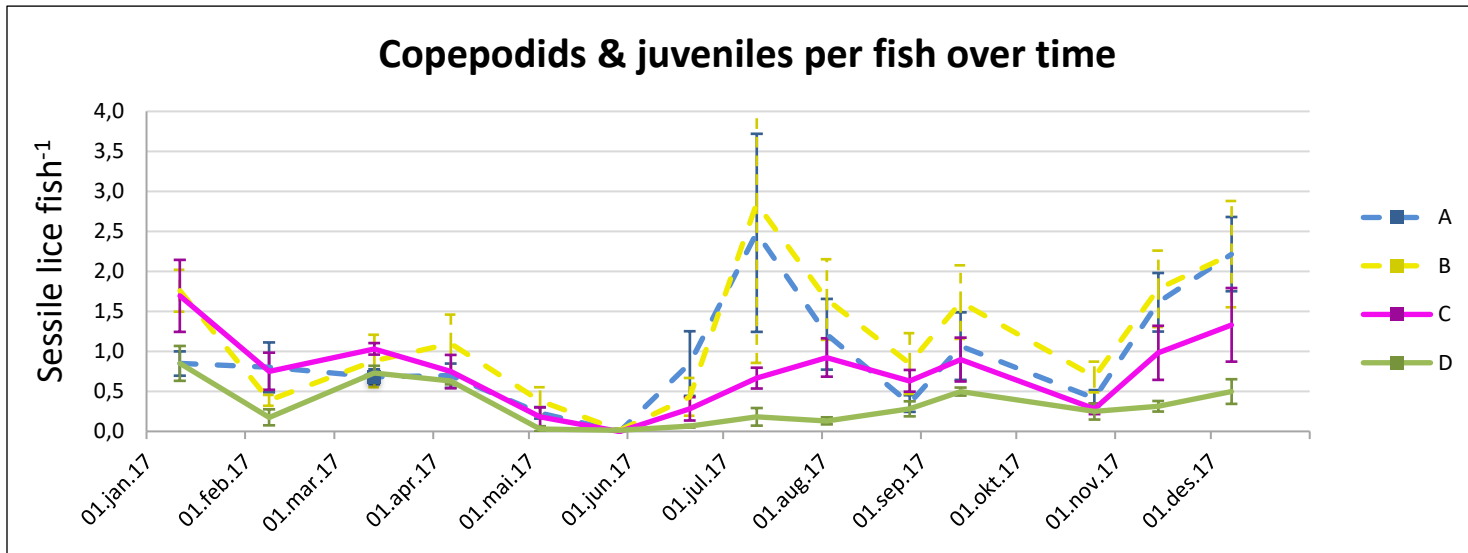
<b>TEST</b> Deep lights Deep feeding Cleanerfish	<b>CONTROL</b> Natural light Surface feeding Cleanerfish	<b>TEST</b> Deep lights Deep feeding Cleanerfish	<b>CONTROL</b> Natural light Surface feeding Cleanerfish
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### In summary;

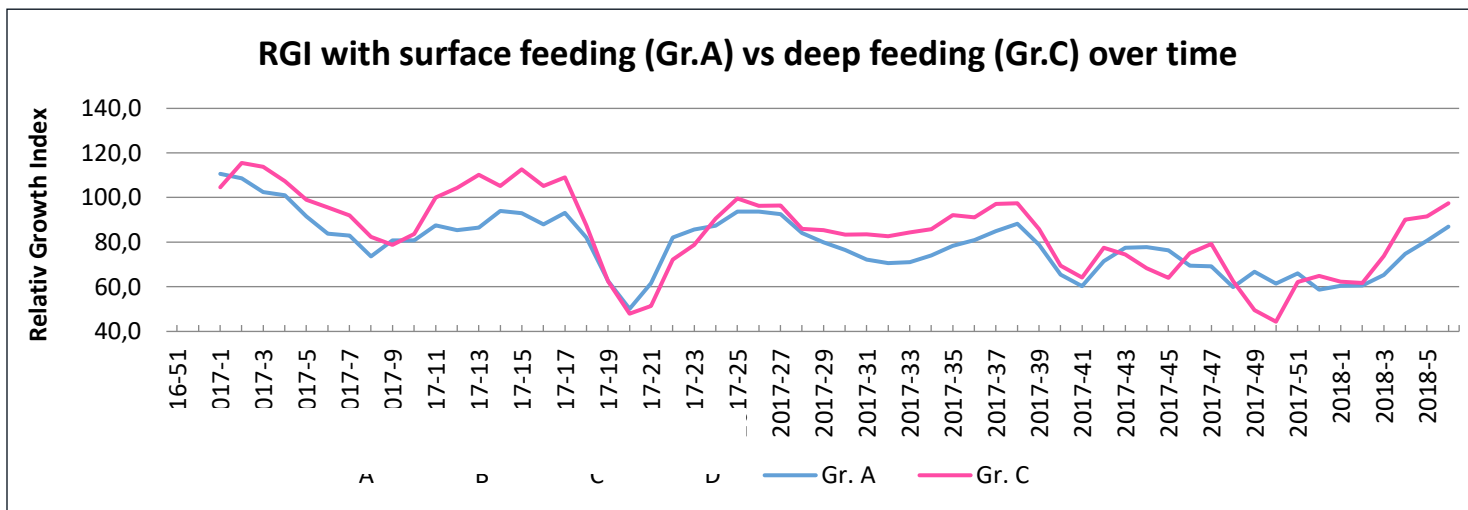
- We can alter fish behaviour and swimming depth in the pen with deep feeding and deeper placement of lights
- No negative impacts on welfare seen in our trials
- Need to be tailored to seasonal changes especially in temperature

## ... even better results with all tools combined (skirts+aeration+deep feeding+deep lights)

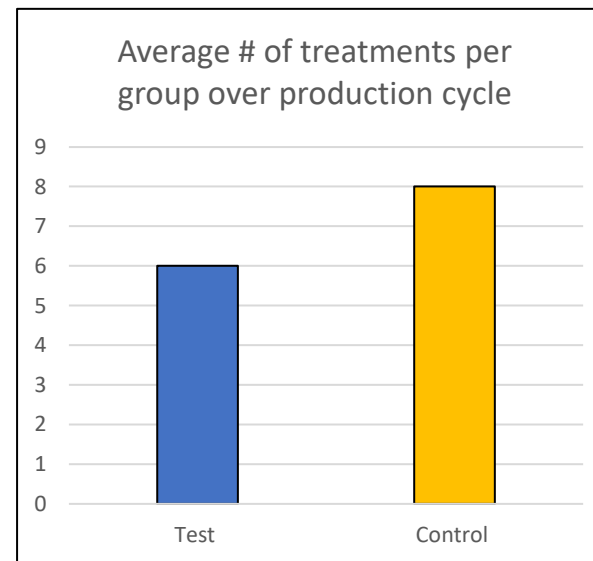
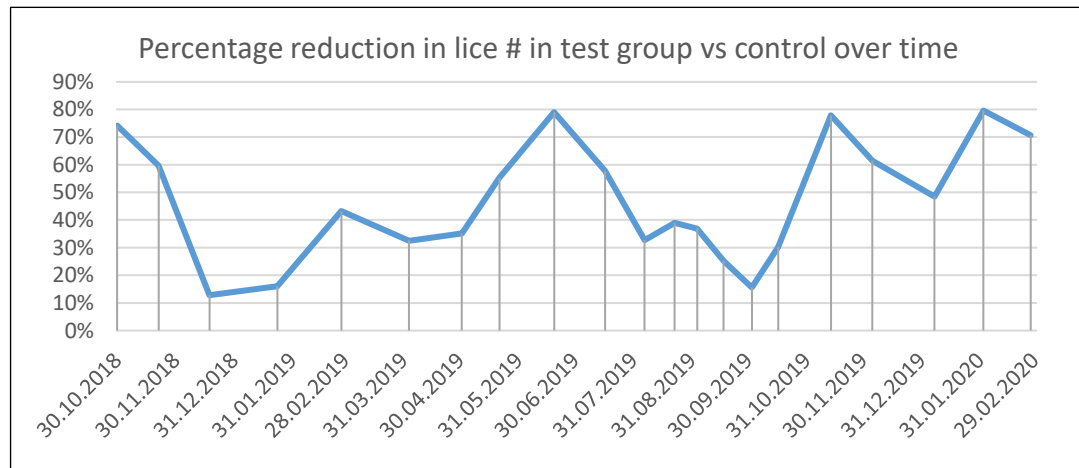
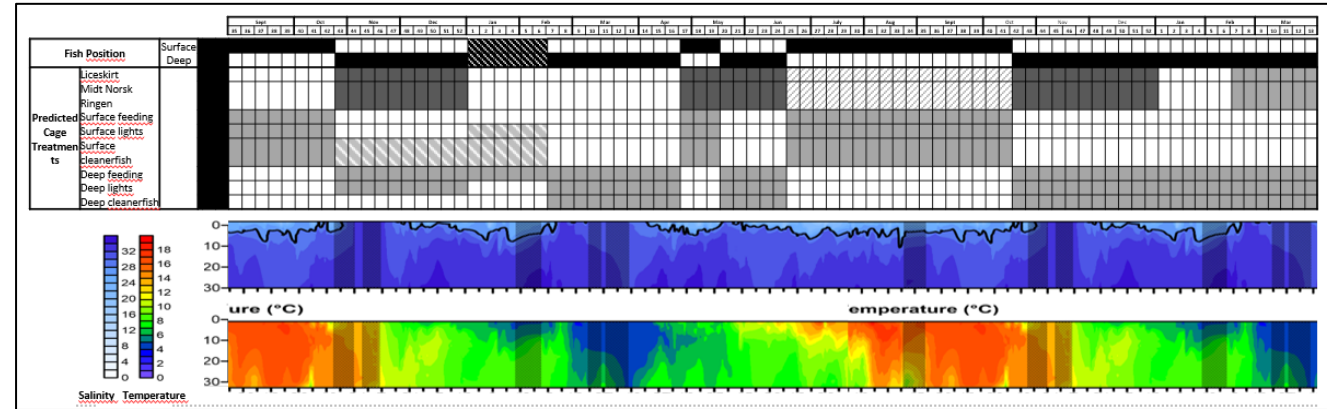
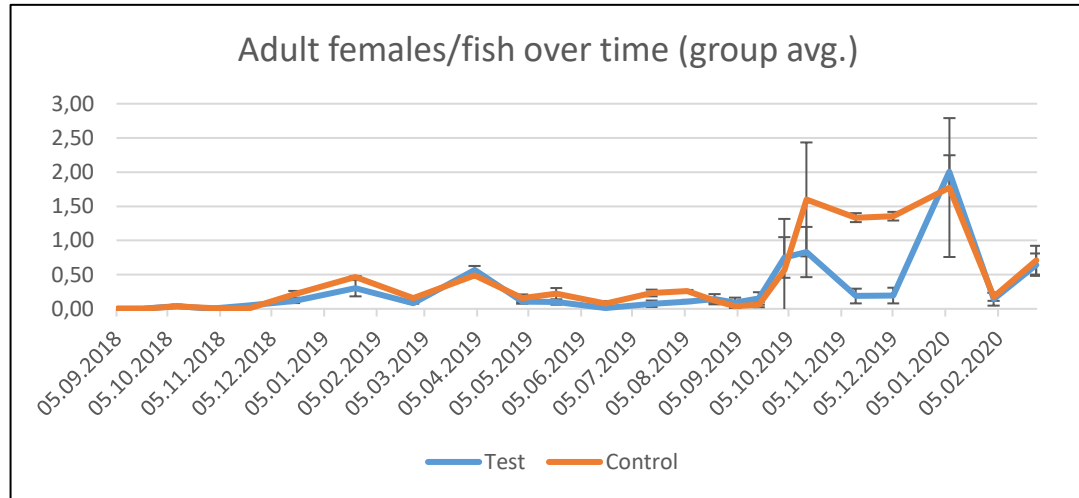


### In summary;

- Lower infestation with combination of preventive tools (**Group D**), over time but with seasonal effect
- No negative impacts on fish welfare shown in our trials
- No negative impact on fish performance. Growth better with subfeeder in some conditions.



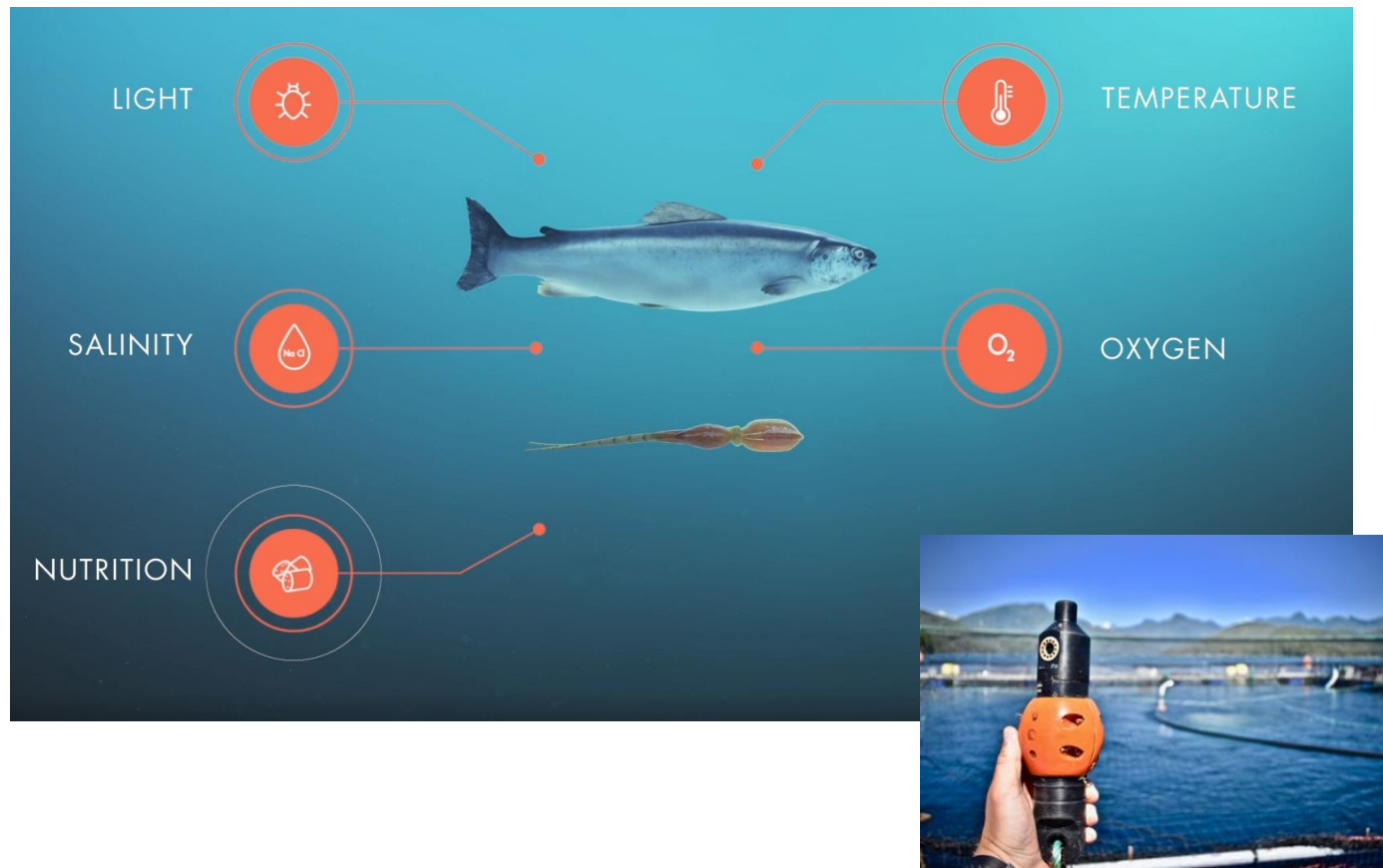
# Dynamic use of preventive tools: skirts+aeration+adjusted feeding+lights



## In summary;

- Consistently less lice in test group with Dynamic prevention
- Saved two treatments (25%)
- Lower mortality & no significant negative impacts on fish welfare

## Dynamic use of preventive tools - background

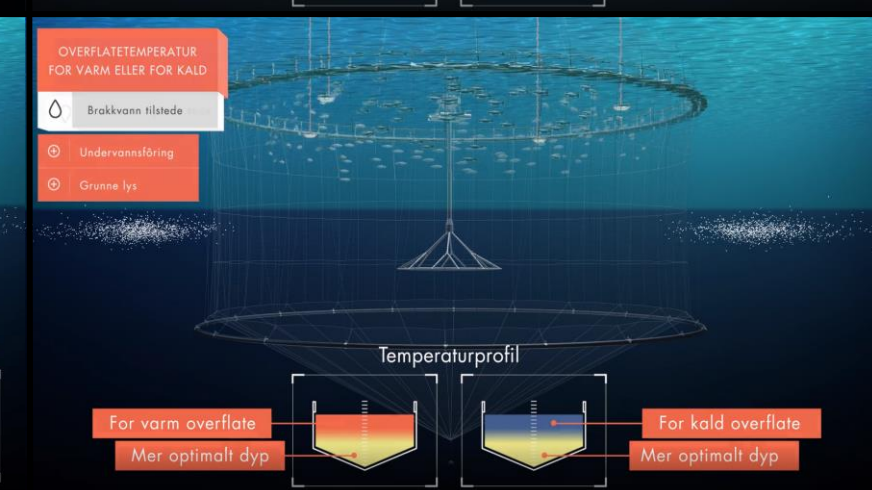
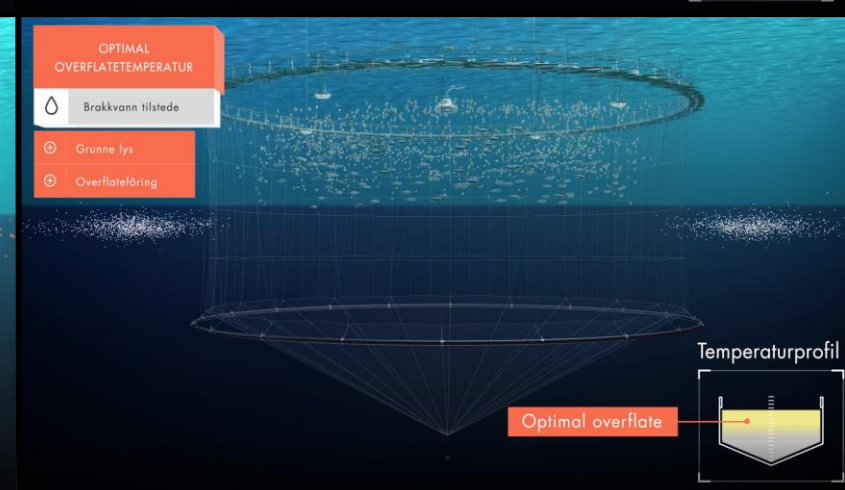
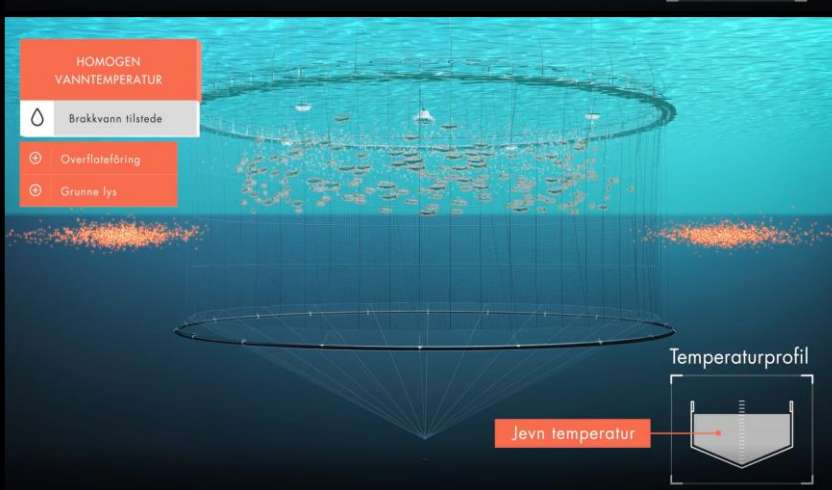
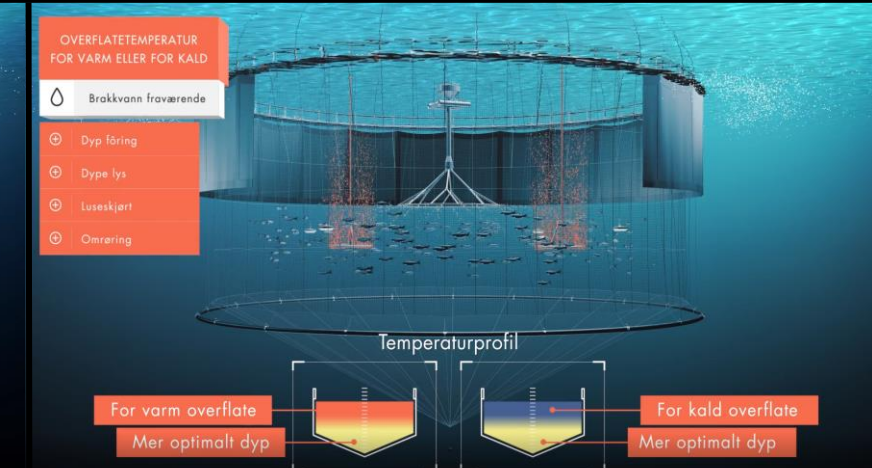
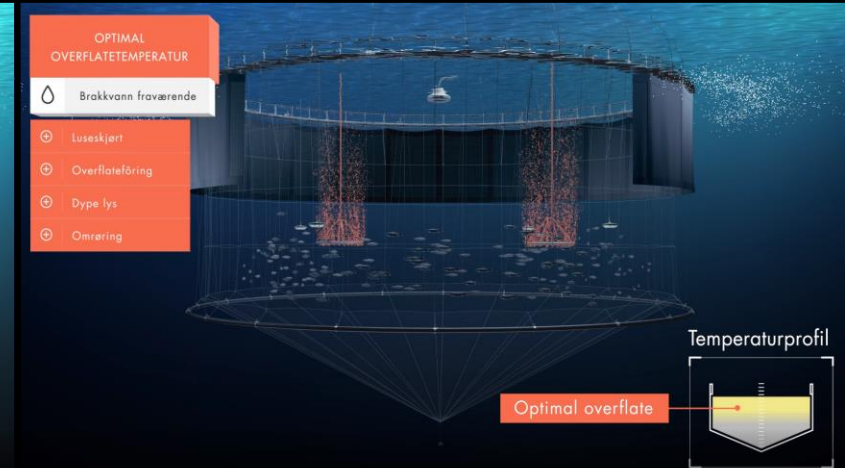
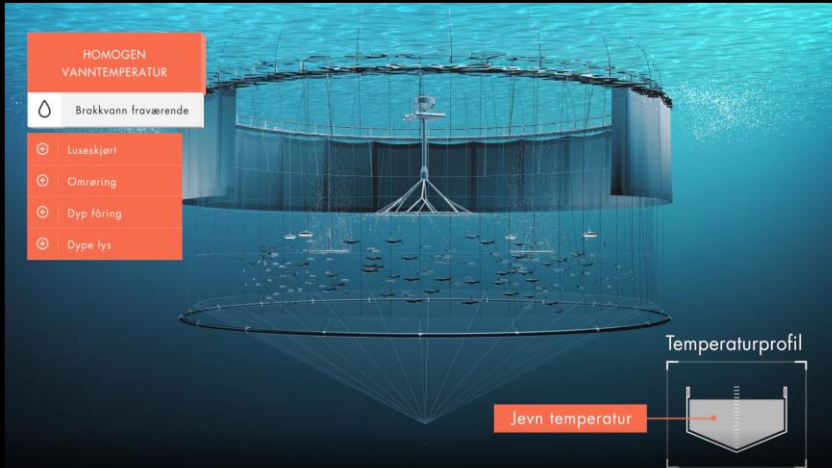


- **Main drivers of fish behaviour:**
  - Temperature
  - Feed
  - Oxygen
  - Light level
- **Main drivers of lice behavior:**
  - Salinity
  - Light
  - Temperature
  - Hydrodynamics
- Season, location & weather!
- Surveillance key for correct decisions

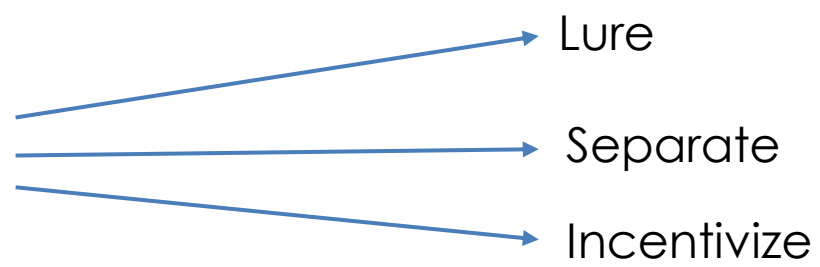
**Aim; adjust tools according to environment → separate fish and parasite as often as possible!**







	1. Homogenous temperature in water column	2. Optimal temperature in the surface	3. Optimal temperature deep
<b>A. Homogenous salinity in water column</b>	1A. Deep feeding, deep lights, skirt and aeration	2A. Surface feeding, deep lights, skirt and aeration	3A. Deep feeding, deep lights, skirt, aeration
<b>B. Brackish layer present down to 5m</b>	1B. Surface feeding, surface lights	2B. Surface feeding, surface lights	3B. Deep feeding, surface lights



# Dynamic use of preventive tools against sea lice

## Summary

### **Preventive tools**

- Prevention is better than frequent treatment; for fish health, welfare and fish performance

### **Behaviour**

- Behaviour of fish and lice is dependent on environmental conditions
- To make correct decisions, monitoring is essential
- Lure – Separate – Incentivize. As many fish as possible, as often as possible.

### **Change preventive tools**

- According to environmental conditions on site and use the tools optimally and dynamically
- Minimize amount of treatments



# Thank you

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