

**PROJECT:** ROBUST  
**SYSTEM:** Based on literature review including FW, CCS and S-CCS  
**PARTNER:** NORCE  
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## Photoperiod condition for robust smolt in FW

### HYPOTHESIS:

LD 16:8 gives optimum photoperiod condition for growth and feed conversion efficiency and causes least osmoregulatory disturbance and early maturation in smolts and post-smolts.

**DURATION:** 2020-2021

**FISH SIZE TESTED:** Up to 1.5 kg

**SALINITIES TESTED:** Fresh water, brackish water, salt water

### HIGHLIGHTS:

- Light that induces growth and maximum growth rate (in parr, smolts and postsmolt fish) is achieved by using continuous light.
- For smoltification, a minimum of 8 hours decrease in day length is necessary.
- In smolts and postsmolt fish, continuous light has minimum effect on maturation at lower temperature (<12°C).
- Continuous light induces maturation (in smolts and postsmolts) with temperature above 13°C and salinity above 20ppt.
- In smolts and postsmolts (seawater challenge tests), best feed conversion efficiency and osmoregulatory performance together with good growth is achieved around LD16:8.

### RECOMMENDATION:

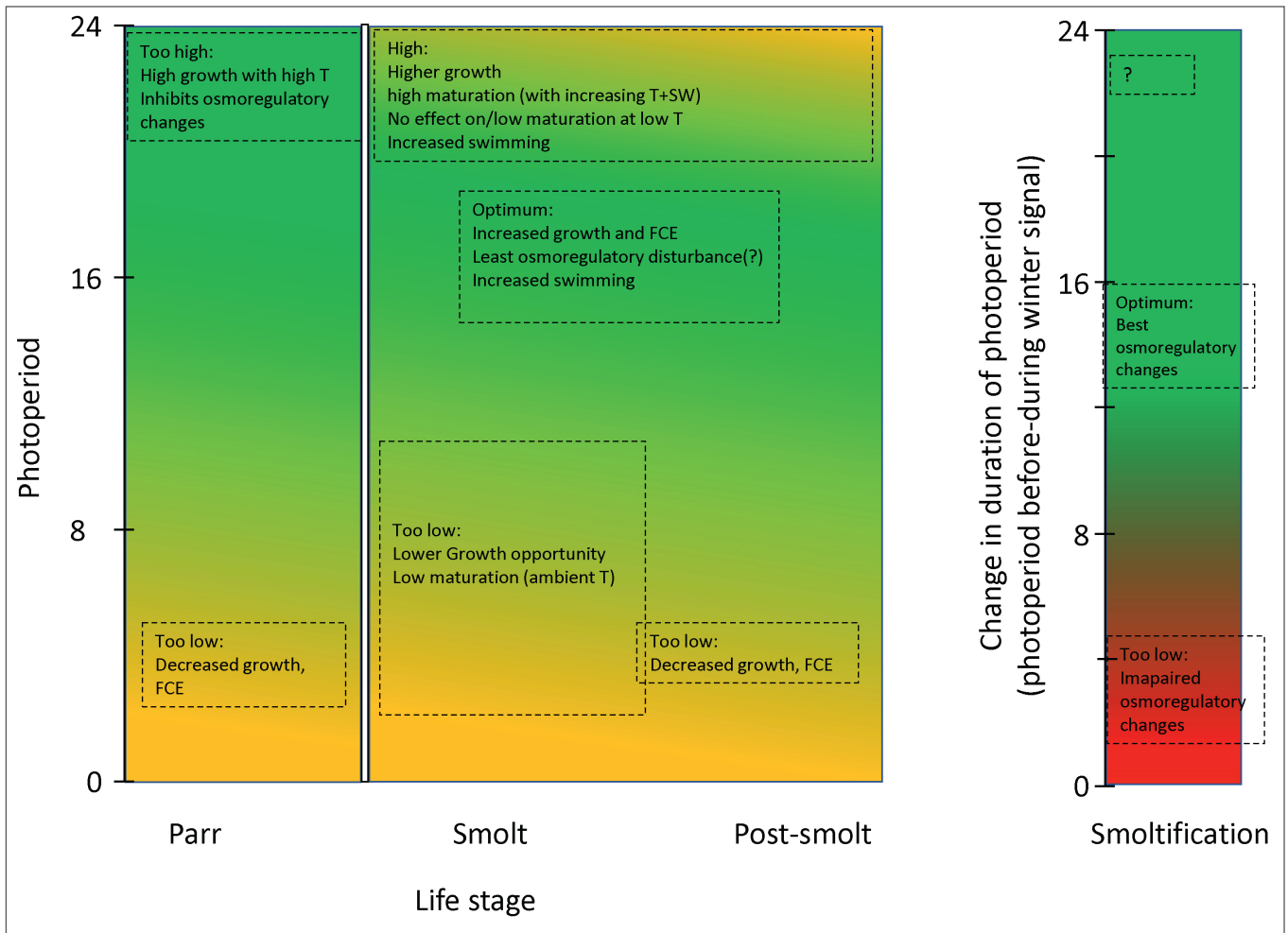
- A 16h day: 8h dark regime optimizes the fish growth, FCE and normal development and at the same time secure smoltification
- To minimize risk of maturation under 24h light regime: keep temperature < 12°C, and avoid salinities > 20 ppt.

### READ MORE:

Lal, P., Tang, P., Tronci, V., Gharbi, N., Nilsen, T.O. (2023) Impact of environmental conditions on growth and post-smolt performance of Atlantic salmon (In revision)



The factsheet is ready for implementation, but with the note that the testing has not been done for all industrial relevant conditions.



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