CYAnobacterial platform Optimised for bioproduction

Rainbow trout pigmentation experiment

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Experimental design:
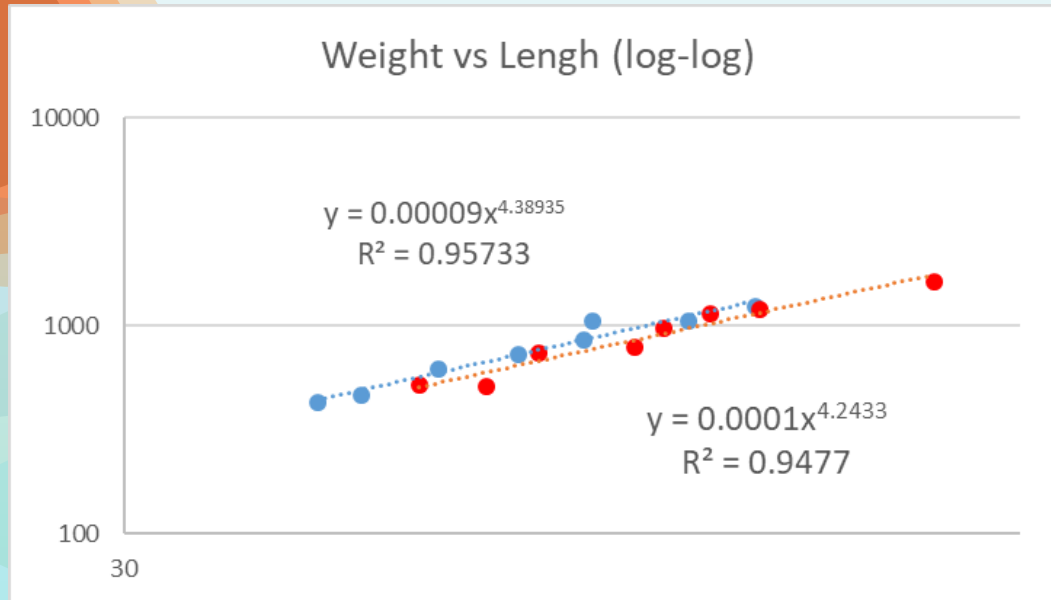
100 specimens of Rainbow trout (Oncorhynchus mykiss) were tagged and randomly dived in two pool:

- Pool A was fed with astaxanthin enriched food
- Pool B was fed with the same food, but without astaxanthin

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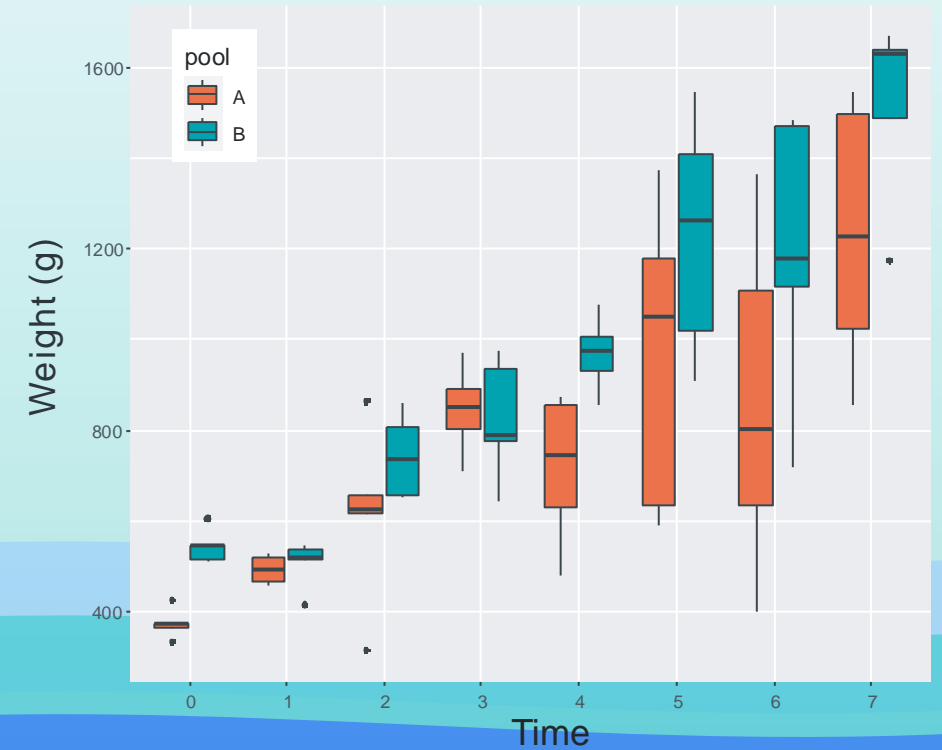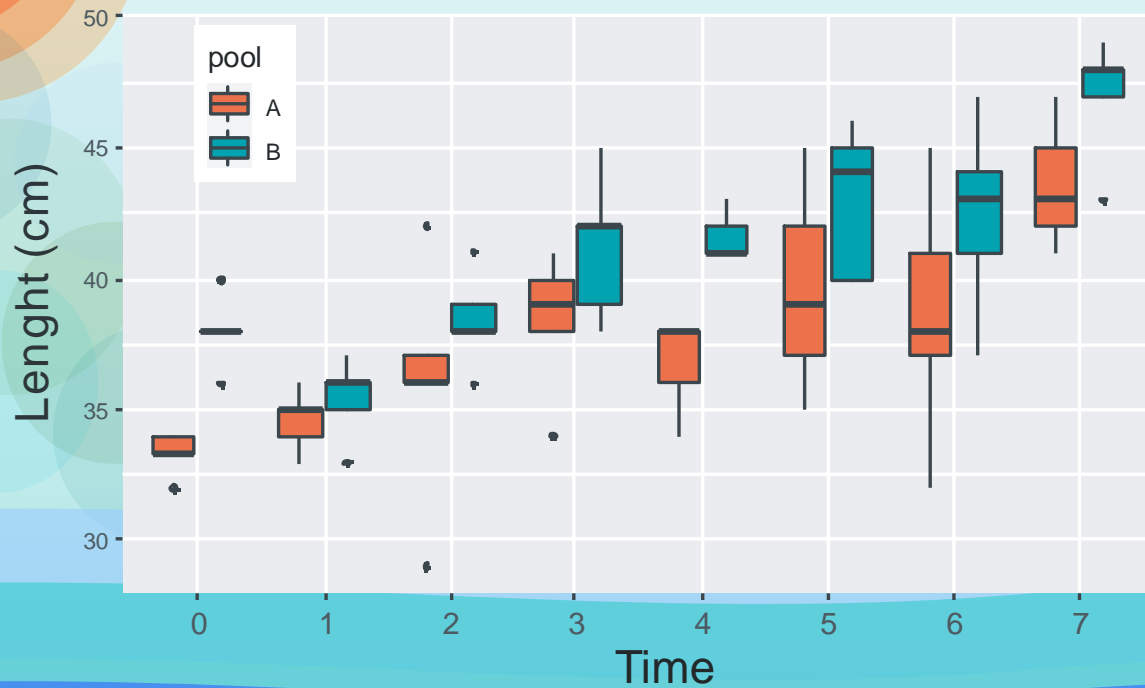
Experimental design: biometric differences among the two group were not significative

Condition factor (K) according to the formula

$$K=(W/L^3)*100$$ **L**= length in cm;

W= weight in g

Growth rate

Weight vs Lengh (log-log)

$y = 0.00009x^{4.38935}$
$R^2 = 0.95733$

$y = 0.0001x^{4.2433}$
$R^2 = 0.9477$

repeated measures ANOVA

	Pool	Time	Time:Pool
Lenght	*	***	ns
Weight	*	***	ns
K	*	***	ns

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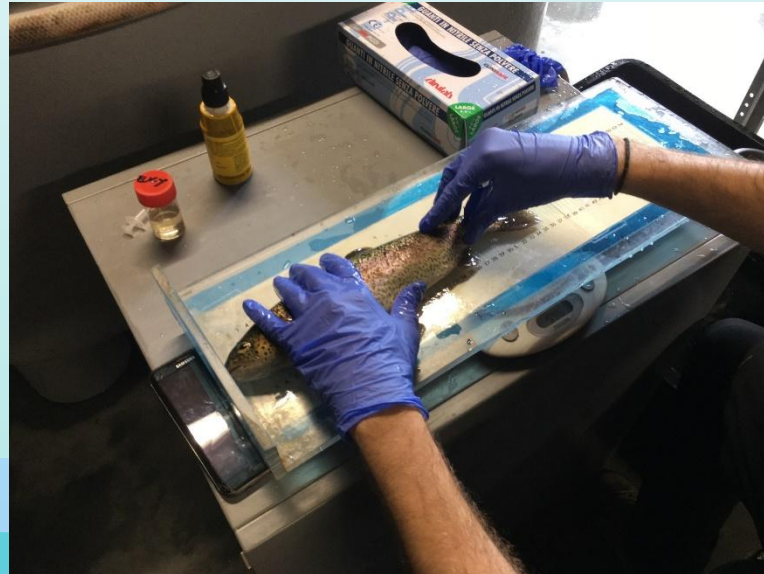Consiglio Nazionale delle Ricerche

ALGATECH
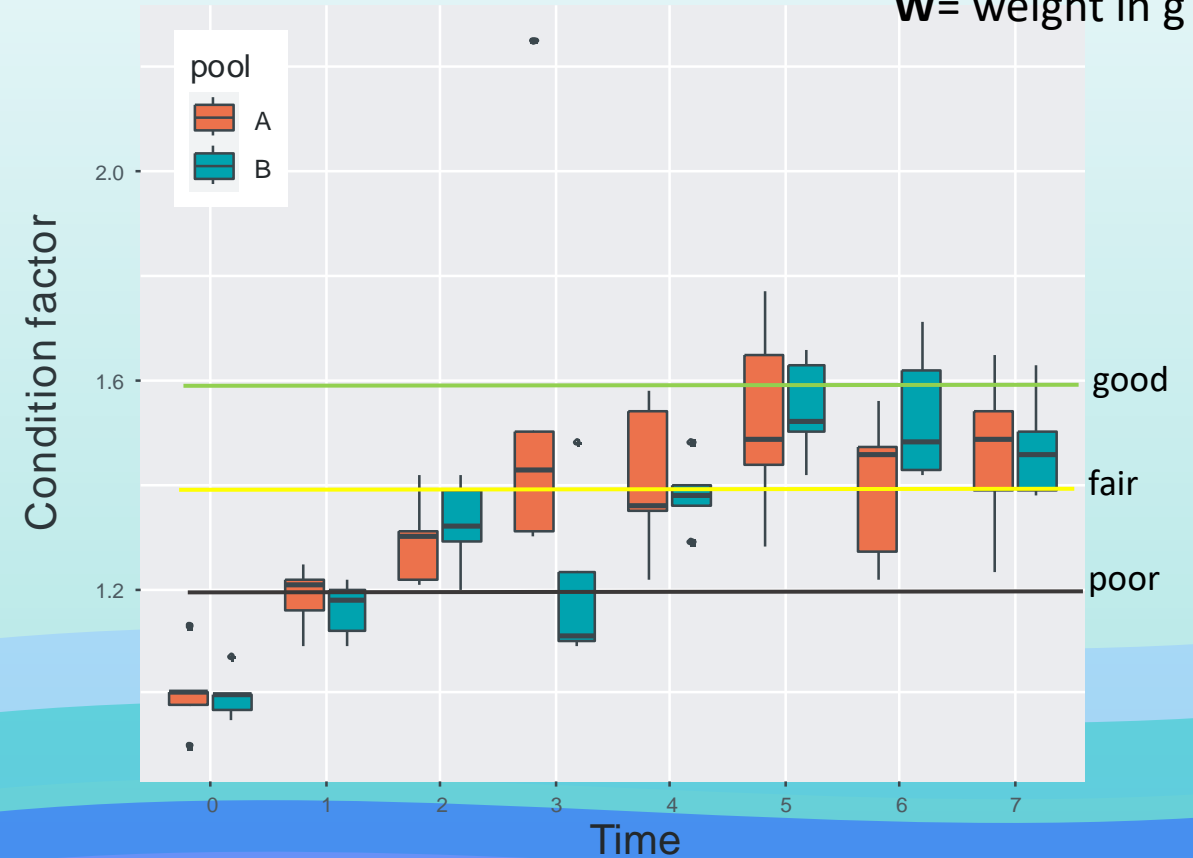
Fish sampling: At monthly interval all the fish were removed form the tank

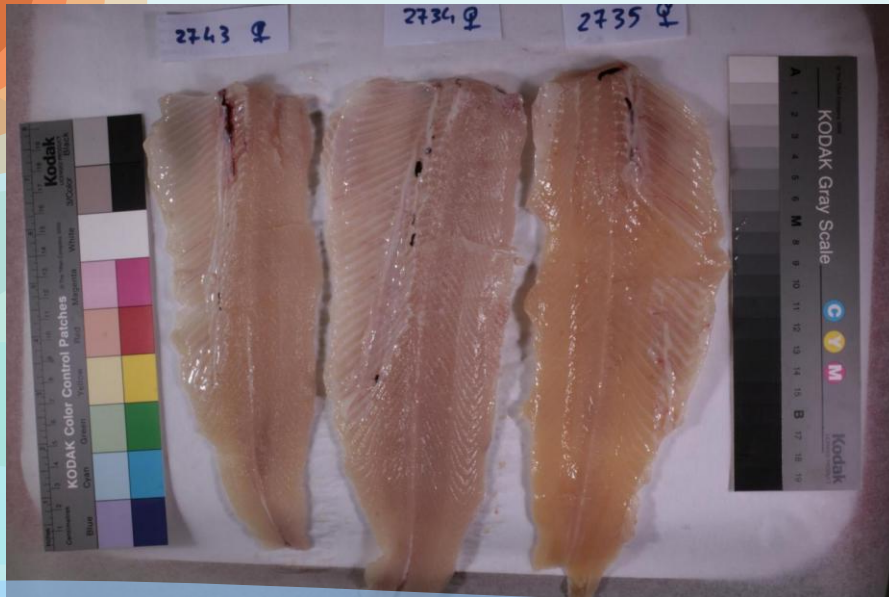biometrics data were collected

From each pool, five fish were sacrificed for the following test in the lab

Fish sampling:

Form each Pool a subsample of 5 specimens were sacrificed to test fillet parameters and the following operation were undertaken:

Fom each fillet a picture were taken under calibrated light and with color register
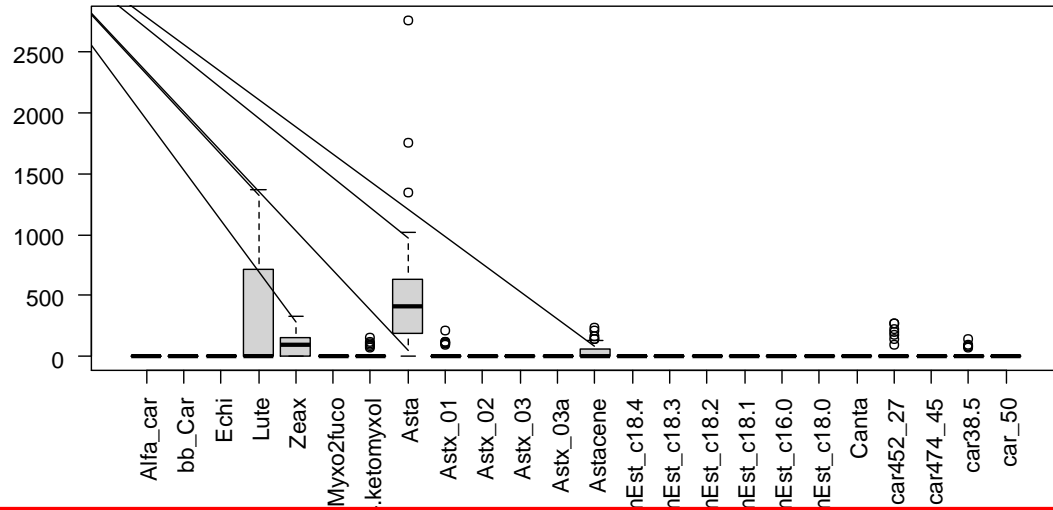
Each fillet was subsampled in three different area along its length, frozen and then analysed for

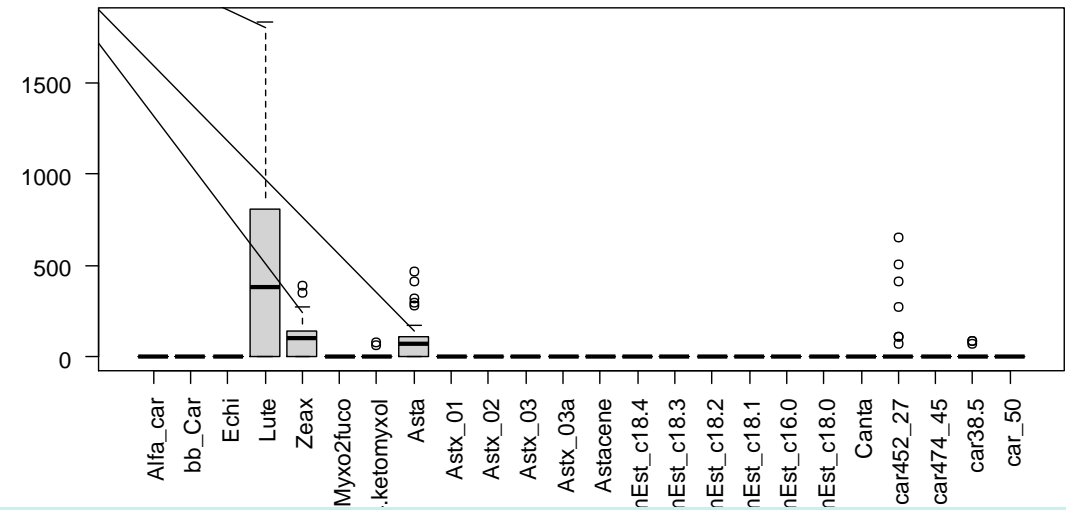- Carotenoid composition were evaluated by HPLC

T7 B3, tag 2832

T7 A4, tag 2722
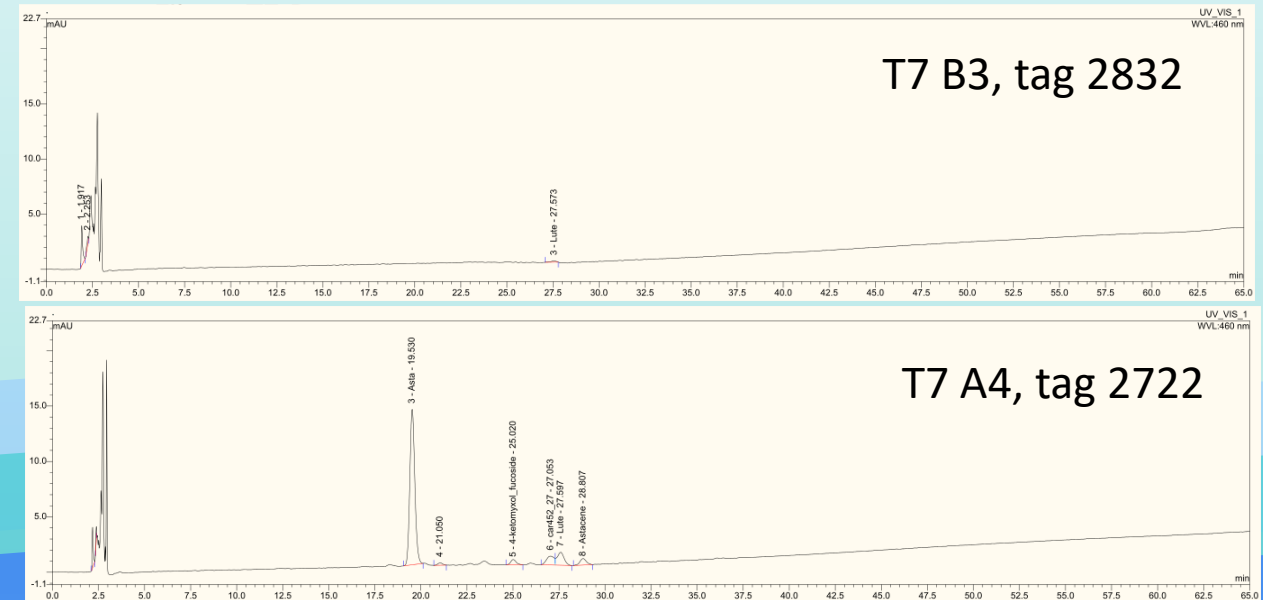
Comparison of the pigment composition in pool A and B

Cyao Pool A pgm

Cyao Pool B pgm

Hematococcous

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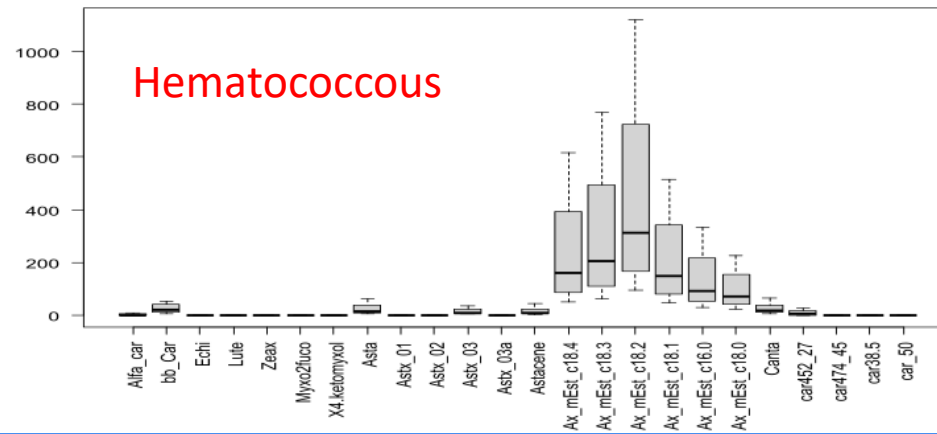
Car. tot - Comparison of the pigment composition in pool A and B
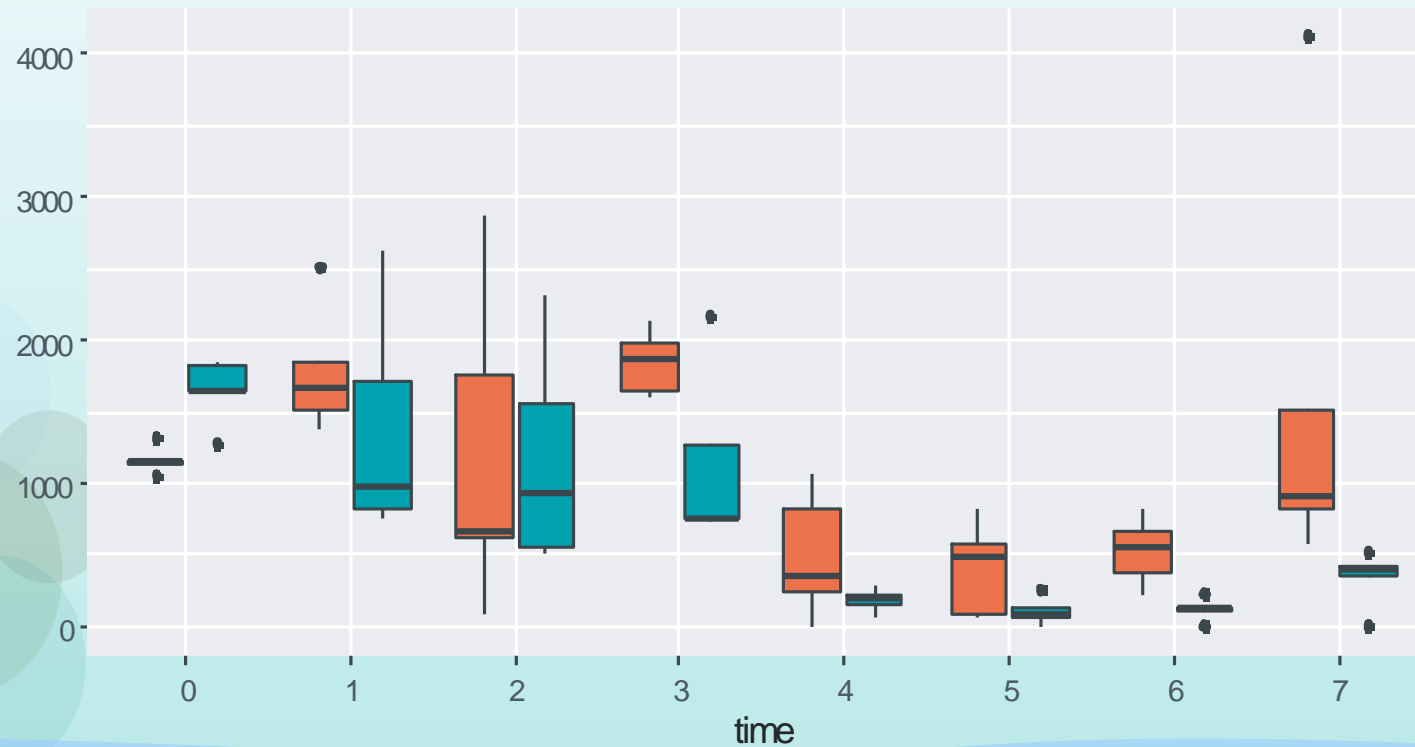
repeated measures ANOVA

	Pool	Time	Time:Pool
SomCar	ns	***	ns

	SomCarTot
T0	ns
T1	**ns**
T2	ns
T3	**ns**
T4	ns
T5	ns
T6	ns
T7	**ns**

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Lutein - Comparison of the pigment composition in pool A and B
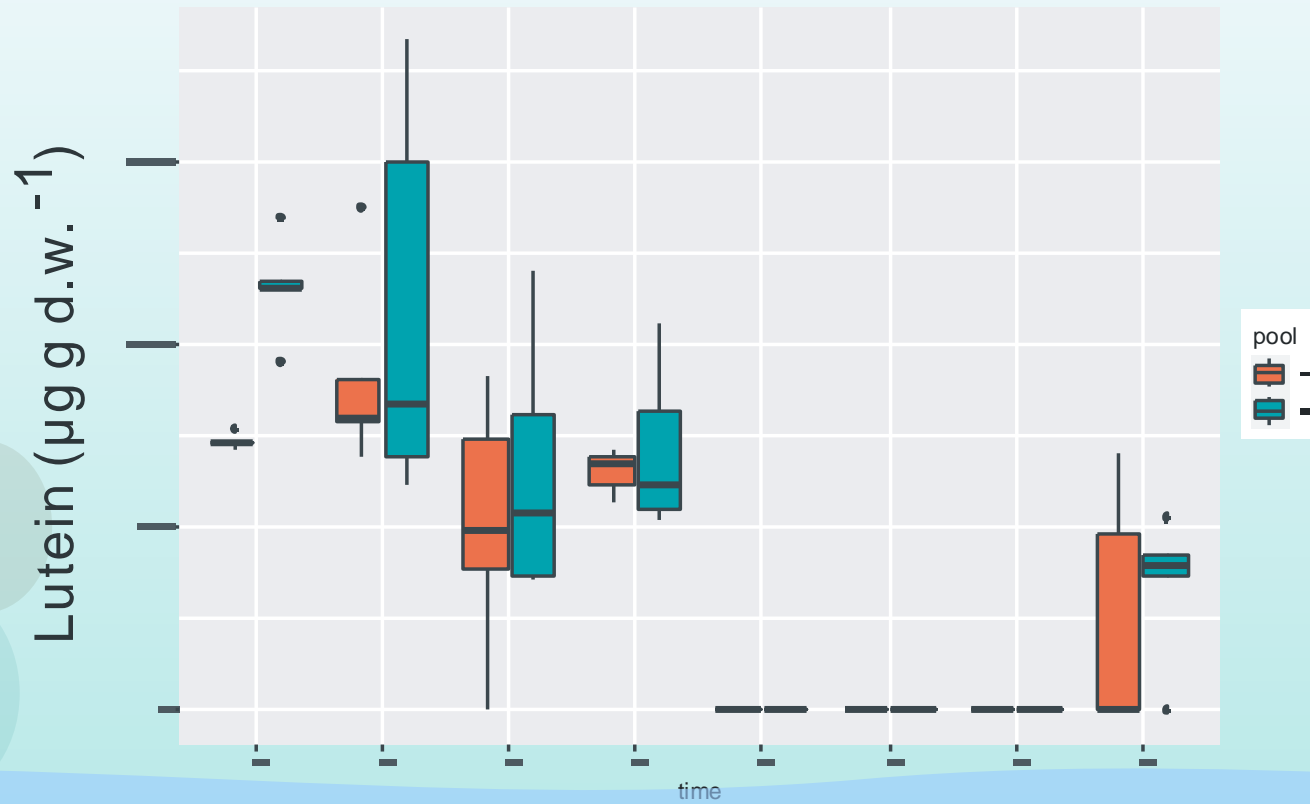
repeated measures ANOVA

	Pool	Time	Time:Pool
Lute	ns	***	ns

	Lut
T0	*
T1	ns
T2	ns
T3	ns
T4	ns
T5	ns
T6	ns
T7	ns

Astax - Comparison of the pigment composition in pool A and B
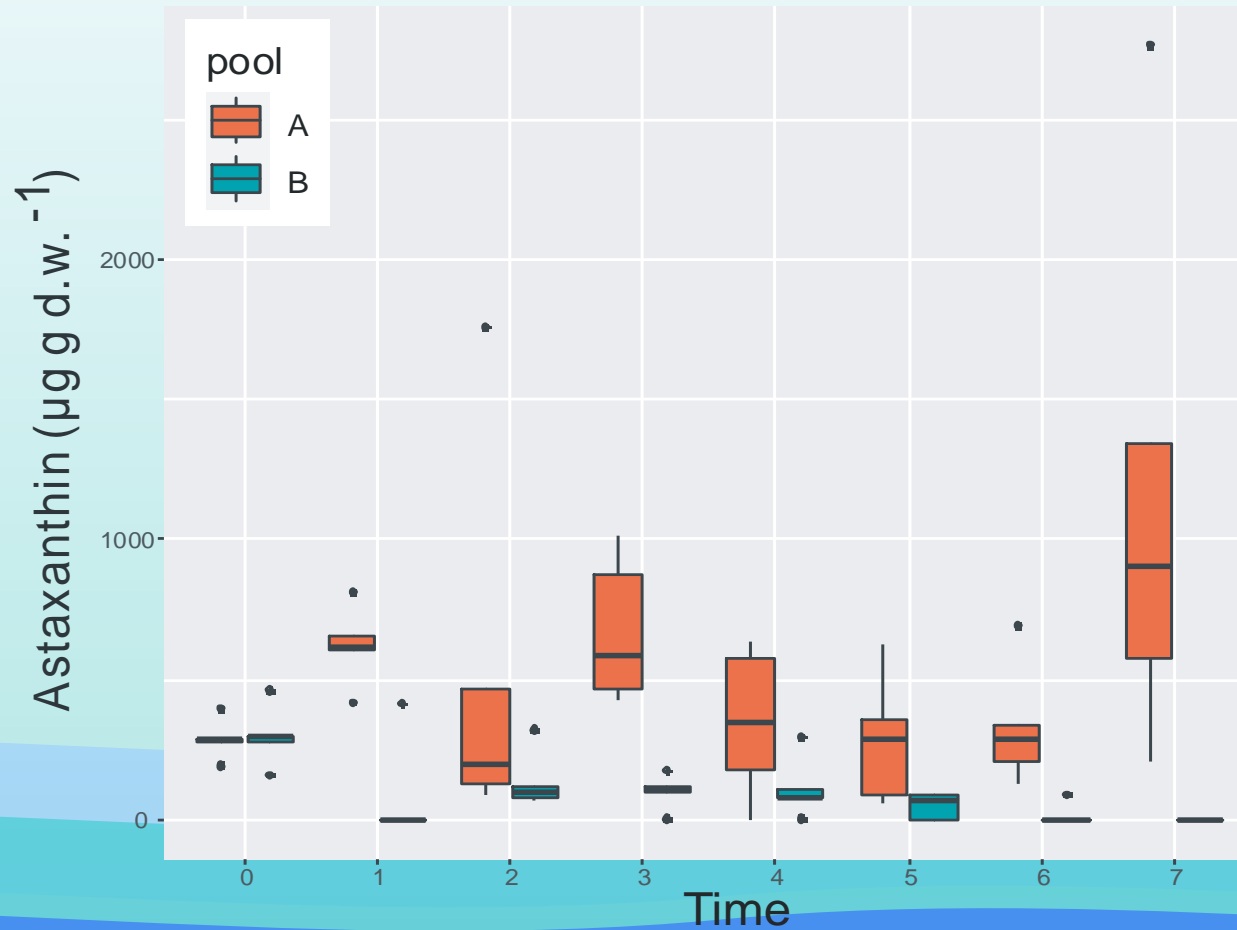
repeated measures ANOVA

	Pool	Time	Time:Pool
Astax	***	ns	ns

	A vs B
T0	ns
T1	*
T2	ns
T3	*
T4	ns
T5	ns
T6	ns
T7	***

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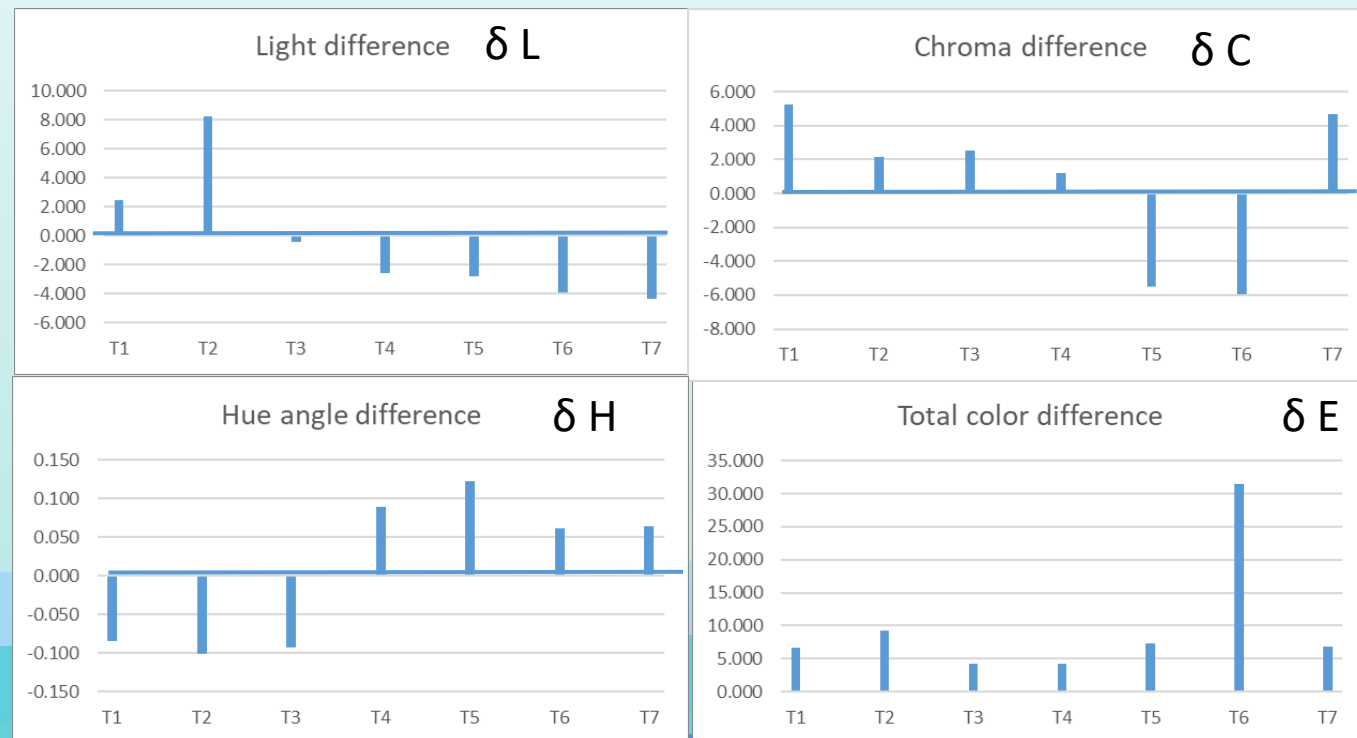# Comparison of the pigment composition in pool A and B

The colour of the fillets was measured from picture with Acrobat at four different spot along the fillet.
Colour parameters (L, a, b) were obtained and then to analyse the data based on the perceived colour by the consumer the derived colour parameters as in **Choubert et al, 2011**, J. of the Science of Food and Agriculture

The differences in colour were based on :

lightness difference (δ L);

chroma difference (δ C);

hue angle difference (δ H);

total colour difference (δ E)

Differences are calculated as

$$\delta = A_t - B_t$$

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Concluding remarks

- Fish in pool A increased their astaxanthin content

- There was an "interference" in the accumulation rate due to eggs production

….suggestions How better exploit these results…

- additional analysis, other statistic tests?

- Planning for a new experiments?

- ….???

Thank you for your attention