

Achieve the Perfect **Fillet Colour** with Alltech Coppens.



Enhance your production planning with the Alltech Coppens Fillet Colour Predictor for rainbow trout

Achieving the perfect shade of pink in fillets from pigmented rainbow trout can be a challenge. To help optimize this aspect of aquaculture production, Alltech Coppens developed its **Fillet Colour Predictor**, a tool designed to streamline the production process and help reduce

uncertainty at harvest. Rainbow trout is known as a premium product with a strong marketing position due to the rich pink colour of its fillets. This colour is acquired by adding astaxanthin to the diet, which accumulates in the fillet and subsequently creates the

desired colour. Although the process of colouration is well-understood, various dietary and environmental factors influence the final fillet colour — leading to uncertainty about whether the fillets will be adequately coloured at the time of harvesting.

Research on fillet colouring at Alltech Coppens

To gain a better understanding of the nutritional factors that affect fillet colouration, Alltech Coppens constructed a model that helps farmers predict the trajectory of fillet colouration when feeding Alltech Coppens feeds. In advance of creating the model, feeding trials were conducted at the Alltech Coppens Aqua Centre (ACAC) in the Netherlands. This was

done over the course of several years by feeding trials with fish feed containing various ingredient compositions and astaxanthin levels. Different growth and body composition metrics were assessed, and the fillet colour was monitored via SalmoFan™, a tool from DSM-Firmenich, that is recognized as the global industry standard for measuring colour in fillets.

Model development

Using the data obtained through the research trials, Alltech Coppens constructed a model that can predict fillet colouration based on several nutritional factors and farming conditions that are known to impact fillet colouration. The factors considered in the model include:

- ✓ **Water temperature**
- ✓ **Feeding level**
- ✓ **Feed type**
- ✓ **Feed conversion ratio**
- ✓ **Days of feeding**

These various factors can be incorporated into a model farming situation to better predict fillet colouration over a certain time.

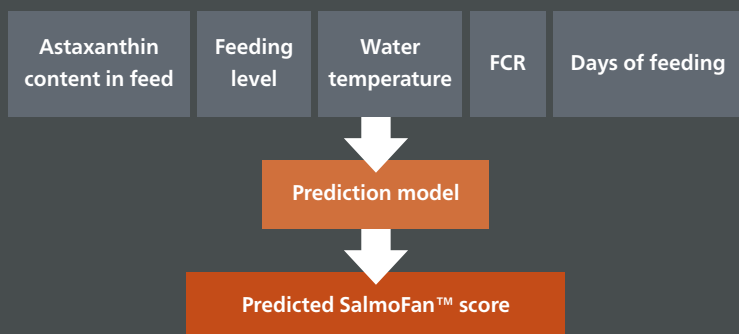


Fig. 1 Conceptual layout of the Alltech Coppens Fillet Colour Predictor for fillet colouration.

**SalmoFan™ field trial
Actual vs. predicted score**

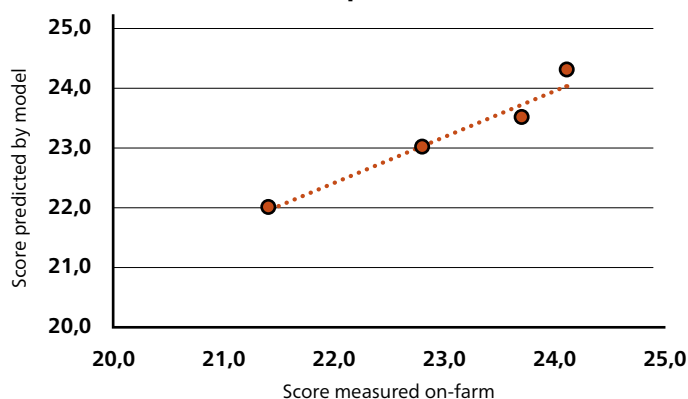


Fig. 2 Practical validation of Alltech Coppens SalmoFan™ score predicted by model compared to the actual SalmoFan™ score measured on farm.





To find out what the Fillet Colour Predictor could do for your farm, please contact your Alltech Coppens sales representative.



To learn more about the most influential factors and astaxanthin in farmed trout, please visit the Alltech Coppens website.

The model was validated through historical data and field tests in close cooperation with customers who produce pigmented rainbow trout. We worked intensively together throughout the development and testing process to ensure that the model would adequately address on-farm challenges and provide accurate and practical results.

The on-farm comparison between the Fillet Colour Predictor and the

actual measured scores demonstrated that the model accurately predicted fillet colour over time in fish weighing between 400 and 800 grams. Moreover, from the experimental and historical data of the ACAC, it can be concluded that the model is consistent when producing table-sized rainbow trout with a harvest weight of 350 grams. These results show that the model can be used by fish farmers as an indicative tool for production planning from rainbow

trout weighing 100 to 150 grams and up to an end weight of 800 grams.

Examples of several farming operations whose SalmoFan™ score was calculated by the Fillet Colour Predictor are included on the last page — but it's important to consider that many other factors can influence the SalmoFan™ score as well.

Optimize fillet colouration for higher profits

By using the Fillet Colour Predictor, you can adjust your feeding strategies more precisely to achieve optimal fillet colouration when it matters most. This helps ensure better product quality — which, combined with timely market entry, ultimately leads to stronger pricing, reduced waste and higher profit margins.

Ready to take the next step?

Get in touch with your sales representative to see how this tool can be used to boost your farm's performance. Let us help you enhance your production planning and achieve the perfect fillet colour every time!



*** The Alltech Coppens Fillet Colour Predictor is intended to provide assessments that can help producers improve their control over fillet colouration. The analysis provided through this tool is a prognosis and should not be viewed as a guarantee of results. Variations in farming conditions, genetics or management decisions can affect real-world outcomes.*

Example scenarios utilizing the Fillet Colour Predictor

Fillet colouration is affected by numerous factors that influence the number of days needed to reach the desired SalmoFan™ score. Included in the tables below are several example scenarios utilizing the Fillet Colour Predictor.



Situation 1 Effect of high-energy vs. medium-energy feeds

When comparing the two feeding scenarios below, the fillet prediction model indicates that achieving a SalmoFan™ score of 28 takes longer when using a medium-energy feed compared to a high-energy feed. This difference is the result of various factors. For instance, the astaxanthine concentration is considerably higher in the **high-energy feed (80 ppm)** than in the

medium-energy feed (60 ppm). Furthermore, the feeding level and feed conversion ratio (FCR) influence dietary astaxanthin intakes and, as a result, the eventual colouration of the fish. Of course, high-energy feeds are more costly, which means a cost-benefit analysis between feeding days in relation to feed type would be useful for the farmer to explore.

Fillet Colour Predictor	
Feed type	High-energy feed
Feeding level (g/kg MBW)	14,50
Water temperature (°C)	16
Fish size (g)	150
Feed conversion ratio (FCR)	0,90
Time (days) to reach SalmoFan™ score 28	62

Fillet Colour Predictor	
Feed type	Medium-energy feed
Feeding level (g/kg MBW)	15,60
Water temperature (°C)	16
Fish size (g)	150
Feed conversion ratio (FCR)	1,00
Time (days) to reach SalmoFan™ score 28	99

Situation 2 Effect of feeding level

A feeding period with 38 more days is needed to reach a SalmoFan™ score of 28 when using the lower feeding level, compared to the high-energy feed used in Situation 1. This illustrates the major impact of the feeding level on the eventual colouration of the fish. As such, lowering or increasing the feeding level can be used as a management strategy to reach the desired colour before a certain harvest date.

Fillet Colour Predictor: Lower feeding level	
Feed type	High-energy feed
Feeding level (g/kg MBW)	10,00
Water temperature (°C)	16
Fish size (g)	150
Feed conversion ratio (FCR)	0,90
Time (days) to reach SalmoFan™ score 28	100

Situation 3 Effect of water temperature

A fish's metabolism and, in turn, feeding level are significantly influenced by the water temperature. Compared to offering the high-energy feed at 16 degrees in Situation 1, offering the same high-energy feed at 8 degrees led to a 48-day increase in the feeding period to reach SalmoFan™ score of 28.

Fillet Colour Predictor: Lower temperature	
Feed type	High-energy feed
Feeding level (g/kg MBW)	6,80
Water temperature (°C)	8
Fish size (g)	150
Feed conversion ratio (FCR)	0,90
Time (days) to reach SalmoFan™ score 28	110