Skretting Nexus

no.15 - Winter 2013

OPTILINE PREMIUM

Special Edition

www.skretting.com.au

SKRETTING

Contents

Cover image:
Images from the latest Skretting Optiline Premium brochure

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www.skretting.com.au

Ready to roll!

James Rose
Managing Director, Skretting Australia

Life at Skretting is one of constant testing, trialling and developing. But every now and then a product comes along that just gives you goose bumps thinking about its potential. Optiline Premium is such a product … and it's ready to roll.

Our colleagues at the Skretting Aquaculture Research Centre have done it again. This time with the identification of metabolic activators that improve a salmon's ability to utilise diet digestible energy. Skretting has built this discovery into a new product called Optiline Premium and it is being rolled out across the salmon producing regions including Norway, UK, North and South America, Canada, and now Australia.

For our industry, in Australia and New Zealand, the Premium concept represents a significant step-up in performance across many attributes. It promises unprecedented fish performance and further reduction in environmental impact.

The launch of Premium has been the result of many months of work from the whole local Skretting team. It has involved capital investment and installing new plant infrastructure, sourcing new raw materials, developing new processes, new test equipment and methods and many, many hours of hard work to make it all happen. A great team effort.

Atlantic salmon is the most advanced aquaculture fish and we are developing a very strong understanding of its biology and requirements. As such, when Skretting has a new R&D hypothesis, we often test it on salmon first as it is easier to establish its response. Transferring our innovation with salmon to other species, taking into account different nutritional needs and health characteristics, can then be done at a faster rate based on this learning.

In this edition of Nexus, we also demonstrate the commercial gains with high energy diets fed to Barramundi. So the question is: how will Barramundi respond when we add the metabolic activators to this high energy feed? Watch this space…

MicroBalance™ protec™ nutrace SEA™ Sustainable Economic Aquafeeds

a nutreco company

MORE FISH
with less feed

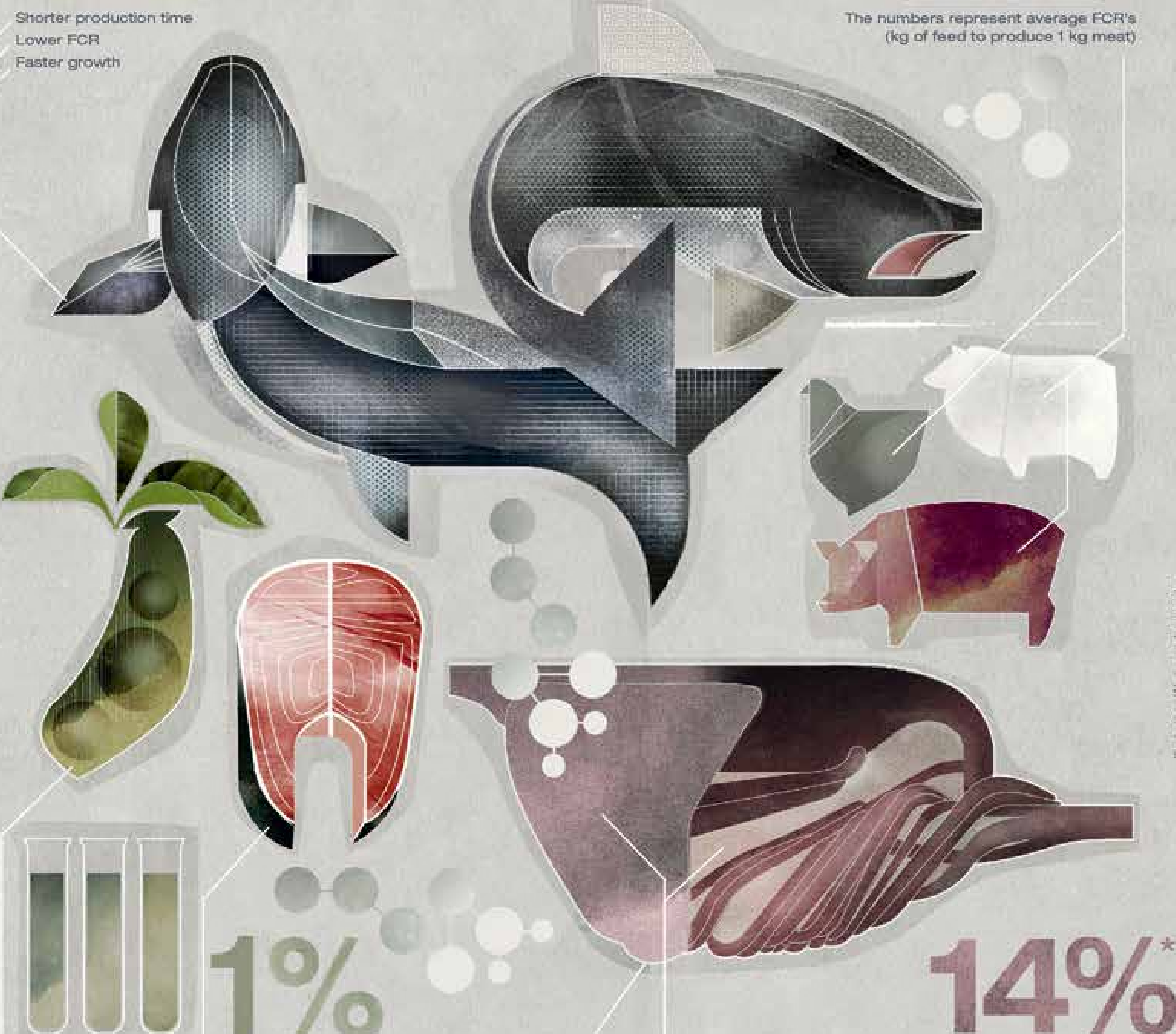
The most efficient farmed animal has become even more efficient! The new grower feed **Optiline Premium** is based on metabolic activators that increase the salmon's utilization of digestible energy. The result is higher slaughter yields and more edible fish.

OPTILINE PREMIUM
Strengthens the salmon's position as the most efficient farmed animal.

Lamb	6.30
Pig	2.63
Chicken	1.79
Salmon	1.15

The numbers represent average FCR's (kg of feed to produce 1 kg meat)

Shorter production time
Lower FCR
Faster growth



The efficiency improvement in resource utilization gives a more sustainable feed.

With **Optiline Premium** the growth potential is considered to be 114% which is 14% higher than the normal expected growth performance.

The improved distribution of fat leads to a higher slaughter yield.

FLEXIBLE RAW MATERIALS
Optiline Premium is formulated based on MicroBalance™, meaning that essential micro-nutrients found in fishmeal can be sourced from alternative raw materials.

METABOLIC ACTIVATORS
Optiline Premium is the first feed to contain metabolic activators that stimulate the fish's metabolism and energy-utilization. The metabolic activators help reduce visceral fat and increase fillet fat content. The improved distribution of fat provides higher slaughter yields and the fillets get larger and tastier with increased levels of omega 3.

SKRETTING

Feeding your passion for fish!

*Based on South East Tasmania experimental trial in winter 2012

A revolutionary breakthrough

Dr Rhys Hauler, Marketing Manager, Skretting Australia

FEED BREAKTHROUGH: PROVIDING MORE FOR LESS

The new winter grower feed, Optiline Premium, is based on metabolic activators that stimulate the fish's metabolism and improve the salmon's ability to utilise digestible energy. Small and large-scale trials in Norway showed key micro-nutrients added to salmon grower feed reduced the feed conversion ratio (FCR) and increased growth rate and slaughter yield, resulting in more marketable salmon. In addition, fillet analysis revealed that the micro-nutrients also raised the level of the omega-3 fatty acids EPA and DHA in the muscle.

Skretting applied these findings in the new salmon grower feed Optiline Premium. The product has been introduced into the Norwegian, UK, Canadian and Chilean markets, and trialled in Australia in 2012. With increased growth, fillet yield and reduced FCR, Optiline Premium can deliver a significant hike in profitability for salmon farmers.

WHAT ARE METABOLIC ACTIVATORS?

Optiline Premium is made based on a breakthrough discovery at the Skretting Aquaculture Research Centre (ARC): our scientists have discovered micro-ingredients that increase the fish's utilization of digestible energy. The metabolic activators are natural substances present in specific raw materials. When combined correctly, these substances positively impact the fish's physiology. More fat is being stored in the edible parts of the fish rather than being lost in the gutted parts of the fish during slaughter.

> Fish fed Optiline Premium resulted in faster growth and lower feed conversion accompanied by consistent one per cent increase in fillet yield

Skretting ARC has built substantial knowledge on the ways in which micro-nutrients affect fish physiology in recent years. For example, their work led to the MicroBalance™ concept that brought the option to manufacture feeds with far lower levels of fishmeal while maintaining feed performance. This latest breakthrough discovery by our scientists at Skretting ARC means we can further boost that performance.

INCREASED DIGESTIBLE ENERGY FOR AUSTRALIAN OPTILINE PREMIUM

Skretting has maintained a strategy of raising the energy density of diets by formulating with a higher level of fat. For Optiline Premium at Skretting Australia, we introduce an even greater digestible energy diet with the use of a vegetable oil as the primary source of dietary fat. Vegetable oil reduces the saturated fatty acid content of the diet, resulting in increased fat digestibility and increased diet energy density, particularly over winter water temperatures (Figure 1). For a high fat content diet like Optiline Premium, the inclusion of a vegetable oil will deliver an additional 2 mega joules of digestible energy per kilogram during colder winter months.

Rhys Hauler, Marketing Manager of Skretting Australia says "Conventionally we expect each extra mega-joule of digestible energy to increase growth rate by three per cent and lower the FCR by 0.04 in Optiline Premium.

through in feed

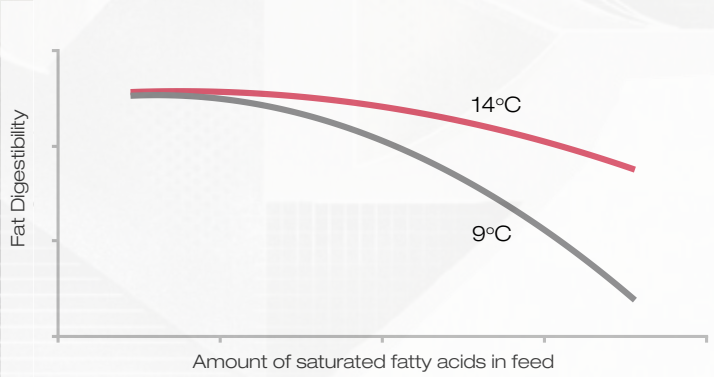


Figure 1. Fat digestibility at different temperatures in salmonids.

Metabolic activators improve these relationships further; suggesting a new parameter of metabolically available energy in Optiline Premium.

Optiline Premium has the equivalent digestible energy content of Norwegian Atlantic salmon diets, and we can expect to achieve the superior fish performance, particularly the FCR's typically achieved in Norway and the UK. With this combination of metabolic activators and improved winter digestible energy content, our salmon customers can now make the very best of our ideal winter growing conditions.

MULTIPLE TRIALS

Metabolic activators have been extensively tested in Norway in both small and large-scale laboratory experiments and commercial-scale experiments, and repeatedly shown promising results. In the trials, a prototype Optiline Premium formulation was compared with Skretting's established Optiline grower feed.

Fish fed Optiline Premium resulted in faster growth and lower FCR accompanied by a consistent one per cent increase in fillet yield compared to the standard winter feed. "Basically, you get more fish from less feed," says Sissel Susort, Product Manager of Skretting Norway. "That's good for the farmers and for sustainability as it clearly demonstrates that the feed raw materials are utilised more efficiently. For example, feeds with ten per cent fishmeal, based on vegetable protein replacement, delivered a FCR below 1 for a 6.3kg salmon."

MORE OMEGA-3 IN THE RIGHT PLACE

"When we analysed the fillets we revealed an unexpected bonus. The EPA and DHA content was three to six per cent higher in g/kg with Optiline Premium. Effectively this raises the nutritional value of the salmon by moving the omega-3 fatty acids to the edible parts of the fish. The worldwide supply of marine omega-3 fatty acids is very limited therefore effective resource utilisation is increasingly important for the sustainability of limited marine raw materials" says Susort.

MORE ON THE BOTTOM LINE

Optiline Premium provides more fish for less feed, both because the harvest yield increases and because growth is faster and the FCR goes down. Faster growth also provides an earlier harvest date and can make the most of ideal growing conditions over the Tasmanian winter. Economically, the improvements seen in growth, FCR and fillet yield allow for an attractive increase in return on investment. ■

Unprecedented salmon perfo
Skretting Australia launches O

Dr Matthew Bransden Technical Account Manager, Skretting Australia

Optiline Premium will be launched into the Australian salmonid market from August 1 2013.

Optiline Premium not only contains metabolic activators, but unique to the diet is the inclusion of a vegetable oil as the primary fat source in the diet. Through the addition of vegetable oil, the saturated fatty acid content is reduced, leading to an improved fat digestibility, and subsequently an additional 2 megajoule (MJ) of digestible energy (DE)/kg of feed than Skretting's existing leading winter diet, Optiline X. When used during the cooler months (April-October), Optiline Premium will promote improved growth performance, reduce feed conversion ratios (FCR) and enhance fillet recovery rates.

Based on trials conducted by Skretting ARC that repeatedly demonstrated the benefits of Optiline Premium, Skretting Australia undertook a replicated trial in groups of salmon in South East Tasmania in the winter of 2012. The performance of Optiline Premium was compared to the Skretting standard winter grower feed, Optiline X (Table 1). Our MicroBalance™ concept was applied to both feeds, and in this case the level of fish meal inclusion was 15%.

Over the four month trial period, salmon fed Optiline Premium had a 14% increase in specific growth rate (SGR) compared to Optiline X (Figure 1). This resulted in 375g of additional growth, a highly significant increase. Final weights of fish fed Optiline Premium were 5.7kg while those fed Optiline X were 5.3kg. Moreover, fish fed

Table 1. Design of replicated trial comparing 3.2kg salmon fed Optiline X or Optiline Premium

Trial design	
Location	South-East Tasmania
Species	Atlantic salmon - all female diploids
Feeds	Optiline X: 3 cages x 160 fish each
	Optiline Premium: 3 cages x 160 fish each
Fish initial weight	3.2kg
Trial duration	120 days (end June to end October 2012)

Optiline Premium showed an improvement in FCR of 0.18 or -13% compared to Optiline X (Figure 2). In addition, fish fed Optiline Premium also had a 5% improvement in condition factor, indicating higher carcass yields (Figure 3).

"These unprecedented growth performances will have positive implications for the local market", Skretting Australia Technical Account Manager Matthew Bransden says. "One strategy will be to use Optiline Premium to increase market weight, but the faster growth rate could

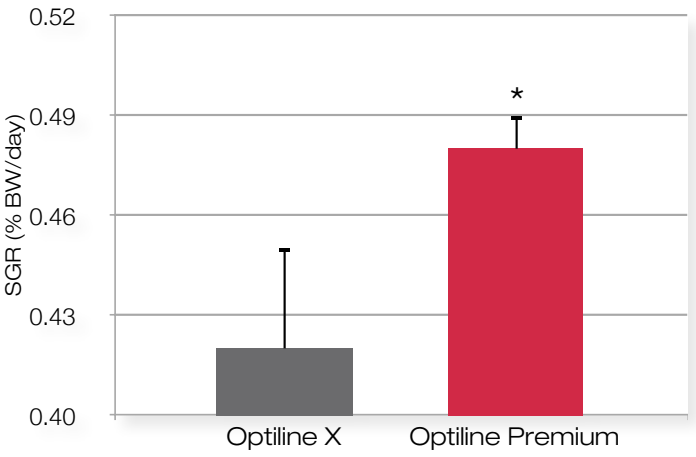


Figure 1. The specific growth rate (SGR, %BW/d) of salmon fed Optiline X or Optiline Premium. Data are presented as mean ± SD, n=3. * denotes a statistically significant result (P<0.05).

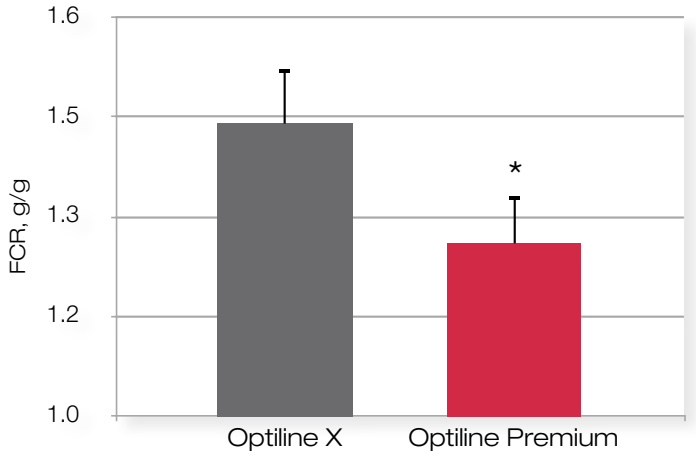


Figure 2. Feed conversion ratio (FCR, g/g) of salmon fed Optiline X or Optiline Premium. Data are presented as mean ± SD, n=3. * denotes a statistically significant result (P<0.05).

ormance
Optiline Premium

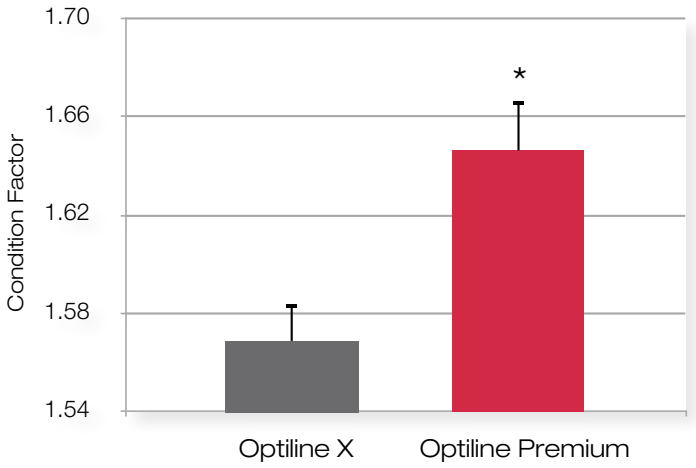


Figure 3. Condition factor of salmon fed Optiline X or Optiline Premium. Data are presented as mean ± SD, n=3. * denotes a statistically significant result (P<0.05).

enable our customers to choose to reduce the amount of time the fish spend in the water. There are considerable benefits for reducing time to production in our local salmon industry, particularly from an economical perspective."

MODELLING THE BENEFITS

As Optiline Premium will not be available until August 2013, salmonid farmers will only be able to realise the benefits of the product for 3-4 months this year. However the full potential will be unleashed during 2014 when Optiline Premium will be available from April until October.

To quantify the growth benefits, the growth rate achieved in the Tasmanian trial was applied to a growth model using scenarios for a Spring or Out-Of-Season (OOS) entry smolt. This modelling exercise took into account the 14% improvement in SGR observed in the local trial when fish were fed Optiline Premium. It was compared to growth expectations of salmon fed Skretting Australia's standard winter grower feed, Optiline X. Outside of the months where Optiline Premium would not be used, the model applied normal Tasmanian growth expectations. Under both scenarios the Optiline Premium fish were grown to a harvest weight of 5000g. The difference in weight was then calculated by comparing it to the growth expectations of fish fed Optiline X, or alternatively, how many more days fish fed Optiline X would need to take to reach the 5000g milestone.

SPRING SMOLT POTENTIAL

For Spring smolt, Optiline Premium will be used for the entirety of their first winter. Modelling showed that if fish weighed ~2kg on the 1st of April when feeding of Optiline Premium would begin, these fish would be more than 544g larger at harvest (5000g) than if they had been fed on Optiline X (Figure 4).

Alternatively, fish fed Optiline Premium would reach the target harvest weight 30 days earlier than fish fed Optiline X. On farms that experience amoebic gill disease (AGD), the fact that these fish can be harvested 30 days earlier would mean removing at least one freshwater bathing treatment.

OUT OF SEASON SMOLT POTENTIAL

For OOS smolt, Optiline Premium will be used in part of their first winter when fish are larger than 1000g, and then from April the following year until harvest.

Under modelled conditions, once salmon reach 1000g and begin feeding on Optiline Premium in their first winter, at the conclusion of that winter the fish would be ~140g larger than salmon fed Optiline X (Figure 5). In the following winter, fish fed Optiline Premium would continue to grow faster and would be 424g heavier at harvest (5000g) than salmon fed Optiline X. Alternatively, fish fed Optiline Premium would reach harvest weight 34 days earlier, eliminating the need for at least one bathing treatment against AGD.

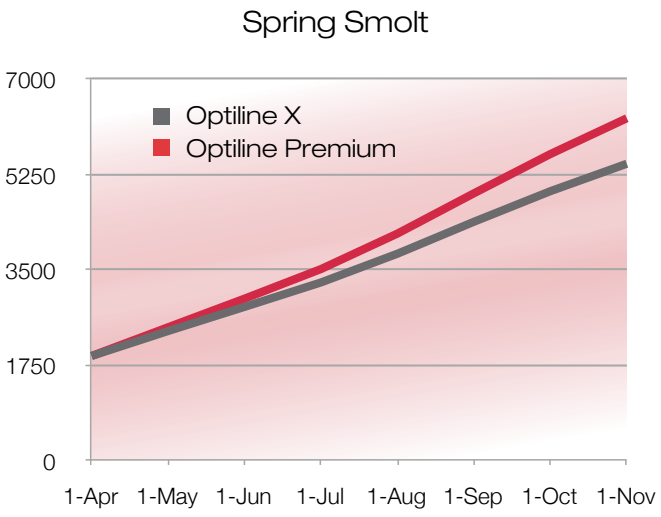


Figure 4. The growth response (g) of Spring-smolt salmon fed Optiline X or Optiline Premium during the winter period. Growth of Optiline X fish are based on standard Tasmanian growth model whereas Optiline Premium fish have accelerated growth of 14%. Shading indicates periods during which Optiline Premium was used.

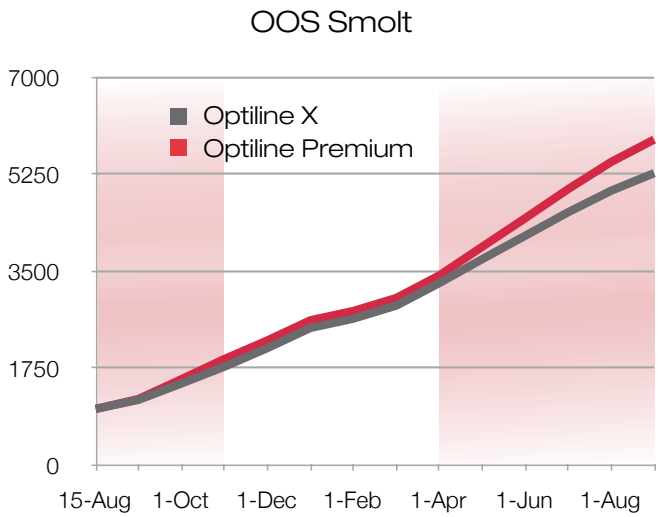


Figure 5. The growth response (g) of Out-Of-Season (OOS) smolt salmon fed Optiline X or Optiline Premium in their first and second winters. Growth of Optiline X fish are based on standard Tasmanian growth model whereas Optiline Premium fish have accelerated growth of 14%. Shading indicates periods during which Optiline Premium was used.

On the basis of the modelling and scenarios above, for a million surviving fish, Optiline Premium would generate 544 tonnes of additional 'in the round' (ITR) biomass in Spring smolt, and 424 tonnes of additional ITR biomass in OOS smolt (Table 2).

Table 2. Optiline Premium benefits to weight gain, biomass, additional carcass yield and shortened days to harvest, compared to Optiline X, in modelled scenarios for Spring and OOS smolt from input to harvest (5000g).

Effect of Optiline Premium on:	Spring smolt	OOS smolt
Final weight difference (grown to same date)	544g	424g
Additional ITR tonnes/million surviving fish	544 tonnes	424 tonnes
Additional tonnes gutted fish/ million surviving fish*	5.4 tonnes	4.2 tonnes
Fewer days to achieve equivalent weight of Optiline X at harvest	30	34

*Assumes normal gutting losses are 16%. Optiline Premium improves this to 15%

MORE THAN JUST GROWTH: IMPROVED YIELDS

The metabolic activators present in Optiline Premium have the added benefit of better fat utilisation; fat is used both more efficiently and also distributed away from the viscera and into the muscle. This has profound effects on yields following harvest and processing. Research undertaken by Skretting ARC demonstrated that using Optiline Premium resulted in yields that were improved by 1%. In the scenarios described above, for a million surviving fish this would result in an additional 5.4 tonne and 4.2 tonne of saleable fish product in the Spring and OOS groups, respectively.

STRENGTHENING FARMED SALMON EFFICIENCY

Farmed fish are highly efficient in utilising feed and retaining protein and energy. It is known that Atlantic salmon have better feed efficiencies compared with other domestic land animal protein sources such as chicken, pig and lamb. The introduction of Optiline Premium has further strengthened the salmon's position as the most efficient farmed animal.

"Our local demonstration trial showed that salmon fed Optiline Premium had an FCR reduction of 0.18 compared to those fish fed Optiline X" explains Matthew Bransden. "While Optiline Premium is a more expensive diet than Optiline X, the benefit of an improved FCR and 1% improvements in yields, mean these costs are easily offset. Subsequently, the additional projected growth when using Optiline Premium will lead directly to additional profits for producers. Alternatively, a faster growth rate can mean an earlier harvest time thus eliminating the need for at least one bathing treatment against AGD. That alone has very positive economic benefits, as well as advantages in relation to animal welfare."

WHEN TO USE OPTILINE PREMIUM

Skretting Australia will be offering Optiline Premium as our advanced winter feed from August 2013. The recommended regime is for Optiline Premium to be fed during normal conditions from April until October in fish 1000g or larger (Table 3).

Table 3. Optiline Premium is available as a 1000, 2000 and 3000 product and falls into the grower range of diets used during optimal, winter conditions.

	Hatchery diets	Smolt diets		Grower diets
Optimal Nutrition Normal conditions	Nutra XP Nutra RC Nutra Supreme	Spirit Supreme	Spirit Plus 100 Spirit Plus 500	Optiline X/XE 1000 Optiline X/XE 2000 Optiline X/XE 3000 Optiline Premium 1000 Optiline Premium 2000 Optiline Premium 3000
Proactive Nutrition Prepare for stress Disease	Protec™ RC		Protec™ 100 Protec™ 500	Protec™ 1000
Specific Nutrition Environment	Nutra Supreme HT	Spirit Supreme HT	Spirit Plus HT 100 Spirit Plus HT 500	Optiline HT 1000 Optiline HT 2000 Optiline HT 3000

ORIENT PREMIUM

At the same time Optiline Premium becomes available for Australian Atlantic salmon, Orient Premium will become available for New Zealand Chinook salmon. Applying the same design approach, Orient Premium will combine the metabolic activators that improve energy utilisation and carcass yield with a very significant increase in diet digestible energy. "We are extremely excited about the potential of Orient Premium" adds Ben Wybourne, Technical Account Manager in New Zealand for Skretting Australia. "Chinook salmon consistently demonstrate higher FCR's when compared to their Atlantic salmon counterparts. With similar improvement in Chinook salmon growth rates and FCR, Orient Premium will have profound implications for both economic and environmental performance for this leading New Zealand industry". ■

Table 4. Orient Premium is available as a 1000, 2000 and 3000 product and falls into the grower range of diets used during optimal, winter conditions.

	Hatchery diets	Smolt diets		Grower diets
Optimal Nutrition Normal conditions	Nutra XP Nutra RC-R Nutra Supreme-R	Orient Supreme	Orient 50 Orient 100 Orient 500	Orient 1000 Orient 2000 Orient 3000 Orient Premium 1000 Orient Premium 2000 Orient Premium 3000
Proactive Nutrition Prepare for stress Disease	Protec™ RC-R		Protec™ OR 50 Protec™ OR 100 Protec™ OR 500	Protec™ OR 1000
Specific Nutrition Environment	Nutra Supreme-R HT	Orient Supreme HT	Orient HT 50 Orient HT 100 Orient HT 500	Orient HT 1000 Orient HT 2000 Orient HT 3000

High energy diets for barramundi during summer

Dr Matthew Bransden Technical Account Manager, Skretting Australia

The use of 'high energy' diets for cultured finfish as a means to reduce the feed conversion ratio (FCR) and improve the growth performance has been widely documented, particularly in salmonid species. For salmonid species as a rule of thumb, for every additional megajoule (MJ) of digestible energy (DE), the specific growth rate (SGR) can be improved by 3% and the FCR reduced by 0.04. While digestible energy can be derived from either oil or protein (and to a limited extent by carbohydrate), oil contains approximately 60% more of the energy density per kilogram compared to protein. Economically it therefore makes sense to derive as much energy as possible from oil as opposed to protein (Table 1).

Table 1. The energetic density of oil or protein, current raw material prices and the $/kilojoule (kJ) ratio.

Raw Material	*Energy density (kJ/g)*	*$/tonne*	*$/kJ*
Fish oil (Fat)	37.5	$2500	$67
Poultry oil (Fat)	37.5	$800	$21
Fishmeal (Protein)	23.0	$2000	$87

Of course it remains essential that the minimum digestible protein (DP) requirement is met to ensure that maximum growth is achieved. The DP requirement changes during the life of the fish, with a higher requirement in small, fast-growing fish compared to later life when larger fish growth is proportionally slower and the demand for protein to keep up with the somatic growth potential decreases.

Subsequently, Skretting adjusts the amount of DP in the diet to accommodate this (Figure 1). While this enables maximum growth it also ensures that expensive proteins are not used as an energy source (the preferential use of oil as the primary energy source 'spares' the protein), which also reduces the overall nitrogenous output that has significant environmental implications.

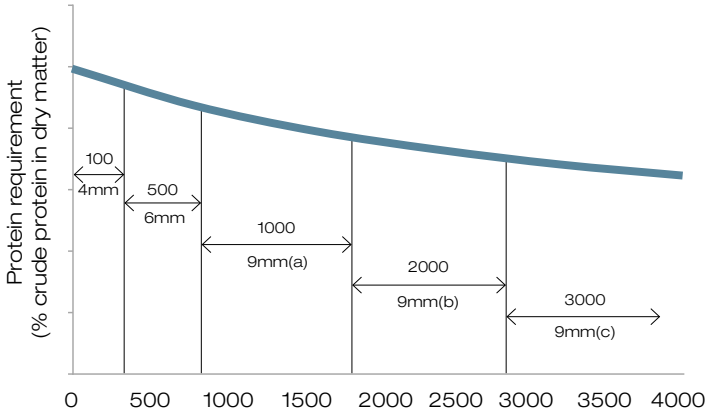


Figure 1. As a fish increases in size its requirement for digestible protein (DP) decreases. Skretting diets are formulated accordingly.

This year, a commercial trial was run from 18th January to 2nd April at Pejo Enterprises, south of Innisfail. Two diets were compared, Skretting's standard energy diet Nova FF (19.4 MJ/kg), and the new high energy diet Nova HF (20.8 MJ/kg). Initial fish weights were 1150g and at the end of the 75 day trial, barramundi fed Nova HF were 64g heavier than fish fed the lower energy Nova FF. Overall this was a significant 12% increase in weight gain over the period, and was also reflected in the SGR (Figure 2). Specific feed rate was similar for both groups (0.46% body weight/day), but the improved growth performance meant that the FCR was reduced in the high energy fish, providing an 11% improvement (Figure 3).

> fish fed Nova HF had a significant 12% increase in weight gain over the period

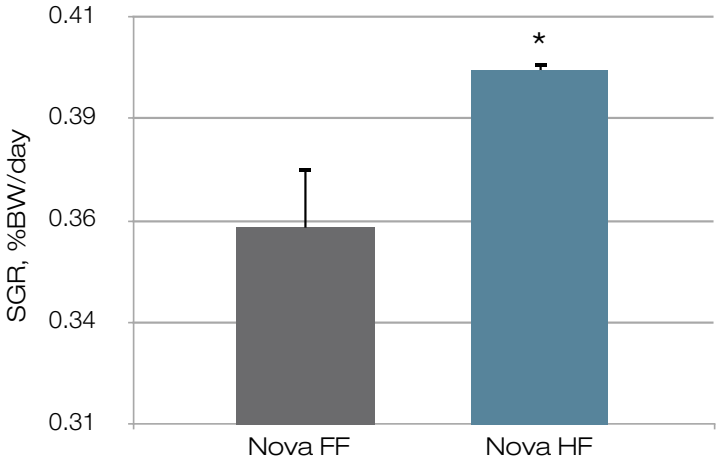


Figure 2. Specific growth rate (SGR, %BW/day) in barramundi fed the standard feed, Nova FF, or the higher energy diet, Nova HF. Data are presented as mean + SD, n=3. * denotes a statistically significant result (P<0.05).

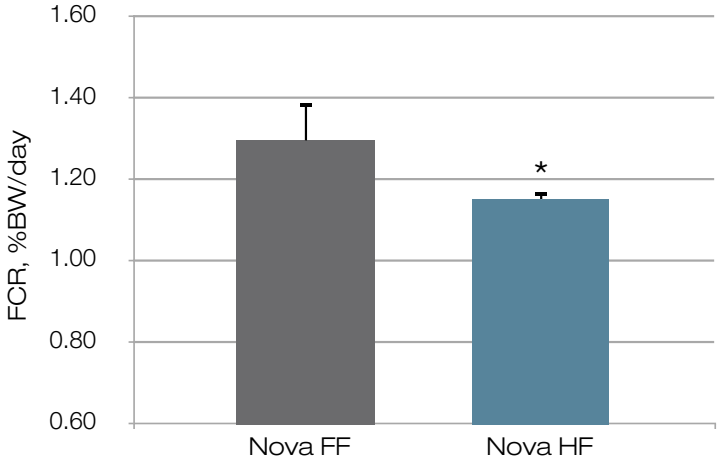


Figure 3. Feed conversion ratio (FCR, %BW/day) in barramundi fed the standard diet, Nova FF, or the higher energy diet, Nova HF. Data are presented as mean + SD, n=3. * denotes a statistically significant result (P<0.05).

This study highlights that, similar to work undertaken in salmonids, barramundi respond positively to increased energy density. While higher energy diets are more expensive than lower energy diets, the improvement in growth and FCR will have a net overall benefit on farm profitability. A cost-benefit analysis using assumptions derived from this trial and costs relevant to your farm can be provided separately to highlight these benefits.

The recommended regime is for Nova HF to be fed during normal conditions during summer in fish 1000g or larger, and a sinking version is also available as Nova HE (Table 2). ■

Sampling day at PEJO Enterprises. Nicole, Marty Phillips and Matt.

Table 2. Barramundi recommended feeding regime, ncluding Nova HF (floating) and Nova HE (sinking) as grower diets to be used during normal conditions.

	Hatchery diets	Grower diets	
		Floating	Sinking
Optimal Nutrition Normal Conditions	Gemma Diamond	Nova FF Nova HF	Nova ME Nova HE
Proactive Nutrition Prepare for stress	Protec™ME	Protec™FF	Protec™ME
Specific Nutrition Environment		Protec™FF	Protec™ME

Latest Residue Report out now

Each year Skretting Australia undertakes a residue monitoring program as part of its commitment to the global Skretting Nutrace® food safety system. All tests carried out under this program are undertaken by selected leading international laboratories ensuring that we not only use best practice test methods, but can also have great confidence in the results.

Through this program we monitor potential residues, use the results to guide our purchasing and product formulations, and keep our customers informed of trends and issues.

Skretting Australia's latest Residue Monitoring Report summarises the level of undesirable substances in Skretting Australia feeds from 2008 to 2012. Results from monitoring in 2012 indicate that Skretting Australia feeds have again met all Australian and European requirements and that the levels of undesirable substances found in feeds are substantially less than the limits set by authorities. The report also outlines Skretting Australia's sustainable ingredient assessment criteria, as stipulated by our Nutrace® program.

For a hardcopy of the report, please contact Jenna Bowyer (jenna.bowyer@skretting.com) or alternatively visit our website to view it online at www.skretting.com.au.

Next year, our 2013 residue report will only be available online from our website. ■

Aqua Nor 13-16th August 2013

The Aqua Nor trade shows are held biannually in Trondheim, Norway. Recent events have attracted 15,000-20,000 visitors from more than 50 nations. Since the beginning of this tradeshow 30 years ago, the aquaculture industry has seen significant progress.

Aqua Nor is an important international event for the aquaculture industry. The event showcases new products, services, technology, processes and current research and development projects not only for salmon culture, but also for other marine species and shellfish culture. For more information on this event, please visit their website: http://nor-fishing.no/en/

The New Zealand Aquaculture Conference 2013

On the 24-25th October, the New Zealand Aquaculture Conference will be held in Nelson. The theme for this year's annual conference is "Good for you. Good for New Zealand". The focus of the conference is on investing in the future of your business, the long-term growth of the aquaculture industry and the sustainability of the environment. Skretting Australia is proud to be a silver sponsor of this event and we will be attending the conference in October.

GOOD FOR YOU
GOOD FOR NZ
NEW ZEALAND AQUACULTURE CONFERENCE 2013

Aquaculture Stewardship Council (ASC) to develop a Feed Standard

On June 19, the Aquaculture Stewardship Council (ASC) launched a project which aims to develop an 'ASC Feed Standard' to be ready by the end of 2015. This one standard will cover feeds that will apply to all the species that the ASC certifies. Currently feed plants cannot be ASC certified, but systems can be put in place to comply with the ASC Standards for species-specific standards such as salmon and trout. It is expected that pilot tests for the Feed Standard will begin in the second half of 2014.

It is recognised that "Feed is an essential element in fish farming; however, it is a major contributor to the overall environmental impact of aquaculture. Some of the issues to be addressed, for example, include the production of key ingredients used in making the feed" (ASC website). The standard will address the aquaculture feed industry's requirements for producing socially and environmentally responsible feed.

More information on the Feed Project can be found on the ASC website under Projects.

asc Aquaculture Stewardship Council