

# What do we feed our salmon?

Here at Tassal we are committed to producing healthy, nutritious and responsibly grown salmon.

The food that we feed our fish is specifically managed to optimise the health of our fish. Healthy fish means that our salmon will ultimately look great and taste delicious and be a sustainable source of seafood for Australians.

Salmon are carnivores and thrive on other sources of protein.

Our salmon feed is made up of:

- Land animal ingredients (chicken meal and chicken oil)
- Vegetable ingredients (grain and protein meal)
- Marine ingredients (fish meal and fish oil)
- Vitamins and minerals
- Carotenoids (astaxanthin)



# What do we feed our salmon?

## Land animal ingredients

We use terrestrial protein in our fish because they are carnivores and they thrive on it. Healthy fish means our salmon will ultimately look good and taste delicious.

We also use it to decrease the pressure on wild fisheries and to grow our fish in the responsible manner Australians expect. In addition, using terrestrial protein allows us to be responsible about natural resources and in finding ways to reduce food waste, whilst having a lighter footprint on the environment.

Terrestrial ingredients used in our

feed are sourced only from Australia and only from suppliers who are certified by the Australian Renders Association (ARA) and are AQIS export accredited. They are also subject to our own supplier approval program and regular audits by our feed company representatives.

Terrestrial protein ingredients are a high quality source of protein, for example poultry meal has a very similar amino acid profile to that of fishmeal, making it a suitable replacement of fishmeal in fish feed.

By working with Australian terrestrial farmers and using the

rest of chicken that is not used for human consumption we are utilising valuable natural resources that went into that chicken, specifically water and grains that required water and arable land to produce. In addition, every chicken raised has a carbon footprint – we absorb some of that footprint into our salmon to produce even more protein for Australians. This is an example of Australian farmers working together to reduce waste and carbon footprint and support the national green food plan.

## Vegetable ingredients

Vegetable ingredients are used in feeds as a source of protein. Fish feeds are designed to achieve a balanced amino acid profile, and hence a mix of vegetable proteins is used.

Vegetable oil is used in feeds as a source of energy. The substitution of fish oil with vegetable oil decreases

the level of saturated fat in feeds, which is shown to improve a fish's ability to digest fat and use energy.



## Marine ingredients

Fish meal and fish oil are used in feeds as a source of protein and oil. Fish meal and fish oil are sourced from forage fish which are a precious marine resource. Forage fish are high protein ingredients that are made from small bony fish. Forage fish includes species such as sardines or anchovies, they are an excellent choice if sustainably fished and certified to IFFO RS or MSC standards.

We fully acknowledge that fishing down the food chain to provide food for farmed salmon is a major sustainability issue for Tassal. This is why we are focused on reducing our dependence on forage fisheries species such as sardines and anchovies.

At Tassal we have lowered our inclusion of fish oil and fish meal to levels that make us world leaders in this area; far exceeding the standards set by ASC.

This aligns us with best practice certifications including ASC (Aquaculture Stewardship Council). Our aim is to be a net fish producer (to produce more fish per kilogram than we utilise in the production process).

Fish oil is a source of energy, but most importantly it provides the only source of long-chain omega-3 fatty acids, which are essential for fish and human health. Like humans, most fish cannot synthesize long-chain omega-3 fatty acids in the body, so they must be sourced from their food

(e.g. in the case of cultured fish, omega-3's come from the inclusion of fish oil from small bony fish or fish trimmings in feed).

As feed is one of our primary inputs into the production process, we continually work with our major feed suppliers to reduce our forage fish meal input and increase protein from other sources.

Using fish meal and fish oil from uncertified fisheries could mean that fish are not managed sustainably and using too much fish meal and fish oil in our diets makes the farming of salmon and unsustainable protein source for Australians.

# What do we feed our salmon?

## Vitamin and Minerals

Vitamins and minerals are added to the feeds to ensure that the fish obtain all the nutrients they require. These are the same vitamins and minerals as those used in supplements for humans.



## Carotenoids

The pink colour of wild salmon flesh, and that of sea trout, is species specific and results from the presence of carotenoid pigments.

The group of carotenoids found in fish are known as xanthophylls and include astaxanthin. Astaxanthin is the main pigment in crustaceans and in wild salmon muscle. The red colour comes from carotenoid pigments in the fishes' diet, and in the wild these usually come from shrimp-like krill or other crustaceans that the salmon eat.

Salmon extract the pigments and selectively store them in skin, muscle and organs. The intensity of the colour does not seem to have an effect on the taste but it

does enhance attractiveness and appearance. In addition to their role as pigments, there is evidence to show that storing these pigments confers health benefits on salmonid fish. As they are unable to synthesise these pigments, wild and farmed salmonids must take them in as part of their diet.

The carotenoids astaxanthin or canthaxanthin are added to the diets of farmed salmon to ensure the flesh has the rich colour that consumers seek. Astaxanthin is not just a pigment, but is closely related to beta-carotene (the precursor of vitamin A), and plays a role in the fishes' immune system and acts as an antioxidant, promoting the good health of the fish.

The pigments may come from crustaceans, from yeast culture or, more usually, from nature identical synthesised products. Whilst astaxanthin is synthesised it must be stressed that this is the same compound that is found naturally, this is why we refer to it as nature-identical.

In wild salmon it seems that the pigmentation has benefits in camouflage and in sexual attraction. Additionally, the pigments are powerful natural antioxidants. As broodstock female salmon prepare for breeding, the xanthophylls are transported to the ovaries where they improve the maturation rate of the oocytes (eggs).



# Responsible feeding

Tassal are committed to ensuring that we feed our salmon in a sustainable and responsible way. Our aim is to be a net fish producer (to produce more fish per kilogram than we utilise in the production process).

## Tassal's Fish-In / Fish-Out Ratio

