

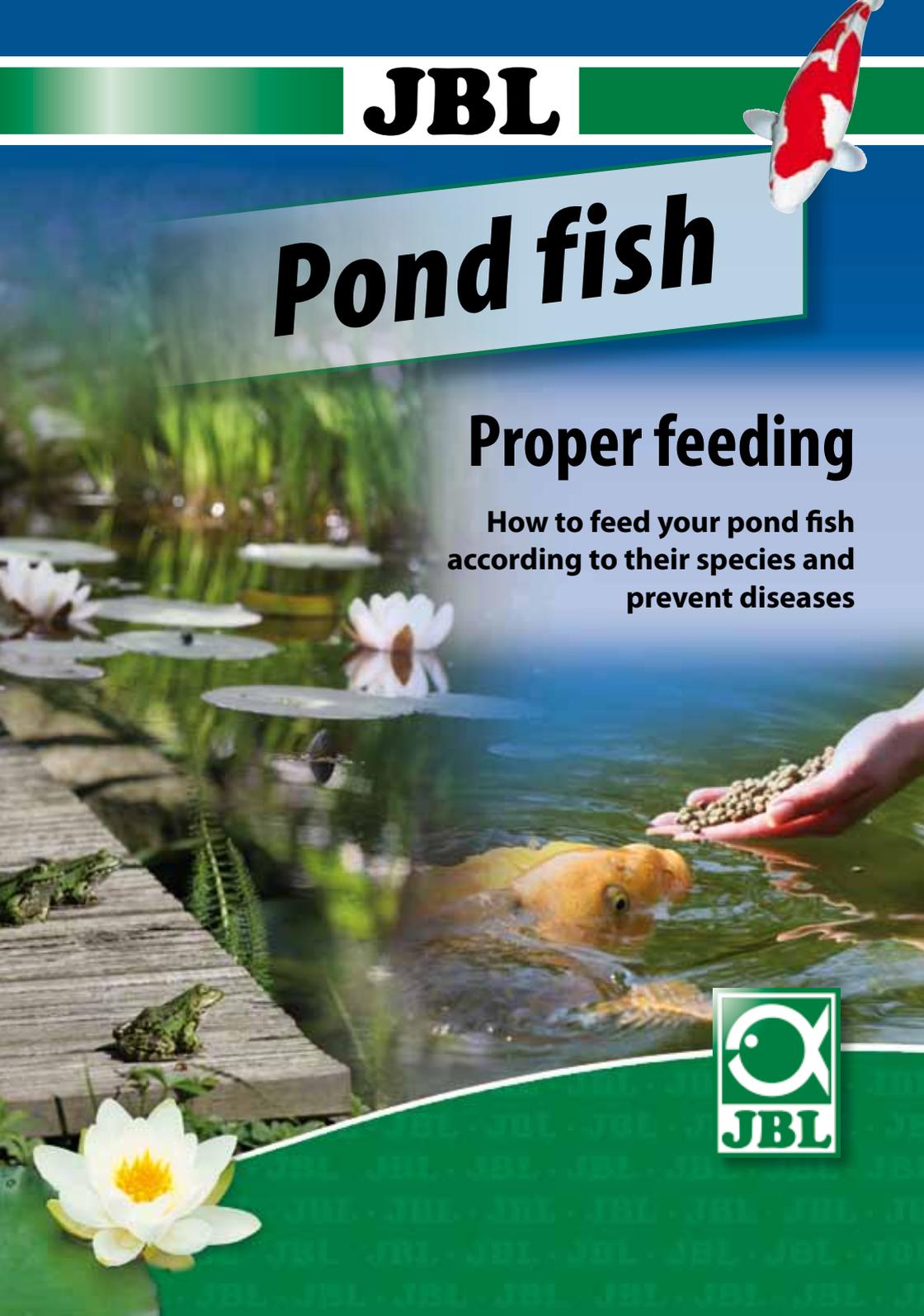
JBL



Pond fish

Proper feeding

How to feed your pond fish according to their species and prevent diseases





Forword 2

Why is species-appropriate nutrition so important? 3

What is special about pond fish nutrition? 4

General advantages of JBL pond fish food 5

Which species eat which foods? 6-7

The JBL koi food concept 8

Food ingredients 9

What are pellets, extrudates and granules?..... 10-11

How much should you feed? 12

How often should you feed? 12

What happens when you are on holiday / gone for a weekend? 13

Seasonally appropriate feeding 13

Can food make a fish sick? 14

JBL Online Hospital..... 15

Overview of JBL's pond foods 16-18

Fish feeding table 19

Feeding fish is actually fun – for both young and old alike!

Many fish species learn to eat out of your hand very quickly and appear to develop a special relationship with their keeper. Feeding by hand even has true advantages, though: You can specifically feed weaker fish more food, and, to boot, the fish are much easier to catch when necessary. You will find that there are many different types of fish food and that the price differen-



ces may be significant. This brochure explains all of the important prerequisites for healthy pond fish nutrition. Scientists and koi specialists have contributed to the brochure and packaged their extensive know-how in easily comprehensible text.

If you pay a little attention to the nutrition of your pond fish, you will enjoy them for a long time and rarely have to deal with diseases. After all, fish are „simply human“.



Why is species-appropriate nutrition so important?

If you answer this question for humans, you will have the correct answer for fish, too!

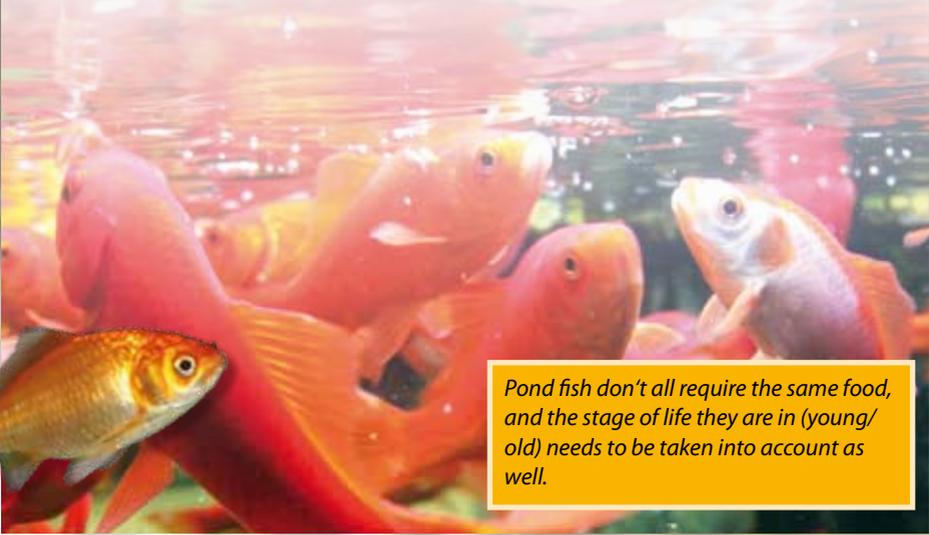
Above all, proper nutrition ensures healthy growth, maintains all vital functions, produces resistance to diseases and enables reproduction. That's how biologists see it.

For a pond owner, species-appropriate nutrition guarantees that their fish will enjoy healthy (but not necessarily fast!) growth, develop magnificent colours and be resistant to bacterial, viral and parasitic disease-causing agents.

The comparison with humans is incredibly fitting: We, too, can only properly digest certain foods and are all too aware that poor nutrition may lead to an undesirable figure and susceptibility to diseases. With fish, though, we can eliminate the factor of exercise – they get enough of that if the pond

is large enough. Just like cows can't digest meat and koala bears are unable to digest chocolate, there are things to avoid when feeding pond fish. Pond fish don't all require the same food, and the stage of life they are in (young/old) needs to be taken into account as well.

The utilisability of the food is another important factor. Dog owners are familiar with this consideration: Cheap food can result in huge piles of faecal matter, although the dog exhibits deficiency symptoms. Unsuitable food can have comparable consequences for fish. Although pedestrians won't be complaining about fish poop, your pond water may become severely polluted with toxins. That, in turn, can lead to algae trouble, which no fish keeper is going to rave about.



Pond fish don't all require the same food, and the stage of life they are in (young/old) needs to be taken into account as well.



What is special about pond fish nutrition?

Contrary to tropical aquarium fish, in temperate climate zones like Europe, pond fish are subjected to changing temperatures.

The colder a body of water, the slower the metabolism of the fish is. Even in cold winters, though, it never comes to a standstill, as otherwise, the fish would die. By contrast, their metabolism is faster in the warmer season. This interaction must be taken into account. Accordingly, tropical warm water fish in aquariums require food with more protein than pond fish, and there is a special food for the cold season that is very easily digestible. The relationship between proteins and fats in the food is extremely important. Pond fish do not all have the same nutritional needs. Sturgeons feed on microorganisms inhabiting the bottom, whereas koi fish tend to eat plants, and gold fish, by contrast, eat everything they can find.

A common error made is to feed inexpensive pellets (actually sticks) that are available in big sacks. They are produced in gigantic amounts for trout farming and contain fish meal with very high concentrations of protein and fat. These cause massive fatty dege-

neration of the liver in our pond fish, which is often fatal. Why? Because trout are predators, so that they need a lot of fish protein. This, in turn, is used to fatten them. Our pond fish, though, are normally not predators, and aren't supposed to look like big pool balls after a year either!



The relationship between proteins and fats in the food is extremely important.



Advantages of JBL pond fish food

Dermatologically tested!

Better food, clearer water!



Doesn't promote algae growth!

With the right protein/fat ratio





Which species eat which foods?

If you keep multiple genres or species of fish in your pond, as most pond keepers do, you will be confronted with the question of how to feed your fish in accordance with their respective genus or species. This is virtually impossible in so-called „communal ponds“ unless all of the fish are fed by hand. However, if you have a collection of different families and species in one pond, it is important to offer a bandwidth of

food that is appropriate for all of them. This is the only way to avoid deficiency symptoms and diseases. By the way, this problem has caused an increasing number of pond owners to set up pure „species ponds“ where one pond may contain only koi fish, another one sturgeon-like fish.





Who eats what?

Goldfish/crucian carp:



JBL PondSticks Classic, JBL PondSticks 4 in 1,
JBL PondFlakes, JBL Pond Coloron, JBL Pond Vario

Fantail goldfish & other bred varieties of goldfish:



JBL GoldPearls, JBL GoldPearls mini

Koi fish:



JBL Koi mini, JBL Koi midi, JBL Koi maxi,

Sturgeon-like:



JBL Pond Sterlet, JBL Pond Sterlet XL

Bitterlings, minnows and sunbleaks:

(only as offspring from specialty stores)



JBL PondFlakes, JBL Pond Vario

Pumpkinseed fish:

(only as offspring from specialty stores)



JBL PondFlakes, JBL Pond Coloron, JBL Pond Vario

Orfe/ide:

(only as offspring from specialty stores)



JBL PondSticks 4 in 1, JBL Pond Coloron

Silver carp

(=algae carp)



JBL PondSticks Classic, JBL PondSticks 4 in 1,
JBL PondFlakes

Grass carp:

JBL PondSticks Classic
JBL PondSticks 4 in 1,
JBL PondFlakes

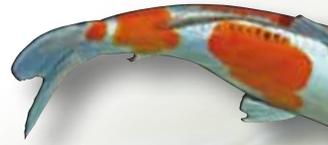


Which species eat which foods?

Proper feeding



The JBL koi food concept



Koi have varying nutritional needs depending on their age. Young, fast-growing koi require a higher protein content than koi that are older and grow more slowly as a result. Aside from composition, the grain size is also important for species-appropriate intake of food. That is why the packaging always indicates the size of the koi that the food is intended for.

← 10-20 cm →

Analytical composition:	
Protein	42 %
Fat content	10,5 %
Raw fibre	2 %
Crude ash	10 %

← 15-35 cm →

Analytical composition:	
Protein	38 %
Fat content	9,5 %
Raw fibre	2 %
Crude ash	10 %

← > 30 cm →

Analytical composition:	
Protein	33 %
Fat content	8 %
Raw fibre	3 %
Crude ash	10 %



Determining the food ingredients

As already mentioned, a fish's nutritional needs must be considered when determining the ingredients of its food: Predatory fish such as pumpkinseed fish need fish meat, whereas koi fish and goldfish need food based on an herbivorous diet. By contrast, since koi fish stem from warmer waters than goldfish, it is very important for them to have a protein fat ratio of 4:1. A higher fat content in the food would result in fatty degeneration of the liver!

Since most fish also ingest small water organisms such as water fleas and copepods, food that is rich in variety must also contain animal protein. JBL exclusively uses proteins from aquatic animals.

When determining the food ingredients, we also decide whether the food is supposed to

float or sink. For example, sturgeon food is always formulated to sink in order to accommodate their natural habit of feeding on the bottom. Koi fish are actually bottom feeders, too, which can be recognised easily by their mouth, which is pointed downwards. They are very flexible though and quickly learn to feed at the surface. Vitamins and minerals (ash content) strengthen the immune system, thereby protecting the fish from disease. After opening a food container for the first time, the food should be used up within 3 months, since the vitamins gradually evaporate after that. This should always be taken into consideration when selecting the container size.

A fish veterinarian once made this very plain: „Food that is a year old has the same nutritional value as old newspapers!“



What are pellets, extrudates and granules?

Pellets:

Pellets are the result of the simplest food technology. The ingredients are mixed and ground first, and then simply cold-pressed through a pellet die with holes. Pellets are normally round, „sausages“ that are shiny on the outside and have irregular break edges. True pellets are barely used in pond fish food.



Extrudates:

Extrudates owe their name to the machine that is used to produce them, an extruder. Extrudates are often referred to as „sticks“ as well. „Pellets“ is another term often used to refer to this kind of food that is actually wrong though. Most of the foods for pond fish are produced by extruders. Described in simple terms, an extruder is like a sophisticated meat grinder. The extruders used for quality food usually have two shafts with helix threads exhibiting a special geometry. This geometry makes it possible to convey, mix, knead and build up pressure. Water and steam can also be added and heated.





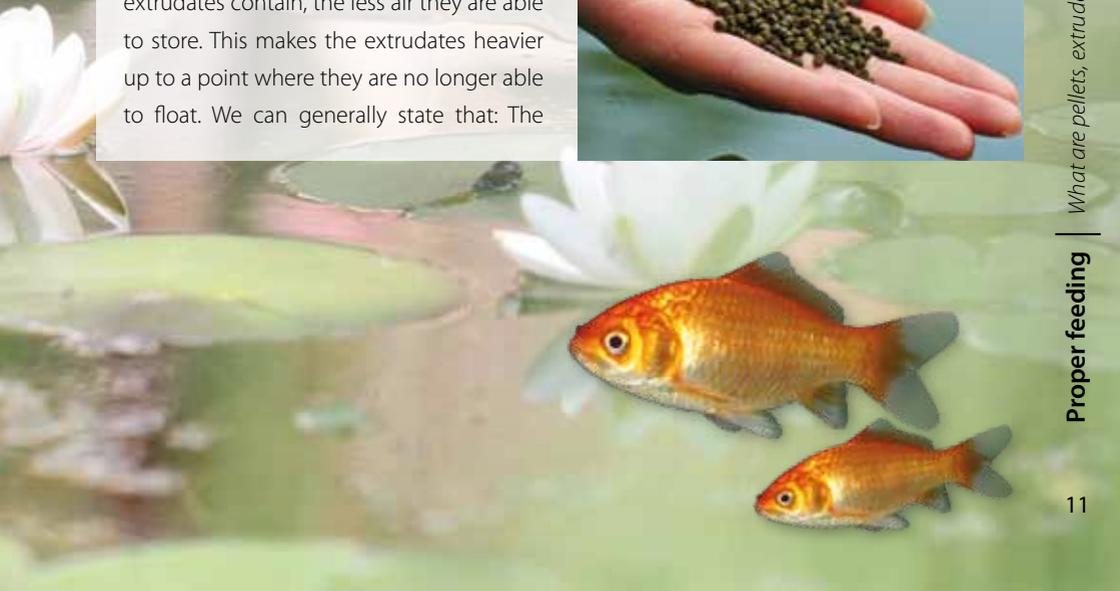
In this way, the food is briefly heated to approx. 140 °C and subjected to pressure of up to 100 bar before it then shoots out of the pellet die located at the end of the helixes in the form of countless strands. There is a rotating blade in front of the pellet die that cuts the strands into short sphere-shaped sticks or into sticks of varying lengths, depending on the rotation speed.

Food produced by an extruder has important advantages: It is more easily digestible and practically germ-free. Add to this its technical properties: The more grain an extrudate contains, the more air it stores when the pressure drops suddenly when it leaves the pellet die. This makes the extrudates able to float. The more valuable proteins the extrudates contain, the less air they are able to store. This makes the extrudates heavier up to a point where they are no longer able to float. We can generally state that: The

heavier an extrudate is, the more valuable it is; the lighter it is, the more you purchase attractively packaged air.

Granules:

Granules are nothing more than extrudates that have been ground and sieved into different fractions. They are commonly used in the professional breeding of juvenile fish.



What are pellets, extrudates and granules?

Proper feeding



How much should you feed?

The amount of food should be selected such that the fish eat the food up completely within around 2-3 minutes. If there is still uneaten food floating on the surface of the water after 5 minutes, the food was too much!

Strangely enough, most pond owners are afraid that their fish will starve. As a result, they overfeed the animals, which is very unhealthy and pollutes the pond water with toxins (leading to algae problems).

You can also dose the food to the gram if you know the weight of the animals. 100 grams of body weight of a larger-sized koi fish require 1 - 2 grams of food per day. But who feels like constantly weighing their fish and their food? The rule of „eaten up in a few minutes“ is sufficiently reliable for dealing with the correlation between the right food and feeding frequency and results in fish of excellent health with no problems.

How often should you feed?

Follow the basic rule: It's better to feed less more often than lots less often.

The similarities to human nutrition are quite obvious here. Young animals require their food ration at least 3 x daily, whereas older animals are also satisfied with a single meal in the evening. One should not forget that most ponds that have been in existence for more than two years have extensive micro-fauna and flora that can serve as a food supplement.

3 x daily



1 x daily



How much should you feed? · How often should you feed?

Proper feeding



What happens when you are on holiday / gone for a weekend?

A weekend without food from the keeper means that the fish have to search for their food in the pond themselves – and that's all. Quite often, this is even beneficial as a small diet.

When the fish receive no food for an extended period of time, it depends largely on the fish population, as well as on the size and age of the pond. Many koi fish in a pond with a large swamp zone and lots of plants will not find enough food and may need to be fed by a neighbour, for example. In this case, it is very important to give precise instructions as to the amount of food! People with no experience are prone to massive overfeeding.

A measuring spoon can be very helpful (e.g. 3 heaped tablespoons for all the fish).

Seasonally appropriate feeding

Again and again, we hear and read that fish do not eat at low temperatures (what is low?). However, if you observe your fish, you will find that there is a transitional period after the winter during which the fish gradually become active even though the (water) temperatures are still below 10 °C. As soon as the fish become active, their metabolism requires food. Since the metabolism is still very slow at low temperatures though, the fish require „winter food“ that is extremely easy to digest, does not stay in the fish's digestive system for a long time and is utilised quickly instead, such as JBL PondEnergil. As a rule of thumb: A special winter food can be fed as soon as the fish become active and want to eat.





Can food make a fish sick?

This heading sounds peculiar, but unfortunately it addresses an important topic. Quality food, such as that produced by JBL, is supplied with a high vitamin content during production which the fish need for their immune system. About 3 months after opening a container for the first time, the vitamin content is reduced so dramatically by the influence of air and light that new food should be purchased. This can be compared to deep-frozen vegetables that have been opened. If you continue feeding the same food after 3 months, the fish may develop

vitamin deficiency symptoms which in turn lead to an increased vulnerability to diseases. Anyone buying brown pellets at very low prices due to ignorance or for reasons of economy doesn't usually obtain pond fish food, and instead obtains trout breeding food. This contains ingredients that are well suited for fattening predatory trout, but not at all for pond fish. This kind of food leads to massive overfeeding, thereby killing the pond fish in the long run.





JBL PondSticks Classic

Classic food sticks for pond fish

- Floating food sticks for garden pond fish during the warmer time of year
- Valuable plant fibres with vitamin complexes ensure a healthy digestive system and provide resistance to disease.
- High plant concentrations correspond to the natural diet of many pond fish and make the food easier to digest, thereby reducing water pollution.



JBL PondSticks 4 in 1

4 different sticks in one food

- The perfect all-round food for all pond fish.
- Red Sticks: with carotenoids and shrimp for brilliant colouring.
- Yellow Sticks: wheatgerm for vitality and growth.
- Green Sticks: healthy vegetable diet meets the specific needs of this species.
- Black Sticks: beta-glucan activates resistance to disease.
- For all pond fish over 15 cm.



JBL Pond Flakes

Flake food for pond fish

- Main food for all pond fish.
- Floating food flakes.
- For moderate and warm temperatures.
- Also suitable for smaller fish.



JBL Pond Coloron

Colour food sticks for all pond fish

- Natural carotinoids and xanthine enhance the brilliant colouring of koi and other pond fish.
- Valuable vegetable and animal raw materials add variety to the diet of fastidious fish.
- Stabilised vitamin C and multivitamin complex.





Tip: Always store food in a cool, dry place.



JBL Pond Vario

Balanced mixture of flake food, sticks and crustacea

- High acceptance rate due to crustacea.
- Mixture of small and large-sized ingredients make this food suitable for all sizes of fish.
- 20% crustacea provide balanced protein/ballast content meeting nutritional needs.
- Essential vitamins increase resistance to diseases.



JBL Pond EnergiJ

Food sticks for lower temperatures

- New: A mixture of two stick sizes for pond fish of all sizes. Energy-rich, easily digestible food for temperatures below 15°C. Multivitamin complex strengthens the animals.
- Fish oil covers the high requirement for unsaturated fatty acids.



NEW

JBL Pond Sterlet

Sinking food pearls for sturgeon

- With high quality protein from aquatic animals.
- Specially designed to meet the nutritional needs of sturgeon.
- Stable in water, therefore accessible to the sloweating sturgeon over a long period in water without polluting the water.

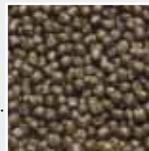


NEW

JBL Pond Sterlet XL

Sinking food pearls (6 mm) for large sturgeons

- High-grade proteins from aquatic animals and spirulina.
- Stable in water, resulting in long availability for slow-feeding sturgeons without polluting the water.
- Protein content formulated to meet the needs of larger (> 60 cm), slower growing sturgeons
- Optimum protein-fat ratio of 4:1 ensures healthy growth with minimal water pollution and less algae as a result.
- Dermatologically tested.



JBL Koi mini

Koi pellets for young koi (10-20 cm)

- Novel pearl shapes ideally suits the size of mouth of young Koi.
- The ingredients satisfy the needs of growing-up Koi, due to essential substances, energy carriers, and vitamins. High vitamin content to ensure that the immunological system is developed.
- Well-balanced percentage of constituents of animal and vegetable origins.
- With adjusted protein-fat ratio of 4:1



JBL Koi midi

Koi pellets for medium-sized koi (15-35 cm)

- Presentation and nutrient content tailored to the specific needs of medium-sized fast-growing Koi.
- Select protein carriers and appropriate fat content to ensure a balanced growth rate.
- 15 % Wheat germ content, fish protein and 4 % fish oil, as well as spirulina algae satisfy the specific nutrient needs of the fish.
- With adjusted protein-fat ratio of 4:1



JBL Koi maxi

Koi pellets for large koi (over 30 cm)

- High-grade food pearls with 10 % high-protein spirulina algae.
- Unsaturated fatty acids and carotenoids yield well-balanced growth and brilliant colours.
- Essential vitamins and stabilised vitamin C enhance the resistance to diseases.
- With adjusted protein-fat ratio of 4:1



NEW

JBL Koi Energil midi/maxi

Vital winter food for large koi

- Sinking sticks, because koi withdraw into deeper water when temperatures drop
- Vital for the prevention of typical spring diseases
- High energy content in the form of 10 % fish oil with valuable omega 3 ensures survival of fish in the winter
- Dermatologically tested.





Fish feeding table

Goldfish/crucian carp



JBL PondSticks Classic JBL PondSticks 4in1 JBL Pond Flakes JBL Pond Coloron JBL Pond Vario

Fantail goldfish, sarasa cornet



JBL GoldPearls JBL GoldPearls mini

Koi fish



JBL Koi mini JBL Koi midi JBL Koi maxi

Sturgeon-like



JBL Pond Sterlet JBL Pond Sterlet XL

Bitterlings, minnows and sunbleaks



JBL Pond Flakes JBL Pond Vario

Pumpkinseed fish



JBL Pond Flakes JBL Pond Vario JBL Pond Coloron

Orfe/ide:



JBL PondSticks 4in1 JBL Pond Coloron

Silver carp (=algae carp)



JBL PondSticks Classic JBL PondSticks 4in1 JBL Pond Flakes

Grass carp



JBL PondSticks Classic JBL PondSticks 4in1 JBL Pond Flakes

JBL

Pond fish - proper feeding

How to feed your pond fish according to their species and prevent diseases

This information has been provided by your JBL partner:



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67141 Neuhofen
www.JBL.de



UK 9728010 V00

4 014162 022806

*Algae trouble in your ponds?
The JBL Pond Lab will help!
www.jbl.de/en/online-hospital*