

Professional

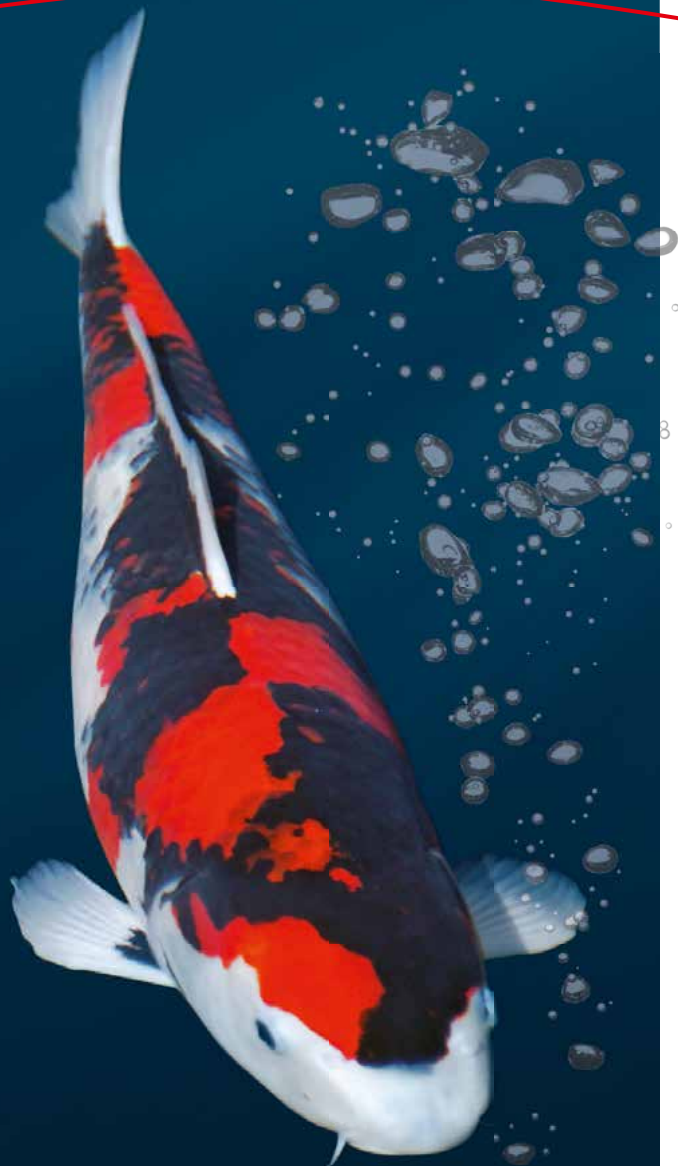
 **Sera®**

KOI



 **Sera®**
For natural garden ponds

www.sera.de



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Koi are miracles of nature

Koi are Japanese ornamental carps that were already mentioned in Chinese literature over 2,000 years ago. “Koi” or “Goi” is the Japanese word for carps in general. The Koi bred today mainly originate from Japan, but also from Israel, Singapore or South Africa, among others.

With over a hundred color and pattern combinations, they are fish with a noble appearance, and they become increasingly popular. They are regarded bringers of luck and may become very tame. Beautiful – depending on body shape and color pattern – fish have a considerable value.

There are at least fifteen main variants and over a hundred subvariants, varieties with one, two or three colors are most common.

The **sera** Research Department has developed the unique **KOI Professional** food that exactly matches the nutritional requirements of the Koi concerning size, temperature and season.

Koi may become 50 years old and, depending on the variant, grow to over a meter (3.3 ft.) in length. However, the pond size has an influence on how fast the Koi will grow. Water quality and nutrient supply decide whether it reaches its potential size and an age according to its nature.





Optimum feeding and **water temperature**

The food composition strongly depends on the corresponding water temperature. All nutrients, especially carbohydrates, are less easily digested at lower temperatures. Food with a low percentage of carbohydrates and an accordingly higher amount of protein and fat is therefore ideal.

The **sera KOI Professional** food range provides the correct food for every season. You can always tell the assigned feeding temperature by the temperature scale on the package.





sera KOI Professional Best food for Koi

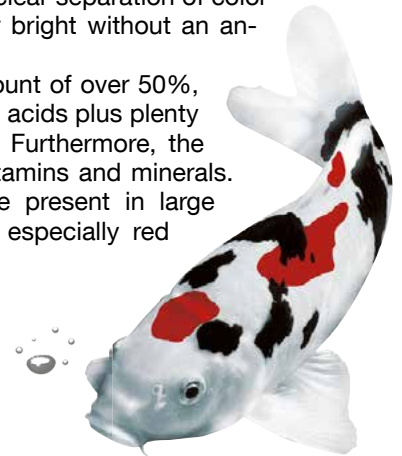
Spirulina

brilliant color depth and a silky appearance



Appropriate nutrition is required for optimizing the splendid colors of Koi. A high amount of Spirulina micro algae in the food supports color saturation and intensification as well as the clear separation of color zones. White areas appear bright without an annoying yellowish tint.

Spirulina has a protein amount of over 50%, contains all essential amino acids plus plenty of unsaturated fatty acids. Furthermore, the algae contain numerous vitamins and minerals. The carotinoids, which are present in large amounts, enhance colors, especially red ones.



sera KOI Professional Spirulina Color Food can be fed throughout the year when the water temperature is above 8°C (46°F).



1 mm



max. 15 cm (6 in.)



3 mm



min. 15 cm (6 in.)



Feeding in spring



When spring comes, the pond wakes up again: The fish go through a wake-up phase after having strongly reduced their metabolism during winter. A beautiful, but also a difficult time. Some bacteria are already active, while the immune system of the Koi, just like the entire metabolism of the cold-blooded animals, is still in energy saving mode.

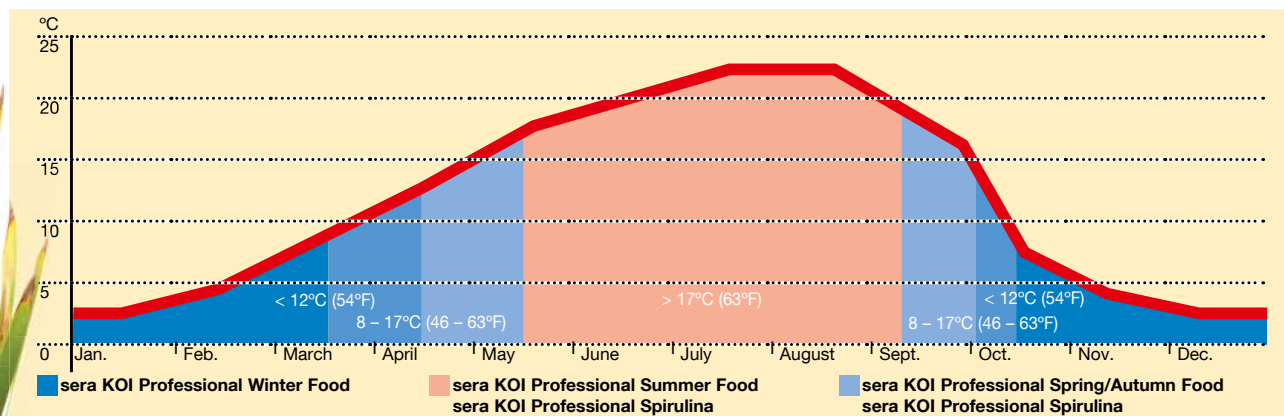
The key task for Koi is therefore to quickly top up nutrient depots as well as to support the weakened immune system. The intestinal flora also needs time to build up. Therefore, Koi should be fed exclusively easily digestible food at low temperatures.

Feeding in autumn

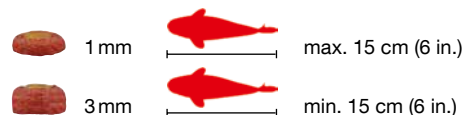


In autumn, the time for all preparations to make Koi hibernate healthily begins. This is the last chance for the Koi to put on reserves for the winter rest.

When the Koi become less active due to falling and strongly varying water temperatures, easily digestible food rich in protein and vitamins is advisable for the transitional period before winter. The immunopotential should be utilized; adding highly unsaturated fatty acids according to the requirements of the Koi is a precondition for forming nutrient depots as to ensure mobilization in spring.



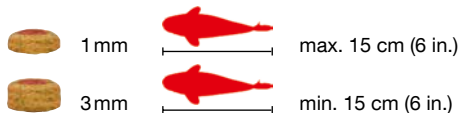
The composition of **sera KOI Professional Spring/Autumn Food** is consistently directed at temperatures below 17°C (63°F).



Feeding in summer



Summer is the most beautiful season for Koi enthusiasts. The fish are extremely active and grow quickly. Now the color intensifying natural additives (astaxanthin, carotinoids) are optimally utilized. An easily digestible food is important, as high water temperatures and sunlight support algae growth. The objective: Good nutritional condition, minimizing the risk of infections in young and adult Koi, best possible growth and minimal water pollution.



sera KOI Professional Summer Food is being fed when the temperature is above 17 – 18°C (63 – 64°F).



Feeding in winter



During winter, Koi have only very little metabolism due to low water temperatures. As long as they are still looking for food on the bottom, very good digestibility and high bioavailability of the food are very important. An ideal winter food therefore has a reduced carbohydrate percentage and an increased fat percentage, while the added fat – valuable fish oil in case of **sera** food – should contain a high amount of essential, highly unsaturated omega fatty acids (EPA and DHA).

The highly digestible sinking food is rich in nutrients and of highest quality. It is fed sparingly. When temperatures sink below 6 – 7°C (43 – 45°F), the fish become inactive and hardly ever look for food, if at all. Feeding should be interrupted at water temperatures below approx. 4 – 5°C (39 – 41°F).

At temperatures below 12°C (54°F), **sera KOI Professional Winter Food** provides a balanced diet, rich in vitamins and according to nature.



Ø 2mm





Vital Immune Protection – the sera VIP Formula

The **sera VIP Formula** represents the consistent utilization of raw materials based on carefully selected plants and food organisms. The VIP Formula guarantees a well balanced ingredient ratio that optimally matches the requirements of the Koi.



Vitamins Perfectly healthy

Vitamins – an important factor for the growth and the metabolism of the Koi. Vitamins are organic compounds essential for the organism that are not or only insufficiently formed within the body. The naturally high vitamin level due to selected ingredients in **sera** food is enhanced in a directed and balanced way (e.g. by an additional portion of stabilized vitamin C in **sera KOI Professional Spring/Autumn food** for increased disease resistance).



Proteins Building blocks of life

Proteins are responsible for the buildup of muscles, bones, skin, fat, blood and tissues. Their most important task is therefore the buildup of body substance for growth, recovery and body maintenance.

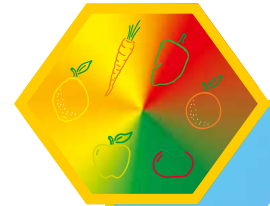
The amino acid composition must be correct for utilizing the proteins effectively with minimum water pollution by excreted indigestible remainders. (High quality fish protein instead of, e.g. unsuitable soy protein!)



Ballast substances Good digestion

Ballast substances are indigestible nutrition components which are, however, indispensable for proper digestion. In **sera** food, they are provided by vegetables and herbs, which are also very valuable otherwise.

Vitamins



Proteins



Ballast substances



Mineral substances



Fats



Carbohydrates



Mineral substances Robust skeleton, strong nerves

Mineral substances have very different functions. When added in the correct and balanced amounts, they support, for instance, skeleton and nerve buildup, regulate osmosis and keep the blood gas exchange intact.



Fats Energy sources

Fats are the most important energy sources for Koi. Insufficient fat amounts on the food can lead to inflammations as well as heart and liver problems. High quality fish oil from marine fish, as used in the **sera** foods, is characterized by a particularly high amount of essential, highly unsaturated omega fatty acids (EPA and DHA), which fulfill important functions within the body.



Carbohydrates Summer nutrient

Carbohydrates are another energy source for Koi. This easily accessible nutrient is, especially during summer, well suited to help the fish put on weight before winter comes. During the colder seasons, carbohydrates must be reduced, as they become less digestible depending on temperature. As is the case with all **sera** raw materials, we strictly ensure gene technology free ingredients from the carbohydrate suppliers.



Spirulina Clear color separation

These micro algae do not only provide high quality proteins and other important ingredients but additionally enhance the immune system and support the formation of brilliant colors with clear white color and a clear color separation. Haematococcus algae (with the vitamin-like astaxanthin), which are also included in all **sera** foods, have comparable, very useful properties even in very small amounts. Using these micro algae makes sure **sera** does not need any artificial color supporting substances at all.



The best water quality

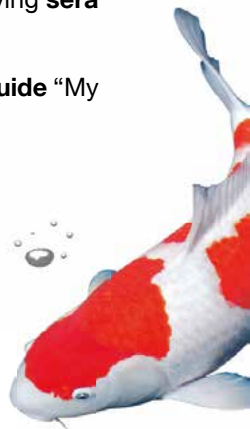
Garden ponds have a limited volume in which waste products can quickly accumulate and pollute the water. An accumulation of small amounts of organic material such as leaves and grass is thus normal. Uneaten food and fish waste also contribute to water pollution. Adding too much food must therefore be avoided. Also, you should not feed food of poor quality that is poorly digested, as this would lead to increased amounts of undigested food components and, correspondingly, to increased and unnecessary water pollution. Poor water quality can extremely affect the growth and the health of your Koi.

The modern, powerful pond filters **sera KOI Professional 12000** and **KOI Professional 24000** provide compact filter systems that effectively remove impurities and pollutants from the pond water and enrich it with oxygen. A mechanical purification step – which in the new version, in addition to the split sieve, also provides fine mesh filter sponges with an overflow pipe that particularly effectively removes floating algae (re-

sponsible for “green water”), bacterial and mineral cloudiness – is followed by a bio chamber. Filter bacteria settling on the unique filter material **sera siporax pond** become active here. They break down dangerous pollutants that may enrich in the pond water. This includes the main final product of protein metabolism: toxic ammonia, but also its – also very toxic – breakdown product nitrite, which is then further converted into the mostly harmless nitrate. The latter one serves as a plant nutrient.

The pond filters can optionally be equipped with UV-C filter units (for reducing the pollution by pathogens and single celled algae) as well as with energy saving **sera pond pumps PP**.

You will find detailed information in the **sera guide** “My pond” and on the Internet on **www.sera.de**.



The high-quality **sera KOI Professional food range** and the innovative **sera KOI Professional Pond Filters** ensure naturally clean and crystal clear pond water.







sera med Professional Treatments

Many dangerous fish parasites could hardly be treated so far. It was often necessary to use veterinary medications that require a prescription. These products were often not specially designed for fish and therefore may be problematic concerning their application and effect (e.g. poor water solubility, difficult dosage, unsuitable supporting agents).

Now there are new, optimal treatments from the **sera** laboratories in Heinsberg, specially developed for Koi and other ornamental fish. **sera med Professional treatments** work quickly and effectively.

You will find detailed information about **sera treatments** in our guide “Healthy pond fish”, or on the Internet on **www.sera.de**.



sera med Professional Tremazol is effective against gill and skin flukes, tapeworms and *Transversotrema*. **sera med Professional Argulol** is effective against parasitic crustaceans: Fish lice, anchorworms, copepods that live on the gills as parasites, and parasitic isopods.





The innovation by the sera Research Department:

sera KOI Professional – the first co-extruded fish food

The natural high-quality food ingredients are processed by different methods, ensuring that the valuable components are preserved. Just like human food, Koi food also contains ingredients that need to be processed carefully at low temperatures, and ingredients that become fully effective at high temperatures.

The co-extrusion method allows to combine the separately manufactured components to a food morsel consisting of a ring and a core especially considering the requirements of the Koi during the different seasons.

This ensures high digestibility, low water pollution and, consequently, low care efforts for the pond throughout the year.

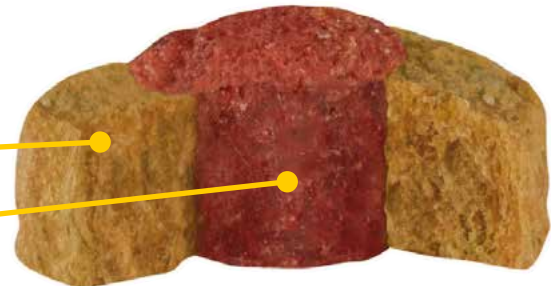
The ring (loop) contains a nutrient combination that exactly matches the nutritional requirements of the Koi during the corresponding season and water temperature. The loop contains very easily digestible ingredients that provide energy and serve as building blocks for growth. The carefully selected raw materials mainly originate from aquatic sources, thus ensuring optimal digestibility and, accordingly, lowest possible water pollution.

The core with the **sera Vital Immune Protect Formula** is manufactured in a very careful low temperature process. Being rich in a balanced combination of vitamins, minerals and trace elements, the food ensures health and longevity of the exclusive fish. Other active ingredient additives, such as beta-glucanes and natural micro algae (Spirulina and Haematococcus), activate and stabilize the immune system, and support color development.



Ring (loop)

Core



sera Professional products



sera KOI Professional Spring/Autumn Food

The easily digestible food for temperatures below 17°C (63°F) for preparation for winter and for an unburdened start into the year. Additional vitamin C strengthens disease resistance.



sera KOI Professional Summer Food

For an extra portion of energy at temperatures above 17°C (63°F). Strong and healthy growth with optimal energy supply and minimum water pollution.



sera KOI Professional Winter Food

Sinking special food for Koi and other valuable pond fish at temperatures below 12°C (54°F). Particularly easily usable at cold temperatures due to its high amount of omega-3 fatty acids (EPA and DHA) and the reduced carbohydrate amount.



sera KOI Professional Spirulina Color Food

The professional food for perfect colors, ideal growth and healthy fish – throughout the year above 8°C (46°F). The high percentage of carotene rich Spirulina and astaxanthin rich Haematococcus algae ensures color depth and clear color separation.



sera KOI SNACK

Easily digestible treat sticks for feeding fun directly from your hand.



sera KOI Professional 24000 Pond Filter

Multi-step purification system including 30 liters (7.9 US gal.) **sera siporax pond** filter medium plus 2 fine mesh filter sponges with overflow pipe. For ponds up to 40,000 liters (10,600 US gal.) and Koi ponds up to 24,000 liters (6,340 US gal.). Optionally 2 **sera pond UV-C Systems 55 W** ready for connection and/or 2 **sera pond pumps PP 12000** plus 25 m (27.5 yd.) of hose.

Treatments



sera med Professional Tremazol

Quickly and safely effective treatment for ornamental fish against gill and skin flukes, tapeworms and against digenic trematodes (flukes, e.g. *Transversotrema* or those that cause worm cataract). A short bath treatment is suitable for pond fish.



sera med Professional Argulol

Well tolerated, highly concentrated treatment for the quick and complete removal of parasitic crustaceans that frequently occur in ponds, such as fish lice (*Argulus*), anchor worms, gill flukes, parasitic isopods and small crustaceans (which may serve as intermediate hosts for other parasites).

Remainders are broken down biologically. – A water change is not required.



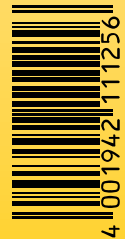
The first co-extruded Koi food

Optimal fatty acid composition
with omega-3 fatty acids.
Balanced carbohydrate amount,
rich in high quality fish protein.

**For a high usability,
less water pollution and clear water**

**sera Professional –
Only nature is better.**

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