

**BIOKAL INTERNATIONAL Ltd.**  
**PLANT PROTECTION**  
**TECHNOLOGIES**



*HORTICULTURAL CROPS*  
&  
*FRUIT CULTURES*



NATUR BIOKAL

**THE POWER OF NATURE**



**NATUR BIOKAL®**

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# NATUR BIOKAL PRODUCT FAMILY

With the application of the Natur Biokal product family it can be ensured that crops get the necessary nutrients in a gentler way. The product consists of 100% natural ingredients. It is produced from plant-, animal-, and mineral-based substances containing vital nutrients, which are beneficial for the crops and the soil. It is simple to integrate into any crop protection treatment. It is essential to ensure adequate nutrition supply during the main stages of the entire growth cycle of crops (e.g. germination-emergence, root and leaf development, tiller production,



stem elongation, appearance of inflorescence, bud formation, flowering, fruit and seed maturation) in order for the treated plant to grow in the most optimal way. **The use of the Natur Biokal product family triggers natural crop protection effects.** The stress tolerance of crops has been reduced due to the increasingly



extreme weather conditions, and therefore, they are becoming more and more susceptible to diseases and damage by pests.

With the use of our product family, the stress tolerance of plants can be increased, and it will be easier for them to tolerate damage caused by sandblasts, hail, windstorms or fluctuations in temperature. As a result, plant tissue can regenerate and renew faster.

**It has preventive and inhibitory effect against fungal diseases in crops.** It strengthens the epidermis of plants, making them more resistant to bacterial and fungal diseases. This factor is also very important for crops intended for storage. Over the years, more and more pest become resistant, and the authorization of more and more pesticides are withdrawn, and therefore, it is increasingly difficult to destroy pests. The Natur Biokal product family contains fragrances that are hard for pests to tolerate, so they are less likely to settle on the plant – or they avoid them completely. **This is due to the natural insect repellent effect of the fragrance that comes from the essential oil content.**

NATUR BIOKAL

## Advantages of using the Natur Biokal product family:

- Authorized for use in organic farming in 100%
- Effective when used in any cultivated plant
- Withdrawal period: 0 day
- Occupational health waiting time: 0 day
- Due to its mode of action, it stimulates the natural defense activity of crops (strengthens the immune system) against fungal infections and external environmental stresses
- The use of the product increases the leaf surface, allowing the plant to absorb more macro- and micro nutrients
- Enhances nutrient uptake that is otherwise difficult for plants
- Improves the general condition and biochemical characteristics of plants
- Strengthens the epidermis of plants, making them more resistant to external impacts

## Recommended use:

- for the leaf treatment of field crops in the quantity of 10–20 l/ha, on 2–4 occasions during the growing season, applied at a concentration of 5–8%,
- for the leaf treatment of vegetables in the quantity of 10–15 l/ha, on 4 occasions during the growing season, applied at a concentration of 5–6%,
- for fruit cultures: for apple in the quantity of 15–20 l/ha, for blackberry in the quantity of 10 l/ha, for grape in the quantity of 15–30 l/ha on 3–4 occasions during the growing season, applied at a concentration of 7–10%.



It should always be applied in a concentration of 5% solution, which means that at least 5 liters of Biokal should be added to 100 liters of water.

Any member of the Natur Biokal product family can be applied together with **any pesticide in one single application**, but a mixing test is required to be performed previously! The impact of the crop protection product is intensified when applied together with chemicals, so the number of treatments can be decreased.

The product family is freely available for everyone, since a pesticide purchase permit is not required. When used for home gardens, all crops can be grown completely free from chemicals.

The ingredients speak for themselves:

The products are based on the most effective herbs in our country – produced for this purpose in controlled “organic” conditions – which are then soaked in thermal water with the highest mineral content in Hungary: it is slightly alkaline, alkaline bicarbonate thermal water with iodide and other trace element ion content.

The following items are also added:

- biohumus produced by earthworms from high quality cattle manure,
- aqueous suspension of wood ash, which, due to its alkaline pH, is suitable for neutralizing the effects of acidic environment (rain, etc.), and adds large amounts of potassium to the products,
- essential oil extracts of various plants to repel pests,
- amino acids, humic acids, fulvic acid, humus-generating soil structure converters, formic acids, polysaccharides, chlorophyll, carotenoids, vitamins, alkaloid minerals containing over 20 kinds of alkaloids, nicotinic acid, 8–10% silicic acid, aconitic acid, oxalic acid, anions, cations, 3.520 mg/liter of humus generating live flora soil structure converters.

# NATUR BIOKAL 01 QUALITY ENHANCING PLANT CONDITIONER



**BIOKAL 01** is suitable for use in any field crops and horticultural crops. It is also suitable for **seed treatment** when the surface of the seeds is covered as protection at first germination. The seeds germinate faster, stronger root is developed, and the plant will emerge easier. In this way, the soil pests have less time to do damage during the germination phase. The application technology after emergence is specified for each crop culture. This product that contains natural foliar fertilizer can be added to the drip solution in case of drip irrigation, or by spraying on the foliage. Based on experience, it is much easier for plants to uptake nutrients through the stomata (plant pores) than through the roots, and therefore, foliar fertilization is very important.

**Before planting woody plants**, it is recommended to immerse the root of the seedlings in Natur Biokal 01 solution, or it can also be used for **general spraying**, which is suitable for reducing the number of overwintering pest and pathogen forms. In case of non-productive orchards, its regular use will have a positive effect on next year's shoot formation.

## Natur Biokal 01 composition:

- Extract of various herbs with special thermal water 57%
- Essence of biohumus 38%
- Essential oils 5%
- Medicinal water, minerals and trace elements

**Due to the strict production rules defined to exclude any possibility of falsification, the exact composition of Natur Biokal 01® is still secret.**

# NATUR BIOKAL 02 NATURAL PLANT VITALIZER

**BIOKAL 02** is suitable for use in any field crops and horticultural crops **from the beginning of fruit set to the end of the growing season**. The environmental stress factors are present throughout the growing season of the plant (hails, windstorms, extreme temperatures); in addition to mitigating these effects, Natur Biokal 02 foliar fertilizer has an important role in fruit set as well. Optimal fruit set is important, because this is what determines yield quality and quantity. If there are not sufficient nutrients to be absorbed in this development phase, fruit drop off will occur. A Natur Biokal 02 increases the uptake of plant nutrients, which promotes the development of more and better quality fruits. It reduces flower and fruit drop-off by reducing stresses from the environment.

In case of woody plants, it increases yield quality and quantity.

## Natur Biokal 02 composition:

- Extract of various herbs with special thermal water 45%
- Essence of biohumus 40%
- Aqueous extract of wood ash (natural alkalizing effect) 10%
- Essential oils 5%



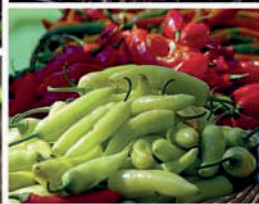
**Due to the strict production rules defined to exclude any possibility of falsification, the exact composition of Natur Biokal 02® is still secret.**



# Technology of pepper cultivation



The Natur Biokal product family can be used freely in the production of sweet peppers in greenhouses or field cultivation. It has natural plant protection effect, increases resistance to diseases, and prevents fungal diseases. The products harmonize nutrients, and stimulate root formation. When used for seed coating,



the seeds should be soaked in the mixture of 1 liter of water and 1 liter of Natur Biokal 01 for one day. On the next day filter the seeds (let them dry), and on the

third day they are ready for sowing either by hand or by sowing machine. After emergence, it enhances rooting and prevents damping-off. It impacts the nutrient uptake of plants positively, resulting in healthy, strong and balanced seedlings. The transplanted seedlings develop roots easier, and start growing faster. The product extends the flowering time by 3–4 days. The essential oils in the product have repelling effect against insect pests (thrips, mites, owl moths). The regular use of Natur Biokal 02 – in addition to the beneficial effects of Natur Biokal 01 – helps to increase fruit set and improve fruit quality. It can be applied at harvest as well, because the withdrawal period is: 0 day. Authorized for use in organic farming in 100%.

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
Before sowing, with constant seed coating	Natur Biokal 01	For 1 kg seed 1 l Natur Biokal 01 + 1 l water	Day 1: soaking Day 2: drying (let dry) Day 3: sowing
When growing seedlings, from the time the first true leaves appear, to prevent damping-off	Natur Biokal 01	2 l / 40 l water	every 10 days
After planting At the time of rooting	Natur Biokal 01	10 l / 200 l water	on 2 occasions
Until flowering	Natur Biokal 01	10 l / 200 l water	Occasionally for the prevention of fungal diseases, in extreme weather conditions
From the appearance of fruit	Natur Biokal 02	10 l / 200 l water	every 12 days, repelling insect pests, to enhance yield growth
At the time of fruit ripening	Natur Biokal 02	10 l / 200 l water	on 1–2 occasions for increasing nutritional content

# Technology of cucumber cultivation

The Natur Biokal product family is suitable for use both in cucumbers grown under protection and in field cucumbers. It can be applied together with crop protection treatments in one single application. It stimulates plant growth, and is also suitable for preventing fungal diseases, and for increasing the effectiveness of pesticides. In sudden weather changes, e.g. temperature drop, cold soil, root loss, low light periods, it assists plants in surviving the stressful period. Natur Biokal 01 and 02 improves the uptake of nutrients, increases resistance to diseases, so it should already be used from the



seedling stage. It stimulates and increases rooting, increases chlorophyll content, improves fruit set, and increases yield. It has a repelling effect against thrips, aphids and mites. Its regular use triggers natural defense mechanism against downy mildew and powdery mildew. Its effects are intensified if applied together with other crop protection treatments.

It is suitable for use during harvesting, since its withdrawal period is 0 day.

The products are approved for use in organic farming.



NATUR BIOKAL

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
When growing seedlings, from the time the first true leaves appear	Natur Biokal 01	2 l / 40 l water	to prevent damping off, even on several occasions
Plant stem irrigation at the time of planting	Natur Biokal 01	10 l / 200 l water	to reduce planting stress, faster rooting
At the intensive growth stage if necessary, can be applied together with chemicals in one single application on 2-3 occasions	Natur Biokal 01	10 l / 200 l water	against insect pests (thrips, aphids, moths, mites), preventively against fungal infections
on 2-3 occasions when fruits are picked	Natur Biokal 02	10 l / 200 l water	to prevent downy mildew, powdery mildew, repelling insect pests continuously

# Technology of tomato cultivation



The Natur Biokal product family can be used in the production of greenhouses tomatoes for the table, or in industrial field cultivation. It is suitable for targeted use during intensive farming. The Natur Biokal product family has natural fungicide effect as early as in the seedling stage. After transplanting, it inhibits the settlement of *Phytophthora infestans*, and also helps healing faster. Its essential oil content repels insect pests, such as thrips, owl moths and *Tuta absoluta*. When added to a tank mixture of bacterial (*Xantomonas* and *Pseudomonas*) pesticide treatment, it ensures faster healing. The products harmonize nutrients, stimulate root formation, extend flowering time by 3–4 days, improve fruit set and fruit quality, increase lycopene content and yield. It is recommended to start using it regularly as early as in the seedling stage. The products are approved for use in organic farming.



It can be applied at harvest as well, because the withdrawal period is: 0 day



Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
When growing seedlings, from the time the first true leaves appear	Natur Biokal 01	2 l / 40 l water	to prevent damping-off (Sheath Blight, Phythium) and soil pests
After planting	Natur Biokal 01	10 l / 200 l water	to relieve planting stress (cold ground), against soil pests
After rooting	Natur Biokal 01	10 l / 200 l water	to stimulate nutrient uptake, against <i>Tuta absoluta</i> , whiteflies, phytophthora infestans, bacterial diseases
Before flowering	Natur Biokal 01	10 l / 200 l water	prolonged flowering, better fruit set, against insects and fungi
up to 2x during fruit growth	Natur Biokal 02	10 l / 200 l water	against insects and fungi
From the start of fruit colour development	Natur Biokal 02	10 l / 200 l water	quality and shelf life improvement



# Technology of potato cultivation



The Natur Biokal product family can be used for coating the tubers, and every 7–10 days after emergence as preventive measure to protect from Phytophthora. As a result, not only damage will be smaller, but less chemical will have to be used in the rest of the growing season. In addition, the crop will



tolerate adverse weather conditions much better, and its water balance will also be improved. If adequate fertilizer is added during the intensive growth stage, the plant will have higher chlorophyll content.

In addition to the Phytophthora disease, potato beetle causes the greatest problems. Several pesticide authorizations have been withdrawn that were previously available, since the potato beetle has become resistant against them. The composition of the Natur Biokal product family contains various essential oils with fragrances that repel potato beetles and aphids. Regular use of the product ensures greater yield, higher quality, higher starch content, and longer shelf life.

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
Seed potato coating	Natur Biokal 01	30 l / 100 l water Natur Biokal 01 solution	by mixing, or depending on the number of sprouts, by spraying
After emergence, mixed with insecticide	Natur Biokal 01	10 l / 200 l water	in case of potato beetle invasion
at the phase of intensive growth, in the same application with protection against potato blight	Natur Biokal 01	10 l / 200 l water	against potato blight and potato beetle
Before flowering	Natur Biokal 01	10 l / 200 l water	to improve stress tolerance, to prevent potato blight, secure fruit setting
at the phase of tuber growth, in the same application with protection against Phytophthora and potato blight	Natur Biokal 02	10 l / 200 l water	against fungal diseases and insect damage, to improve nutritional value (starch)
In case of hail damage	Natur Biokal 01	20 l / 200 l water	on 1 occasion

# Technology of root vegetables cultivation



Since root vegetables have large foliage, it generally effectively assists foliar fertilization. Foliar fertilization performed using the Biokal product family strengthens the foliage against diseases and adverse climatic effects.

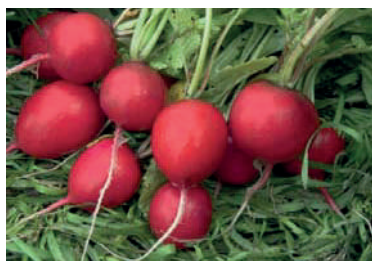
One of the serious problems of root vegetable production is that there are few products available for the control of root-knot nematodes and carrot flies. And the few ones available cannot be used continuously throughout the growing season.



The other problem is the elimination of storage diseases in crops intended for storage. In addition to the importance of the good condition of the green mass and root, it is extremely important for the beet epidermis to be as strong as possible, to avoid mechanical damage during harvest, because soil fungi (Stemphylium disease, white and gray mold rot) settle on any wounds, and as a result of growth, the crops will rot in the storage area. When crop protection treatments are supported by the Natur Biokal product family, the root epidermis will be stronger and more resistant to mechanical damage, and the wounds will heal much faster, so pathogens won't have enough time to enter the plant.

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
in 3–5 true leaf stage, in one single application with post-emergence weed control	Natur Biokal 01	10 l / 200 l water	rooting stimulation, relieving cold stress
in 7–10 leaf stage, in one single application with fungicide treatment	Natur Biokal 01	10 l / 200 l water	tissue support, increasing resistance to diseases
Middle of root growth stage, treatment up to 2 occasions	Natur Biokal 02	10 l / 200 l water	to relieve cold stress, conditioning and protection against fungal infections, in particular diseases usual during storage
Second half of the growth period	Natur Biokal 02	10 l / 200 l water	improving quality (taste, color content), to improve nutritional values

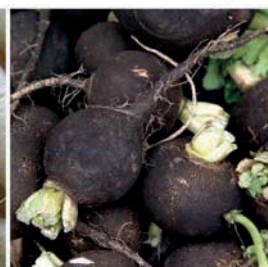
# Technology of radishes cultivation



When growing radishes (radish, black radish, icicle radish) it is important to consider that these are mostly short-season crops, so the goal is to produce uniform, nice-looking stock during this short time. To achieve this, it is necessary to ensure continuous supply of nutrients so that the plant can uptake the nutrients quickly and to the highest possible degree. This process is facilitated by the Natur Biokal product family.



The greatest problem in pest control is the decreasing number of available pesticides. This poses an especially great problem in case of fly species that have larvae damaging the underground part of radishes. Pesticides authorized for this culture have contact effect, and they have the same mechanism of action.



Therefore, if pesticide treatments are supplemented by the use of products in the Natur Biokal product family, better effect can be achieved in the control of these pests.

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
Intensive foliage growth, in one single application with the treatment against fungal diseases, application on 2 occasions	Natur Biokal 01	10 l / 200 l water	treatment of stress caused by thermal fluctuations, to improve the resistance of tissues
During intensive growth	Natur Biokal 01	10 l / 200 l water	to ensure better uptake of nutrients, to prevent pests and pathogens
Root growth, colouring	Natur Biokal 02	10 l / 200 l water	to improve taste and color content



# Technology of bulb crops cultivation



In the technology of bulb crops cultivation, the use of the Natur Biokal 01 and Natur Biokal 02 plant vitalizer is recommended every 14 days, applied through foliar fertilization.

With continued use, it has preventive effect against fungal diseases, especially in preventing and treating the downy mildew of the bulb. Its repellent effect against onion fly, due to its essential oil content, is well known.



During intensive cultivation there may be nutrient supply disruptions in the plant. Targeted treatments with Natur Biokal are excellent for preventing or eliminating expected or actual physiological disorders, stresses caused by weather conditions, micronutrient deficiencies – while rooting and nutrient uptake is also increased.

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
Foliage development phase with line treatment	Natur Biokal 01	10 l / 200 l water	to stimulate rooting
Intensive growth on 2–3 occasions	Natur Biokal 01	10 l / 200 l water	To improve stress tolerance, prevent diseases (downy mildew), conditioning, repelling onion flies
Bulb development on 2–3 occasions	Natur Biokal 02	10 l / 200 l water	to improve crop quality, disease prevention, (downy mildew, powdery mildew), to repel onion flies
In case of hail damage on 1 occasion	Natur Biokal 01	20 l / 200 l water	regeneration of tissues



# Technology of brassica vegetables cultivation

It is recommended to use the Natur Biokal product family for brassica vegetables from as early as the seedling stage. It is also suitable for minimizing stress after transplanting, or shock caused by environmental factors (ice and wind damage). There may be short nutrient uptake disturbances during heading in the intense growth



stage, which may be mitigated by continuous nutrient supply. The relatively large foliage enhances the uptake of Natur Biokal. It can be applied together with any pesticide treatment in one single application, so it in particular provides protection against cabbage flies and owl moths, as well as fungal and bacterial diseases (*Xanthomonas*, *Pseudomonas*) throughout the growing season. It conditions the plant, and increases their resistance to diseases. It has repellent effect against all pest insects.



- Authorized for use in organic farming in 100%.
- Withdrawal period: 0 day

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
After planting	Natur Biokal 01	10 l / 200 l water	to manage stress after planting, to stimulate root growth
At the intensive growth stage, applied together with protection against cabbage fly in one single application if necessary, on 2 occasions	Natur Biokal 01	10 l / 200 l water	to prevent fungal diseases, to repel cabbage flies, owl moths
In the heading stage, in case of stalk cavitation, prevention, on 2 occasions if required	Natur Biokal 02	20 l / 250 l water	to prevent fungal diseases, to repel cabbage flies, moths and owl moths, to reduce diseases during storage
In case of hail damage	Natur Biokal 01	20 l / 250 l water	on 1 occasion

# Technology of melon and watermelon cultivation



In the course of growing melons, it is also important to provide plenty of nutrients as early as in the seedling stage to make them more resistant to soil fungi (*Rhizoctonia*, *Phythium*), and to reduce stress caused by transplanting and environmental factors (hail damage, wind, fluctuations in temperature). It is essential to provide a continued supply of nutrients during intensive growth in order to achieve unique and nice-looking stock, and to ensure optimal fruit set. The Natur Biokal products assist all this: they ensure balanced nutrient supply, making the plant tissues



stronger, so the plant will be more resistant to extreme weather conditions, fungal and bacterial diseases. The products also contain essential oils with insect repellent effect, so insect pests will avoid the treated crops as a result of continuous treatment. Since harvest is performed continuously, no pesticide treatment can be applied; however, Natur Biokal products contain 100% natural ingredients, so their withdrawal period is 0 day, and therefore they can be applied even during harvesting. The ripe fruits are more savoury with a sweeter taste, and their shelf life increases.

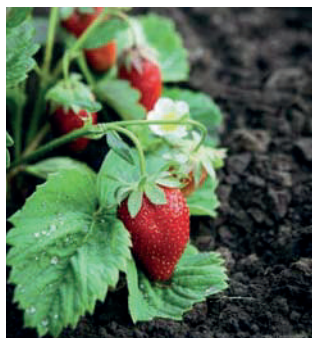


If applied immediately after hail damage in a concentration of 10%, it will quickly heal wounds caused by ice, preventing the

settlement of bacteria and fungi through the wounds. It is also authorized for use in organic farming throughout the growing season.

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
At the phase of growing seedlings	Natur Biokal 01	15 l / 200 l water	against damping-off (Phyrium, Sheath Blight)
After planting	Natur Biokal 01	15 l / 200 l water	to reduce planting stress, for faster rooting
Intense shoot growth	Natur Biokal 01	15 l / 200 l water	making tissues resistant to disease
Before flowering	Natur Biokal 01	15 l / 200 l water	prolonged flowering, improving fruit set
At intense growth stage	Natur Biokal 02	15 l / 200 l water	to stimulate growth, to increase fruit size, to prevent disease
Before ripening	Natur Biokal 02	15 l / 200 l water	to improve quality (taste, color content), to improve shelf life
In case of hail damage	Natur Biokal 01	20 l / 200 l water	faster healing of wounds, regeneration

# Technology of strawberry cultivation



The Natur Biokal product family is suitable for use in strawberry production in greenhouses or field cultivation, on soil or in hydroculture as well, throughout the growing season. Its continuous use has natural plant protection effect against gray mold and insect pests. Strawberries, as all berry plants, belong to sensitive crops. The main problem is that directly before ripening no pesticide treatment can be applied because of the withdrawal period. More and more damage is caused by the spotted wing drosophila (*Drosophilla suzukii*), since it stings ripening



fruits, leaving soft brown spots in the flesh. In addition, wounds are also exposed to secondary fungal infections, which will reduce shelf life. The essential oil content of the Natur Biokal product family helps to keep spotted-winged midges (*Drosophilla suzukii*) away, and strengthens the tissues, increasing shelf-life in this way. The regular use of the products improves fruit set, and therefore increases yield quantity and quality, especially the colours and flavours of the fruit. These products are suitable for use in organic farming, their withdrawal period is 0 day, so they can be used throughout the harvesting season.

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
After planting in the autumn	Natur Biokal 01	10 l / 200 l water	intense, vigorous rooting, relieves stress after planting
End of vegetative growth	Natur Biokal 01	10 l / 200 l water	in preparation for winter, to increase winter firmness
At the rooting phase, Repeated in the spring on 1-4 occasions	Natur Biokal 01	10 l / 200 l water	to strengthen tissues, increase resilience, improve rooting, to relieve stress caused by frost and cold soil, against damping-off (Phytophthora, Sheath Blight), to promote flower formation
Before flowering	Natur Biokal 01	10 l / 200 l water	to avoid fungal infections (late blight, botrytis, powdery mildew)
After fruit set, in the berry development phase on 2-3 occasions	Natur Biokal 02	10 l / 200 l water	uniform berry growth, against fungal infections, improving color and flavor
In the fruit ripening phase	Natur Biokal 02	10 l / 200 l water	against pests, especially to improve the spotted-winged midge ( <i>Drosophilla suzukii</i> ) and heteroptera, to improve color and flavor
In case of hail damage	Natur Biokal 01	20 l / 200 l water	faster healing of wounds, regeneration



# Foliar fertilization of non-productive orchard cultivation with Natur Biokal 01



Natur Biokal 01 biologically active solution stimulates the plant's immune system to make it more resistant to diseases, and triggers natural pest control effect against fungal diseases. Furthermore, it is an overall conditioner, increases frost tolerance, and stimulates root growth.

It assists in transforming hard to absorb nutrients in the soil into easy to absorb nutritional elements. In addition, it also reduces the number of overwintering forms of pests and pathogens, so it can also be used as general spraying. Its stimulating and strengthening effect also increases the effect of pesticides. Young plants with loose tissues are easily infected by fungal diseases.

If pesticides are overused, they may cause burns; Natur Biokal 01 is perfect for mitigating such damage. Its use enhances bud formation. It can also be freely used in organically cultivated fruit orchards. Treatment can be repeated every 7–10 days.





# Technology of pome fruits cultivation

Natur Biokal 01 and 02 biologically active solutions stimulates the plant's immune system to make it more resistant to diseases, and triggers natural pest control effect against fungal diseases. It can be used as preventive protection against fire blight (*Erwinia amylovora*). Its stimulating and strengthening effect also increases the effect of pesticides. Its essential oil content has repellent effect



against insect pests (apple moths, leaf-mining moths, leaf roller moths). Where used continuously, yield quality and quantity is also improved. It is recommended to use immediately after hail damage in a concentration of 10%, to quickly regenerate wounds caused by ice.



Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
At rest Spring / autumn	Natur Biokal 01	10 l / 200 l water	general spraying against overwintering forms of pests
Before flowering, in one single application with fungicide and pesticide treatment	Natur Biokal 01	10 l / 200 l water	against diseases infecting the flowers
After flowering, in one single application with fungicide and pesticide treatment	Natur Biokal 02	10 l / 200 l water	strengthening plant tissues, repellent effect against pests, against fungal diseases
After fruit set in small fruit size, in one single application with fungicide and pesticide treatment	Natur Biokal 02	10 l / 200 l water	increasing fruit set, preventing pest damage
During intensive growth	Natur Biokal 02	10 l / 200 l water	increasing fruit quality, preventing pest damage (moths)
Before and during ripening	Natur Biokal 02	10 l / 200 l water	preventing pest damage ( <i>Drosophilla suzuki</i> )
During hail damage	Natur Biokal 01	10 l / 200 l water	faster healing of wounds

# Technology of peach, apricot, and plum cultivation



Multiple preventive treatments may be required against the fungi causing peach leaf curl (*Thaphrina deformans*); the foliage application of the product Natur Biokal 01 together with fungicide increases the effect of fungicides. In case of plum, the weakened epidermis allows monilia disease to settle easier. It can be greatly reduced by the continuous application of the product. Since it is absorbed quickly, it strengthens and regenerates tissues, so the infection may be terminated earlier, and with fewer treatments. Insect pests: aphids, sawfly (*Janus compressus*), peach moth (*Anarsia lineatella*); in case of plum, it has repellent effect against leaf and fruit wasps, so they won't settle and reproduce – and in this way there will be less damage caused by larvae as well. Where used continuously, yield quality and quantity is also improved. It is recommended to use immediately after hail damage to quickly regenerate wounds caused by ice, and to prevent fungi spores from entering the plant tissue.



Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
General spraying in spring/autumn	Natur Biokal 01	10 l / 200 l water	reducing the number of pests and pathogens in overwintering forms
Before the flowering phase, in the same application with protection against taphrina	Natur Biokal 01	10 l / 200 l water	against leaf curl ( <i>Taphrina deformans</i> ), with repellent effect against insect pests (aphids, sawfly, peach moth)
After the flowering phase, in the same application with protection against taphrina	Natur Biokal 02	10 l / 200 l water	against leaf curl ( <i>Taphrina deformans</i> ), with repellent effect against insect pests (aphids, sawfly, peach moth)
After fruit set in case of small fruit size	Natur Biokal 02	10 l / 200 l water	to increase fruit set
During intensive growth	Natur Biokal 02	10 l / 200 l water	with repellent effect against insect pests (aphids, sawfly, peach moth), against fungal diseases (monilia, botrytis)
After reaching full fruit size	Natur Biokal 02	10 l / 200 l water	to improve shelf life, taste and colour
Before and during ripening	Natur Biokal 02	10 l / 200 l water	to prevent damage by spotted-winged midges, heteroptera, peach moth
During hail damage	Natur Biokal 01	20 l / 200 l water	faster healing of wounds, decreasing stress

# Technology of cherry and sour cherry cultivation

Flowering cherries and sour cherries (fertilization stage) are very sensitive to environmental factors. Too high temperature (above 25°C) or excessive rain during the flowering phase decreases fruit set. Prevention against the monilia disease should also be started during flowering and fruit set. Fungus entering through the stigma destroys the flower, then it also enters the shoot and the stem through the pedicel. The good condition and plant health of trees are prerequisites of adequate yield quantity and quality. The formation of buds is highly dependent on the nutrients supplied for the plant in the previous year.

Natur Biokal 01 and 02 biologically active solutions assist plants in becoming more resistant to diseases. It triggers natural pesticide effects against fungal diseases. Its effects are intensified if applied together with other pesticide treatments, and also fills the plants with nutrients. It is recommended to use immediately after hail



damage to quickly regenerate wounds caused by ice, and to prevent secondary fungal diseases from entering the plant tissue. Protection against the cherry fruit fly (*Rhagoletis cerasi*, *R. cingulata*) and the spotted-winged midge (*Drosophilla suzukii*) when the fruit is nearly ripened is difficult because of the withdrawal periods, since only materials with 0 day as withdrawal period can be used. Due to its essential oil content, the Natur Biokal product family repels cherry flies

and spotted-leaf midges, preventing any damage caused by them. Where used continuously, yield quality and quantity is also improved.



Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
General spraying in spring/autumn	Natur Biokal 01	10 l / 200 l water	against overwintering forms of pests and pathogens
Before flowering	Natur Biokal 01	10 l / 200 l water	against brown rot, to manage flowering stress
After flowering	Natur Biokal 02	10 l / 200 l water	against brown rot, to manage flowering stress
After fruit set in case of small fruit size	Natur Biokal 02	10 l / 200 l water	against fungal diseases, to enhance smooth fruit development
During intensive growth	Natur Biokal 02	10 l / 200 l water	against damage caused by cherry fruit fly, to improve flavour and colour
Before and during ripening	Natur Biokal 02	10 l / 200 l water	against damage caused by cherry fruit fly, fruit wasps, spotted-winged midges
During hail damage	Natur Biokal 01	20 l / 200 l water	regeneration of wounds

# Technology of wine grape and dessert grape cultivation

In grape production, Natur Biokal 01 and 02 biologically active solutions trigger natural pesticide effect against fungal diseases, they are especially recommended for preventing downy mildew of grapevine and powdery mildew. It can be applied together with any pesticide treatment in one single application. After berry set, gray mold (*Botrytis cinerea*) can cause serious problems. Young berries will rot and die. The pathogen prefers



rainy, humid weather, when it settles in dense foliage, and infects the plant through wounds (by pests or mechanical) or by penetrating crack in the berries. Due to its essential oil content, it has insect repellent effects. It is essential to protect against phytoplasma spread by the American grapevine leafhoppers (*Saphoideus titanus*),

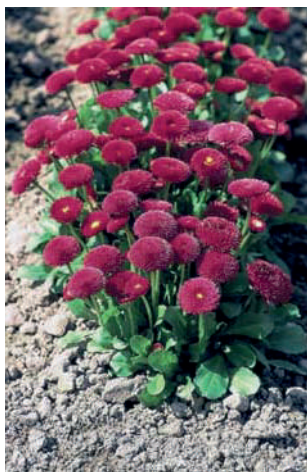
which causes the yellowing of grape. Where used continuously, yield quality and quantity, as well as the nutritional value are also improved.



Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
4-6 leave state	Natur Biokal 01	10 l / 200 l water	.
Before flowering	Natur Biokal 01	10 l / 200 l water	prolongation of flowering
Berry set	Natur Biokal 02	10 l / 200 l water	to improve fruit set, against American grapevine leafhopper
Intense shoot growth	Natur Biokal 02	10 l / 200 l water	against powdery mildew, downy mildew, American grapevine leafhopper
Veraison	Natur Biokal 02	10 l / 200 l water	against powdery mildew, downy mildew, American grapevine leafhopper
Ripening	Natur Biokal 02	10 l / 200 l water	to prevent damage caused by fruit wasps and grapevine leafhoppers
During hail damage	Natur Biokal 01	20 l / 200 l water	faster regeneration of wounds on berries and shoots



# Care for ornamental plants with Natur Biokal technology



For the protection of human health, it is important to apply as few chemical pesticides on ornamental plants in the garden and in public areas as possible. When using the Natur Biokal product family on perennial ornamental shrubs, protection can be provided with using absolutely no chemicals. These plant conditioners can also be used in organic farming, since their withdrawal period is 0 day. It is recommended to use Natur Biokal 01 from the start of the growing season, already for the general spraying in the spring, since it reduces the number of overwintering forms of fungal diseases, and due to its essential oil content, it also repels insect pests.

Applied from the second half of the growing season, Natur Biokal 02 strengthens the tissues of leaves,

so fungal and bacterial diseases are less likely to attack shrubs. When used immediately after any abiotic stress (hail damage, drought, storm), it will help the wounds heal faster. Due to its essential oil content, it will have



repellent effect against all insect pests during the entire growing season. In this way, we will be delighted by the beautiful, green-leaved ornamental shrubs all year round.

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
General spraying in early spring	Natur Biokal 01	10 l / 200 l water	against overwintering pests (fungi, insects)
1st part of the growing season, on 3 occasions in every period of 10–14 days	Natur Biokal 01	10 l / 200 l water	against pests, to strengthen plant tissues
2nd part of the growing season, on 3–5 occasions in every period of 10–14 days	Natur Biokal 02	10 l / 200 l water	against pests, to strengthen plant tissues
Against abiotic stress	Natur Biokal 01	20 l / 200 l water	hail damage, sudden temperature change

# Care for ornamental plants with Natur Biokal technology



When using the Natur Biokal product family on annual plants planted either in flower beds or in flower pots, care can be provided with using absolutely no chemicals during the entire growing season. These conditioners contain only natural ingredients, so they are suitable for use in organic farming; their withdrawal period is 0 day. They are not harmful to the environment. Due to the ingredients of the product family, they strengthen plant tissues throughout the entire growing season, making them more resistant to disease, and therefore, they will tolerate any rapid weather changes easier (fluctuation of temperature, hail and wind storms).



Due to its essential oil content, the products have insect repellent effects. Fast rooting and development is important after transplanting. If the plant is soaked with Natur Biokal 01, it reduces stress caused by transplanting, and also stimulates root growth. If applied on 3–4 occasions until flowering, we will achieve strong and uniform crops.



Use Natur Biokal 02 after the appearance of flowers. It will result in multiple and more beautiful flowers.

In case of potted indoor plants, before flowering, add 0.5 dl Natur Biokal 01 to 1 liter of water every two weeks, and proceed similarly with Natur Biokal 02 after flowering.



Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
At the phase of planting seedlings	Natur Biokal 01	10 l / 200 l water	to reduce planting stress, improve rooting
1st part of the growing season, on 3 occasions in every period of 10–14 days	Natur Biokal 01	10 l / 200 l water	against pests, to strengthen plant tissues
2nd part of the growing season, on 3–5 occasions in every period of 10–14 days	Natur Biokal 02	10 l / 200 l water	against pests, to strengthen plant tissues
Against abiotic stress	Natur Biokal 01	20 l / 200 l water	hail damage, sudden temperature change

**BIOKAL INTERNATIONAL Ltd.**  
**PLANT PROTECTION**  
**TECHNOLOGIES**



*FIELD CROPS*



NATUR BIOKAL

**THE POWER OF NATURE**



**NATUR BIOKAL®**



# Technology of winter wheat cultivation



Since the ban on seed treatment with pesticide content, the first defense line used for the germ state has been interrupted. After sowing, the seeds are not protected against pests by pesticide-content ingredients, so the seed either does not germinate, or germinates late. Natur Biokal 01 product can be used in any seed treatment method (directly after harvest, between harvest and sowing, before sowing). When used for seed coating, the mixture of 10 liters of water and 10 liters of Natur Biokal 01 is required for 1 ton of seed.

It can be applied together with any weed control or pesticide treatment in one single application. Due to its nutrient content it strengthens the plant, and therefore prepares it for the winter, and it also works preventively against powdery mildew. Its essential oil content repels

the larvae of ground beetles and owl moths.

When applied together with weed



control in the spring, damage by early spring pests can also be decreased. When applied together with the pesticide treatment used at the mass larvae emergence of cereal leaf beetles, it strengthens the plant tissues, so the fungicide treatments against any fungal diseases (powdery mildew, rusts, leaf spots) can be performed more effectively.

During ear growth and flowering, chemical protection against Fusarium is inevitable; adding our product to the tank mixture will also keep heteroptera and aphids away, and will also stimulate the growth of wheat grains, but it also has an effect on the physiological state of the spikelets.

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
Coating in case of constant seed, at any seed coating period	Natur Biokal 01	1 ton of seed and 10 liter Natur Biokal 01 + 10 liter water	immediately after harvesting, or in intermediate period, or before sowing
Autumn weed control + treatment with insecticide	Natur Biokal 01	10 l / 200 l water	against the larvae of ground beetles, preventively against fungal diseases, plant vitalization
Spring weed control + treatment with insecticide	Natur Biokal 01	10 l / 200 l water	against cereal leaf beetle, powdery mildew, rust, leaf spots; plant vitalization
Ear growth, flowering	Natur Biokal 02	10 l / 200 l water	against fusariosis, heteroptera, aphids



## Technology of maize cultivation

Since the withdrawal of seed treatment agents with pesticide content, seeds after sowing are no longer protected against soil pests (cockchafer larvae, wireworms). Germination and emergence will be slow and interrupted, so the emerged crop will not be uniform. If the seeds sown are not treated beforehand, Natur Biokal 01 can be used at any time for seed treatment – immediately after harvest, at a later time, or before sowing. Due to its essential oil content, the agent may repel pests harmful at the germ stage; the seed will uptake moisture for germination, together with the conditioning material on it. In this way, emergence will be faster and stronger.

The period of early post-emergent weed control is the same when maize leaf weevil and *Oscinella frit* cause damage. At the time of weed control, add Natur Biokal 01 to repel pests and to strengthen plant tissues, and it also provides preventive protection against any later fungal diseases. From 12-leave state on, maize can be damaged by the larvae of owl moth and corn moth, or by aphid colonies. At the time of flowering, it becomes necessary to apply Natur Biokal 02 as supplement to fungicide treatment (fusarium, leaf spots, common smut) to reduce damage by the above mentioned pests.



Leaf spots, rust, common smut, or eyespot in maize may occur from maize flowering up to maturation, which may require several fungicide treatments. Most of these diseases are spread with support from pest damage. In addition to increasing fruit set, the product Natur Biokal 02 also strengthens plant tissues and fills it with nutrients, it stimulates the faster uptake of nutrients, and regenerates any wounds. It has repellent effect against pest insects.

Where the Natur Biokal product family is applied throughout the entire growing season of sweet corn, higher quality and more uniform crops can be achieved. Due to the nutrient content of the solution, the ear growth will increase more intensely, and it will be easier for the plant to uptake fertilizers, causing the colour, sugar content and flavour of maize improve. The essential oil content may repel pests, so the maize field can be protected from moths before harvest.

Defense against them during harvest is impossible using chemicals, because the withdrawal periods should be adhered to. Natur Biokal products can be used even on the day of harvesting, since the withdrawal period is 0 day.

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
Coating in case of constant seed, at any seed coating period	Natur Biokal 01	1 ton of seed and 10 liter Natur Biokal 01 + 10 liter water	immediately after harvesting, or in intermediate period, or before sowing
post-emergence weed control + insecticide treatment	Natur Biokal 01	10 l / 200 l water	against maize leaf weevil and <i>Oscinella frit</i> , preventively against fungal diseases, plant vitalization
In 10–12 leaf state insecticide treatment + fungicide treatment (if necessary)	Natur Biokal 01	10 l / 200 l water	against owl moth, larvae of corn moth, aphids, Colorado potato beetle, common smut, leaf spots; for plant vitalization
Flowering	Natur Biokal 02	10 l / 200 l water	against leaf spots, rust, common smut, eyespot in maize, aphids, corn moth, Colorado potato beetle, owl moths
In case of sweet corn, on 1 or more occasions during harvest as well	Natur Biokal 02	10 l / 200 l water	against owl moths, corn moth

## Technology of sunflower cultivation

Germination has become more difficult since the withdrawal of seed treatment agents with pesticide content, because soil pests can damage unprotected seeds. If germination and rooting is inappropriate, emergence will be slow and interrupted, and the crops will be weak and susceptible to pests. The product Natur Biokal 01 is a natural plant conditioner which is also suitable for seed treatment (after harvest, later, or directly before sowing) in case of using untreated seeds,



so this treatment will provide first protection in the germ stage against soil pests (weevils, grubs). Natur Biokal 01 can also be applied after emergence, in one single application together with post-emergent weed control; it will strengthen the plant tissues, decrease the phytotoxic effect of the herbicide, and also provide preventive protection against fungal diseases (diaportha disease, phoma, alternaria disease). Due to its essential oil content, it has insect repellent effects on aphids, heteroptera, owl moths. The product Natur Biokal 02 is also suitable as supplementary treatment to the control of fungal diseases of the head and the achenes (alternaria disease, white and gray rot); the product stimulates the regeneration of diseased tissues, increases fruit set, increases the oil content, and any aphid infection can be prevented.

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
Coating in case of constant seed, at any seed coating period	Natur Biokal 01	For 1 ton of seed 10 liter Natur Biokal 01 + 10 liter water	immediately after harvesting, or in intermediate period, or before sowing
2-4 leaf state, post-emergence weed control + insecticide treatment	Natur Biokal 01	10 l / 200 l water	against aphids, heteroptera, owl moths, preventively against fungal diseases, plant vitalization
In 6-leaf state, fungicide treatment before flowering	Natur Biokal 01	10 l / 200 l water	stem canker, phoma, alternaria disease, plant vitalization
When flowering	Natur Biokal 02	10 l / 200 l water	alternaria disease, white and gray mold rot, plant vitalization
Head formation, fungicide treatment (if necessary)	Natur Biokal 02	10 l / 200 l water	alternaria disease, white and gray mold rot, plant vitalization, regeneration, improving the quality of achenes

## Technology of oilseed rape cultivation

Since the withdrawal of seed treatment agents with pesticide content, seeds sown in early September are exposed to the damage by soil pests (fungi, insect pests). The product Natur Biokal 01 can be used as seed treatment agent after harvest, later, or directly before sowing. Pre-emergent or early post-emergent weed control can be performed after sowing, with Natur Biokal 01 added to the tank mixture, which will have beneficial effect on the development of the small plant, strengthen the plant tissue, and reduce the number of



pests appearing in that period (rape flea, rape wasp larvae). The Natur Biokal product applied at the same time of applying growth regulators in the autumn (and if necessary, in the spring) will strengthen plant tissue, so fungal diseases will occur to smaller degrees, and it will also have repellent effect on insect pests (rape wasp, rape beetle, weevil beetles). Throughout the prolonged flowering of rapeseed, it is important to ensure high resistance, which is also assisted by this family of conditioning products. The quality of the oil content of rapeseed is very important, in which field positive effect can be achieved by using Natur Biokal 02 as supplement to pesticide treatments.

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
Coating in case of constant seed, at any seed coating period	Natur Biokal 01	1 ton of seed and 10 liter Natur Biokal 01 + 10 liter water	immediately after harvesting, or in intermediate period, or before sowing
Post-emergent weed control in the autumn	Natur Biokal 01	10 l / 200 l water	against the larvae of rape flea and rape wasp, to strengthen plant tissues
Growth regulator use	Natur Biokal 01	10 l / 200 l water	to repel pests, to strengthen plant tissues
Use of growth regulator in spring, if necessary	Natur Biokal 01	10 l / 200 l water	against rape wasp, rape beetle, weevils
Before flowering, in one single application with fungicide treatment	Natur Biokal 02	10 l / 200 l water	against rape wasp, rape beetle, weevil beetles, to increase yield quality and quantity, to increase oil content quality
After flowering, in one single application with fungicide treatment	Natur Biokal 02	10 l / 200 l water	against rape wasp, rape beetle, weevil beetles, to increase yield quality and quantity, to increase oil content quality

# Plant protection for legumes (soybean, peas, beans) using the Natur Biokal technology

During the production of legumes, it is very important to ensure ideal soil temperature and moisture content for sowing, so that the seeds can germinate and emerge as soon as possible. Due to the lack of authorized seed treatment agents with pesticide content, the seeds may have remnants of bacterial diseases on their surface (*Xanthomonas*, *Pseudomonas*), and the fungal propagules (*Phytium*, *Ascohyta* sp.) can cause serious damage to the crop after emergence. Germination requires a lot of water, and



therefore, if Natur Biokal 01 is used for seed treatment, then in addition to providing the first defense line for the germ stage, the seed moisture content is also increased – so the sowed seeds will emerge faster. Natur Biokal 02 increases protein content. Once the crops have emerged, post-emergent weed control must be performed on one occasion, and protection against fungal diseases (*Ascohyta* sp., *Fusarium* sp.) must also be provided on several occasions during the growing season. If Natur Biokal 01 is also applied together with the above treatments, it will strengthen the plant tissue, fill the plants with nutrients, so they will be less susceptible to disease; in addition, its ingredients also contain fragrances that repel pests. As a result, aphids, thrips and moths are unable to spread in the crop.

No pesticide treatment can be applied in green beans around harvest, because of the withdrawal periods. Natur Biokal has no withdrawal period, so this product can be used even during harvesting to repel insect pests.

Growth stage	Product name	Dosage (l/ha) min. 5% concentration	Note
Coating in case of constant seed, at any seed coating period	Natur Biokal 01	1 ton of seed and 10 l Natur Biokal 01 + 10 l water	immediately after harvesting, or in intermediate period, or before sowing
During post-emergence weed control	Natur Biokal 01	10 l / 200 l water	to repel pests (thrips, aphids), against fungal diseases ( <i>Phytium</i> , <i>Ascohyta</i> , <i>Fusarium</i> )
Stock spraying together with chemicals on 1 or 2 occasions, in case of excessive pest growth	Natur Biokal 01	10 l / 200 l water	to repel pests (thrips, aphids), against fungal diseases ( <i>Phytium</i> , <i>Ascohyta</i> , <i>Fusarium</i> )
From the emergence of fruit	Natur Biokal 02	10 l / 200 l water	to repel insect pests, to enhance yield growth
At the time of fruit ripening	Natur Biokal 02	10 l / 200 l water	for increasing nutritional content and repelling pests