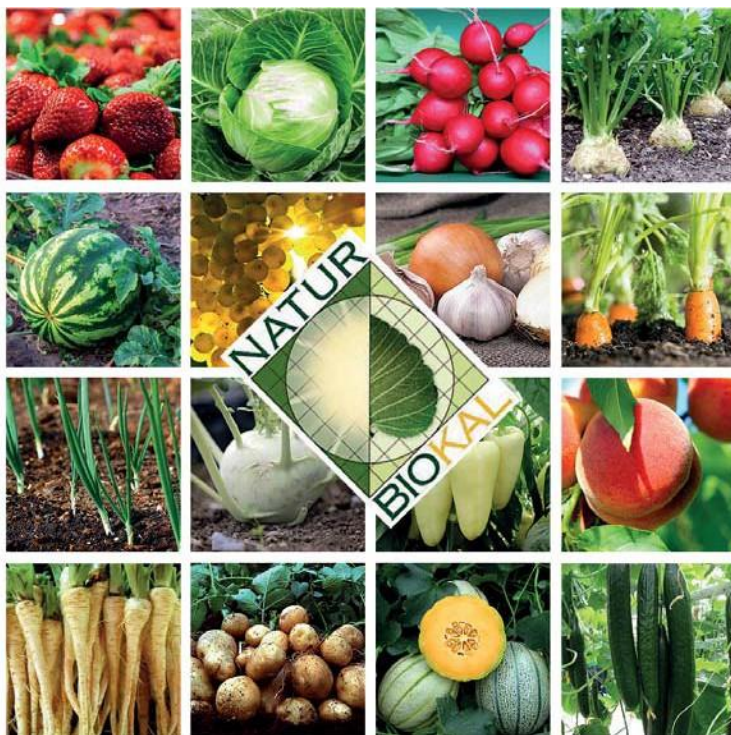


**BIOKAL INTERNATIONAL Kft.**  
**PLANT PROTECTION**  
**TECHNOLOGIES**

*HORTICULTURAL*  
&  
*FRUIT CULTURES*



NATUR BIOKAL

**THE WONDER 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 receive the necessary nutrients in a gentle 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-shooting, 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 plant 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 Over the years, more and more pest become resistant, and the authorization of more and more pesticides are withdrawn, and therefore, it is increasingly difficult to destroy pests.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.**

**These products work by way of contact, meaning that they are washed off from leaves by irrigation and rainfall, which eliminates their effects.**

### Advantages of using the Natur Biokal product family:

- Authorized for use in organic farming in 100%.
- Effective when used in any cultivated plant
- Food safety 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 on 2–4 occasions during the growing season, applied at a concentration of 5%,
- for the leaf treatment of vegetables on 4 occasions during the growing season, applied at a concentration of 5%,
- 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.**

None of the Natur Biokal product line **can be applied in the same round with copper-containing plant protection agents!** The impact of other crop protection products 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.

# MONILIA TEST (CPR Európa Kft.)

In 7 days



CONTROL



NATUR BIOKAL 01 4%



NATUR BIOKAL 6%



3% COPPER PRODUCT

In 28 days



CONTROL



NATUR BIOKAL 01 4%



NATUR BIOKAL 6%



3% COPPER PRODUCT



# BOTRYTIS TEST (CPR Európa Kft.)

In 7 days



CONTROL



NATUR BIOKAL 01 4%



NATUR BIOKAL 6%

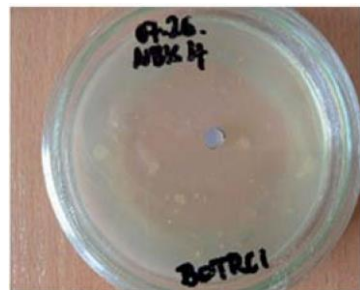


3% COPPER PRODUCT

In 28 days



CONTROL



NATUR BIOKAL 01 4%



NATUR BIOKAL 6%



3% COPPER PRODUCT

# NATUR BOKAL 01 QUALIY ENHANCING PLANT CONDITIONER

**BIOKAL 01** is suitable for use in any field crops and horticultural crops. It is also suitable for **seed coating** 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 shoot easier. In this way, the soil pests have less time to do damage during the germination phase. The application technology after shooting 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.

**It cannot be mixed with copper products.** This product works by way of contact, meaning that they are washed off from leaves by rainfall or irrigation.

## 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 BOKAL 02 NATURAL PLANT VITALIZER

**BIOKAL 02** can be used in all cultures of woody plants **throughout the entire 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. It is essential to ensure optimal fruit set, as it is a condition of good crop 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. It is a preparation that cannot be mixed with copper products, and works by way of contact.

## 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.**



## Natur Biokal 01M to fight soilborne pests



Natur Biokal 01M is suitable for use in all field and horticultural crops, features a higher active ingredient content, and consequently shows higher efficiency in insect repellent action. To achieve the desired effect, its regular use is very important. At the time of insect swarming, it can be applied as frequently as in every 3 days, because the goal is to have insects avoid crops owing to the fragrance and flavour of the product.

Experiments confirm that the Natur Biokal 01M product also reduces the number of pests in the soil, as well as soilborne development stages.

When sprayed on leaves, it makes leaves stronger and greener, has preventive impacts against fungi, and repels pest insects, too.

A product working by way of contact. It cannot be mixed with copper compounds!

### Application:

- when sprayed on leaves, apply in 5% dosage for proper insect repellent effect, and in every 5–7 days at the time of insect swarming
- to reduce the number of soilborne pests, spray on the soil, and then apply in the course of watering or drip irrigation in 10 l/ha quantity, regularly, in every 10 days until the end of the growing season

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

## Farmers' experience in relation to the use of Natur Biokal

We have asked our farmers to tell us about their experience in relation to the use of Natur Biokal products:



**István Papp, Zákányzék:** “Spring carrot has not been treated with chemicals, but only with the 5% dosage of Natur Biokal 01. Its form of action is rather spectacular, because stocks have become greener. Carrots for winter harvest have not seen powdery mildew infection. With the use of the product, we have been able to skip 2 full treatments with plant protection agents. The resistance and ability of the plants to utilize nutrients have improved a lot, and by looking at the colour of plants it is apparent that they are thriving.”





**Mrs. Kopaszné Éva Németh, Mórhalalom:** “In the case of onion to be harvested during late autumn, the key task is to ensure protection against mildew during this rarely dry, rather rainy, constantly humid and foggy weather. In the harvesting period, plant protection agents cannot be used, and then we apply Natur Biokalt, which is helpful in preventing the occurrence of mildew and promoting the growth of onions. When they are unable to take up nutrients through the roots, leaves offer a very good way to feed the plants. We have been using this product for a longer while now, and it gives us huge help in protection against mildew.”

**Attila Szunyogh, Zákányszék:** “Plant conditioning is the first line of protection, because plants in sound condition tend to be much more resistant to any disease. An important aspect is that the biostimulator should work to assist the inhibition of fungal growth and discouragement of insects. It is also essential that plants need to have access to sufficient nutrients even during berry development, and at these times the fastest route is the one through the leaves. Differences are apparent both in the quality and size of berries. These small variations that can be seen in the berries add up for significant benefits during the growing season. Botrytis infection was visible at the time of berry development, but with the regular application of Biokal 01 this infection was unable to spread, and therefore intervention with plant protection agents did not become necessary.



**Norbert Hegedűs, Szatymaz:** “Foliar fertilizers are used for honeydew melon both in field cultivation and plastic tunnel farming. Nutrients are also delivered by means of drip equipment. Our goal is to reach the appropriate leaf size as soon as it is possible so that the plant should thereafter be able to grow fruits. High ambient temperatures had their negative impacts on the field crops. The hail storm in July had the worst effects on the smallest stocks. During the growing season, I applied Natur Biokal on 3 occasions. It resulted in faster growth, promoted regeneration after the hail storm, and several new shoots



appeared. The price-to-value ratio is appropriate, plants become healthier, and therefore less plant protection agent is needed when this product is used.”

**József Sipos, Földeák:** “Well-developed, healthy plants, fierce green colour. Their ability to resist drought also lasted longer than in other varieties. Stronger tissue structure is just another advantage.” For winter wheat, a nearly 10% larger yield was harvested from the fields treated with the Natur Biokal 01 product.”

In the light of CPR Európa Kft’s culture dish experiment, it can be claimed that the product shows excellent efficiency to fight *Botrytis* and *Monilia*. In organic farming, winter wheat yielded more than 10% extra crops with the use of the product.

From among the pest insects of cherry and sour cherry, the most serious problems are caused by the cherry fruit fly, because it swarms while fruits ripen, and when chemical agents can no longer be used for compliance with food safety withdrawal periods. Every day 5% Natur Biokal 01 product is sprayed on the cherry trees, and no worms could be found in the fruits even as late as in the second half of July.

# 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 effects, increases resistance to diseases, and prevents fungal diseases. The p



the commencement of seedbed management, Natur Biokal 01M is used for the suppression of soilborne pests by delivering it into the soil with water, in 10 l/ha dosage, in every 10 days until the end of the harvest. For general plant conditioning, Natur Biokal 01 should be sprayed on the leaves in 5% dosage. After shooting, 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. Owing to its increased active ingredient content, Natur Biokal 01M triggers a repelling effect against pest insects (thrips, mites, owl moths) when it is sprayed on leaves in 5% dosage. It can be applied at harvest as well, because the food safety withdrawal period is: 0 days. Authorized for use in organic farming in 100%. It cannot be mixed with copper!

Time	Product name	Dosage	Note
from the seedling age until harvest	Natur Biokal 01	5% sprayed on leaves in intervals of 7–10 days	Plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5–7 days	from the onset of damage or infection caused by insects
use as soilborne pest repellent over the entire growing season	Natur Biokal 01M	10 l/ha in intervals of 10 days until harvest	by means spraying, and then irrigation or dripping into the soil

# Technology of cucumber cultivation

The Natur Biokal product family is suitable for use both in cucumbers grown under protection and in field cucumbers. When sprayed on leaves in 5% dosage, in intervals of 7–10 days, Natur Biokal 01 stimulates plant growth, and is also suitable for preventing fungal diseases.



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In sudden weather changes, e.g. temperature drop, cold soil, root loss, low light periods, it assists plants in surviving the stressful period. It is recommended to start using it regularly as early as in the seedling stage, as it stimulates and increases rooting,

increases chlorophyll content, improves fruit set, and increases yield. Its regular use triggers natural defense mechanism against downy mildew

and powdery mildew. It is suitable for use at times of harvesting. When sprayed on leaves in 5% dosage, Natur Biokal 01M has a repelling effect against thrips, aphids and mites. Against soilborne pests over the entire growing season, by means of spraying, and then irrigation or delivering BIOKAL 01M into the soil with the use of drip equipment, in 10 l/ha dosage, in 10-day intervals until the end of harvesting.

It cannot be mixed with copper!

Time	Product name	Dosage	Note
from the seedling age until harvest	Natur Biokal 01	5% sprayed on leaves in intervals of 7–10 days	Plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5–7 days	from the onset of damage or infection caused by insects
use as soilborne pest repellent over the entire growing season	Natur Biokal 01M	10 l/ha in intervals of 10 days until harvest	by means spraying, and then irrigation or dripping into the soil



## 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. The Natur Biokal 01 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 faster healing. Bacterial (*Xantomonas* and *Pseudomonas*) infections also improve at a faster rate. The products harmonize nutrients, stimulate root formation, extend flowering time by 3–4 days, improve fruit set and fruit quality, increase the lycopene content and yield. It is recommended to start using it regularly as early as in the seedling stage. Owing to its increased active ingredient content, Natur Biokal 01M repels pest animals, such as thrips, owl moths and *Tuta absoluta*. Against soilborne pests, it is to be sprayed, and then applied in the



form of  
irrigation  
or with  
the use of  
drip



equipment in 10 l/ha dosage, in 10-day intervals, from the seedling stage. It cannot be mixed with copper!

Time	Product name	Dosage	Note
from the seedling age until harvest	Natur Biokal 01	5% sprayed on leaves in intervals of 7–10 days	Plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5–7 days	from the onset of damage or infection caused by insects
use as soilborne pest repellent over the entire growing season	Natur Biokal 01M	10 l/ha in intervals of 10 days until harvest	by means spraying, and then irrigation or dripping into the soil down to the root zone

## Technology of potato cultivation

After sprouting, in intervals of 7–10 days, Natur Biokal 01 can also be used for prevention against *Phytophthora*

In addition, the crop will tolerate adverse weather conditions much better, and its water balance will also be improved. 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. Owing to its increased active ingredient content, Natur Biokal 01M repels potato beetles and aphids, too. The regular use of the product ensures larger yield, higher quality, higher starch content, and longer shelf life.



During and until the end of the growing season, when applied and used with irrigation in 10 l/ha dosage, in 10-day intervals Natur Biokal 01M

has a repellent effect on soilborne pests, larvae and wireworms. It cannot be mixed with copper!

Time	Product name	Dosage	Note
from the seedling age until harvest	Natur Biokal 01	5% sprayed on leaves in intervals of 7–10 days	Plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5–7 days	from the onset of damage or infection caused by insects
use as soilborne pest repellent over the entire growing season	Natur Biokal 01M	10 l/ha in intervals of 10 days until harvest	by means spraying, and then irrigation into the soil down to the root zone.



## Technology of root vegetable cultivation



Foliar fertilization performed with the use of Natur Biokal 01 in 5% dosage, in intervals of 7–10 days, the Biokal product family strengthens the foliage against diseases and adverse climatic effects. One of the major problems of root vegetable production is that there are few products available for the control of rootknot nematodes and carrot flies. And the few ones available cannot be used continuously throughout the growing season. When Natur Biokal 01M of increased

active ingredient content is sprayed and then irrigated into the soil in 10 l/ha dosage, in 10-day intervals, the use of the product results in reduced number of rootknot nematodes, larvae and wireworms during the entire 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 grey 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.

It cannot be mixed with copper!



Growth stage	Product name	Dosage	Note
from true 4-leaved state	Natur Biokal 01	5% sprayed on leaves in intervals of 7–10 days	Plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5–7 days	from the onset of damage or infection caused by insects
to repel rootknot nematodes and other soilborne pests during the entire growing season	Natur Biokal 01M	10 l/ha in intervals of 10 days until harvest	by means spraying, and then irrigation into the soil down to the root zone.

# 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.

It is facilitated by Natur Biokal 01 applied in 5% dosage, as sprayed on leaves, in intervals of 7–10 days.

A major issue in pest control is the decreasing number of available pesticides. It poses a particularly serious great problem in case of fly species that have larvae damaging the underground part of radishes. All around the growing season, Natur Biokal 01M can be applied regularly, in 10 l/ha

dosage, with spraying runs in every 10 days, and then as added to irrigation to reduce the numbers of soilborne pests and fly larvae until the end of harvesting. It cannot be mixed with copper!



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Growth stage	Product name	Dosage	Note
from the 2-leaved state until harvesting	Natur Biokal 01	5% sprayed on leaves in intervals of 7–10 days	Plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5–7 days	from the onset of damage or infection caused by insects
use as a repellent against fly larvae and soilborne pests over the entire growing season	Natur Biokal 01M	10 l/ha in intervals of 10 days until harvest	by means spraying, and then irrigation into the soil down to the root zone.

## Technology of bulb crop cultivation



In the technology of bulb crops cultivation, the use of the Natur Biokal 01 plant vitalizer is recommended in intervals of 7–10 days, or in 5% dosage when applied in combination with foliar fertilization.

With continued use,

it has preventive effect against fungal diseases, especially in preventing and treating

the downy mildew of the bulb. To reduce the numbers of onion fly larvae and soilborne pests, use Natur Biokal 01M in 10 l/ ha dosage, in the form of spraying in 10-day intervals, and then with irrigation into the soil. Targeted treatments with Natur Biokal are excellent for preventing or eliminating expected or occurred physiological disorders, stresses caused by weather conditions, micronutrient deficiencies – while rooting and nutrient uptake is also increased.

It cannot be mixed with copper!



Growth stage	Product name	Dosage	Note
from the cotyledon age until harvest	Natur Biokal 01	5% sprayed on leaves in intervals of 7–10 days	Plant conditioning, preventive protection against insects and fungi
use as insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5–7 days	from the onset of damage or infection caused by insects
use as soilborne pest, fly larva repellent over the entire growing season	Natur Biokal 01M	10 l/ha in intervals of 10 days until harvest	by means spraying, and then irrigation into the soil down to the root zone.



## Technology of brassica vegetables cultivation

It is recommended to feed the Natur Biokal 01 product in 5% dosage to 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. When sprayed in 5% dosage, Natur Biokal 01M keeps away adult cabbage flies

and owl moths. Against soilborne pests, Natur Biokal 01M needs to be sprayed out in 10 l/ha dosage, in 10-day intervals, and then washed into the soil down to the root zone. The relatively large foliage enhances the uptake of Natur Biokal, and therefore preventive protection can be provided



against fungal and bacterial diseases (*Xanthomonas*, *Pseudomonas*) throughout the growing season. It conditions the plant, and increases their resistance to diseases.

It cannot be mixed with copper!

Growth stage	Product name	Dosage	Note
from the seedling age until harvest	Natur Biokal 01	5% sprayed on leaves in intervals of 7–10 days	Plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5–7 days	from the onset of damage or infection caused by insects
use as soilborne pest repellent over the entire growing season	Natur Biokal 01M	10 l/ha in intervals of 10 days until harvest	by means spraying, and then irrigation into the soil down to the root zone.

# 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.

Natur Biokal 01 is useful in this as it ensures balanced nutrient supply,



field,



making the plant tissues stronger, so the plant will be more resistant to extreme weather conditions, fungal and bacterial diseases. Owing to its increased active ingredient content, Natur Biokal 01M features even more intense insect repellent effects, and pest insects will avoid the treated crops as a result of continuous treatment. If protection needs to be provided against soilborne pests in the crops, Natur Biokal 01M can be applied with spraying in 10 l/ha dosage, in 10-day intervals, and then with irrigation into the soil or delivered with the use of drip equipment. The ripe fruits are more delicious with a sweeter taste, and their shelf life increases.

If applied immediately after hail damage in a concentration of 10%, Natur Biokal 01 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.  
It cannot be mixed with copper!

Growth stage	Product name	Dosage	Note
from the seedling age until harvest	Natur Biokal 01	5% sprayed on leaves in intervals of 7–10 days	Plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5–7 days	from the onset of damage or infection caused by insects
use as soilborne pest repellent over the entire growing season	Natur Biokal 01M	10 l/ha in intervals of 10 days until harvest	by means spraying, and then irrigation or dripping into the soil down to the root zone



# Technology of strawberry cultivation



The consistent use of Natur Biokal 01 has natural plant protection effects against grey mold and pest insects. To fight soilborne pests, Natur Biokal 01M can be applied with spraying in 10 l/ha dosage, in 10-day intervals, and then with irrigation into the soil or delivered with the use of drip system.



Strawberries,

as all berry plants, belong to sensitive crops. More and more damage is caused by the spotted wing *Drosophila*, 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 Natur Biokal product range strengthens tissues, thereby increasing the shelf-life of crops.



The regular use of the products improves fruit set, and therefore increases yield quantity and quality, especially the colours and flavours of the fruit. It can be applied throughout the growing season, until crops are harvested. It cannot be mixed with copper!

Growth stage	Product name	Dosage	Note
from the seedling age until harvest	Natur Biokal 01	5% sprayed on leaves in intervals of 7–10 days	Plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5-7 days	from the onset of damage or infection caused by insects
use as soilborne pest repellent over the entire growing season	Natur Biokal 01M	10 l/ha in intervals of 10 days until harvest	by means spraying, and then irrigation or dripping into the soil down to the root zone

## Foliar fertilization of non-productive orchard cultivation with Natur Biokal 02



In 3–5% dosage and intervals of 7–10 days, Natur Biokal 02 triggers natural plant protection effects 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 nutritional elements that are easy to take up. In addition, it also reduces the number of overwintering forms of pests and pathogens, so it can also be used as general was-spraying. Its stimulating and strengthening effect also increases the effect of pesticides. Young plants with loose tissues are easily infected by fungal diseases. Its use enhances bud formation. It can also be freely used in organically cultivated fruit orchards.

It cannot be mixed with copper!

In the event of insect invasion, use Natur Biokal 01M in 5% dosage, repeatedly, in 10-day intervals.



## Technology of pome fruits cultivation

Natur Biokal 02 triggers natural plant protection effects against fungal diseases. It can be used as preventive protection against fire blight (*Erwinia amylovora*). It is recommended to use immediately after hail damage in a concentration of 10%, to quickly regenerate wounds caused



NATUR BIOKAL

by ice. When pest insects swarm, Natur Biokal 01M should be sprayed out in 5% dosages, at least on 2 occasions, in intervals of 5–7 days, depending on the given insect infection. It cannot be mixed with copper!

Growth stage	Product name	Dosage	Note
from budding until leaf fall	Natur Biokal 02	3–5% for leaf spraying in intervals of 10–14 days depending on the extent of the infection	plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5–7 days depending on the extent of swarming	from the onset of damage or infection caused by insects



## Technology of peach, apricot, and plum cultivation



Multiple preventive treatments with Natur Biokal 02 may be required against the fungi causing peach leafroll (*Thaprina deformans*). In case of plum, the weakened epidermis allows monilia disease to settle easier. It can

be massively 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. Pest insects: aphids, sawfly (*Janus compressus*), peach moth (*Anarsia linea-tella*); in case of plum,

it has a repellent effect against leaf and fruit wasps, so they cannot settle and reproduce – and in this way there will be less damage caused by larvae, as well. In the case of excessive pest insect growth, Natur Biokal 01M is to be applied in 5% dosage,

repeatedly, in intervals of 5–7 days. 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.

It cannot be mixed with copper!



Growth stage	Product name	Dosage	Note
from budding until leaf fall	Natur Biokal 02	3–5% for leaf spraying in intervals of 10–14 days depending on the extent of the infection	plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5–7 days depending on the extent of swarming	from the onset of damage or infection caused by insects

## 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 02 triggers natural plant protection effects against fungal diseases, and replenishes nutrients in plants. 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 spotted-winged midge



(*Drosophilla suzukii*)

when the fruit is nearly ripened is difficult because of the food safety withdrawal periods, since only materials with 0-day withdrawal periods can be applied. Natur Biokal 01M repels cherry flies and spotted-leaf midges in order to prevent any damage caused by them. At times of swarming, daily 5%

NATUR BIOKAL

Growth stage	Product name	Dosage	Note
from budding until leaf fall	Natur Biokal 02	3–5% for leaf spraying in intervals of 10-14 days	plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season, at times of swarming	Natur Biokal 01M	5% sprayed on leaves in intervals of 5-7 days even on a day-to-day basis	from the onset of damage or infection caused by insects



## Technology of wine grape and dessert grape cultivation



In grape production, Natur Biokal 02 triggers natural plant protection effects against fungal diseases, they are especially recommended for preventing downy mildew of grapevine and powdery mildew. After berry set, grey mold (*Botrytis cinerea*)



can cause serious problems. Young berries potentially 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 cracks in the berries.

Owing to its increased active ingredient content, Natur Biokal 01M



repels insects. It is essential to protect against *Phytoplasma* spread by the American grapevine leafhoppers (*Saphoideus titanus*), which causes the yellowing of grape. Use Natur Biokal 01M in 5% dosage with spraying, even on a day-to-day basis at times of swarming. Where used continuously, yield quality and quantity, as well as the nutritional value are also improved.

It cannot be mixed with copper!

Growth stage	Product name	Dosage	Note
from budding until leaf fall	Natur Biokal 02	3–5% for leaf spraying in intervals of 10–14 days	plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5–7 days even on a day-to-day basis	from the onset of damage or infection caused by insects

## 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.

The applied 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



damage, drought, storm), it will help the wounds heal faster. With its higher active ingredient content, Natur Biokal 01M will have repellent effects against all pest insects throughout the growing season. In this way, we will be delighted by the beautiful, green-leaved ornamental shrubs all year round.

Growth stage	Product name	Dosage	Note
from budding until leaf fall	Natur Biokal 02	3–5% for leaf spraying in intervals of 10-14 days	plant conditioning, preventive protection against insects and fungi
use as pest insect repellent over the entire growing season	Natur Biokal 01M	5% sprayed on leaves in intervals of 5-7 days even on a daily basis	from the onset of damage or infection caused by insects

—— BiogeN stem degradation product



## FOR FARMERS

*who are a step ahead of others.*



### Benefits of the product

- **Up to 10 days can be allowed to work the BiogeN stem degradation product into the soil.**
- **Reduced use of plant protection products**  
Plants becoming more resistant to diseases.
- **Natural nitrogen supply**  
Smaller quantities of artificial fertilizers needed.
- **Efficiency independently from the type of the soil**  
It is capable of exercising beneficial effects on any type of soil.
- **Facilitation of soil cultivation without subsoiling**  
It is sufficient to treat the soil with combinators.
- **Cost-efficient quantity of application, 1 kg/ha**

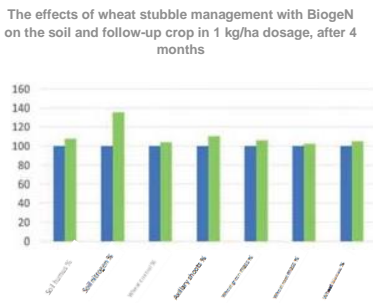
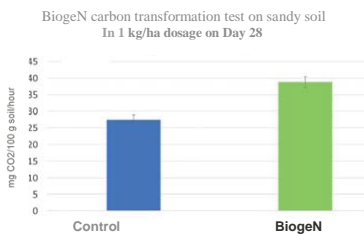
e-mail:marki.anita@naturbiokal.hu Tel:+36 30/747 6217 www.naturbiokal.hu

# TECHNICAL SPECIFICATIONS

- Number of the authorization document: 6300/1916-2/2020
- Composition: *Bacillus licheniformis* bacterium, perlite
- Formulation: water-soluble granules
- Shelf-life: 2 years under 5 °C, 1 year at between 5° and 25°
- Food safety withdrawal period: 0 day
- Occupational health withdrawal time: 0 day
- Packing from: 1 kg, 10 kg
- Application: in 1 kg/ha quantity, 100–300 l/ha when applied with water
- It may not be mixed with bactericidal and fungicidal products!

BiogeN is a solid microbiological formula containing *Bacillus licheniformis*, bacterium. Its special feature is that it is able to bind nitrogen from the air, and produces sugar for reproduction from stem residues, and consequently it can survive under natural circumstances.

Up to 10 days can be allowed to work the BiogeN stem degradation product into the soil.



The carbon transformation test looked into the effects of BiogeN on natural soil under laboratory circumstances. The results suggest that the bacterial strain that can be found in the BiogeN product bound nitrogen to support the natural bacterial community of the soil in intensifying the breakdown of added sugar.

In the demonstration experiment conducted at the edge of the settlement of Görcsöny, a wheat stubble field was treated. The bacterial strain that is present in the BiogeN product utilized the residual energy of stems to bind nitrogen from the air. As a consequence of BiogeN treatment, the nitrogen content of the soil increased considerably. As a result of this higher nitrogen content, the growth parameters of the follow-up crop of wheat improved.



## Plant protection for legumes (soybean, peas, beans) with the use of 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 shoot 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 shooting. 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 – consequently the sowed seeds will shoot faster.

Once the crops have shot, 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 food safety withdrawal periods. Natur Biokal 01M can be applied even at the time of harvesting green beans to repel pest insects in 5% dosage.

It cannot be mixed with copper!

Time	Product name	Dosage	Note
Coating in case of constant seed,	Natur Biokal 01	1 ton of seeds and 10 liters of Natur Biokal 01 + 10 liters of water	after harvest or before sowing
Throughout the growing season	Natur Biokal 01	5% sprayed on leaves 2-3 times	plant conditioning, preventive protection against insects and fungi
used to prevent, repel pest insects over the entire growing season	Natur Biokal 01M	5% sprayed on leaves	from the onset of damage or infection caused by insects

## Technology of rapeseed cultivation

Since the partial withdrawal of the permitted use of seed treatment agents with pesticide content, seeds sown in early September are exposed to the damage by soil pests (fungi, pest insects). The Natur Biokal 01 product 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, and consequently fungal diseases will occur to a smaller extent. With its increased active ingredient content, Natur Biokal 01M – when sprayed in 5% dosage and 7-day time intervals – will also have repellent effects on pest insects (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.

It cannot be mixed with copper!

Time	Product name	Dosage	Note
Coating in case of constant seed,	Natur Biokal 01	1 ton of seeds and 10 liters of Natur Biokal 01 + 10 liters of water	after harvest or before sowing
Throughout the growing season	Natur Biokal 01	5% sprayed on leaves 2-3 times	plant conditioning, preventive protection against insects and fungi
used to prevent, repel pest insects over the entire growing season	Natur Biokal 01M	5% sprayed on leaves	from the onset of damage or infection caused by insects

## Technology of sunflower cultivation



Shooting 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,

shooting will be prolonged and interrupted, and the crops will be weak and susceptible to pests. The Natur Biokal 01 product 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 shooting, in one single application together with postemergent weed control; it will strengthen the plant tissues, decrease the phytotoxic effect of the herbicide, and also provide preventive protection against fungal diseases (diaportose disease, phoma, alternaria disease). Owing to its increased active ingredient content, Natur Biokal 01M has the potential to keep away aphids, heteroptera, owl moths. In the event of insect invasion, Natur Biokal 01M, sprayed out in 5% dosage, has repellent effects. The Natur Biokal 01 product is also suitable for controlling fungal diseases of the head and the achenes (alternaria disease, white and grey rot); the product stimulates the regeneration of diseased tissues, increases fruit set, increases the oil content, and any aphid infection can be prevented.

It cannot be mixed with copper compounds!

Time	Product name	Dosage	Note
Coating in case of constant seed,	Natur Biokal 01	1 ton of seeds and 10 liters of Natur Biokal 01 + 10 liters of water	after harvest or before sowing
Throughout the growing season	Natur Biokal 01	5% sprayed on leaves 2-3 times	plant conditioning, preventive protection against insects and fungi
used to prevent, repel pest insects over the entire growing season	Natur Biokal 01M	5% sprayed on leaves	from the onset of damage or infection caused by insects

## 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 shooting will be prolonged 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 can repel pests that are harmful at the germ stage; the seed will uptake moisture for germination, together with the conditioning material that are present on it. In this way, shooting 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 5% Natur Biokal 01M to the tank mix in order to repel pests and strengthen plant tissues, while 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. 5% Natur Biokal 01M is capable of mitigating 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 Natur Biokal 01 product strengthens plant tissues and fills them with nutrients; it stimulates the faster uptake of nutrients, and regenerates wounds.

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. Natur Biokal products can be used even on the day of harvesting, since the food safety withdrawal period 0 days. It cannot be mixed with copper!

Time	Product name	Dosage	Note
Coating in case of constant seed,	Natur Biokal 01	1 ton of seeds and 10 liters of Natur Biokal 01 + 10 liters of water	after harvest or before sowing
Throughout the growing season	Natur Biokal 01	5% sprayed on leaves 2-3 times	plant conditioning, preventive protection against insects and fungi
used to prevent, repel pest insects over the entire growing season	Natur Biokal 01M	5% sprayed on leaves	from the onset of damage or infection caused by insects



## 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. When applied in 5% dosage, Natur Biokal 01M also keeps away the larvae of ground beetles and owl moths due to the increased active ingredient content of the formula.

Damage by early spring pests can also be mitigated. When applied together with the pesticide treatment

used at the mass larval emergence of cereal leaf beetles,

it strengthens the plant tissues, and therefore the fungicide treatments against any fungal diseases (powdery mildew, rusts, leaf spots) can be performed more effectively.

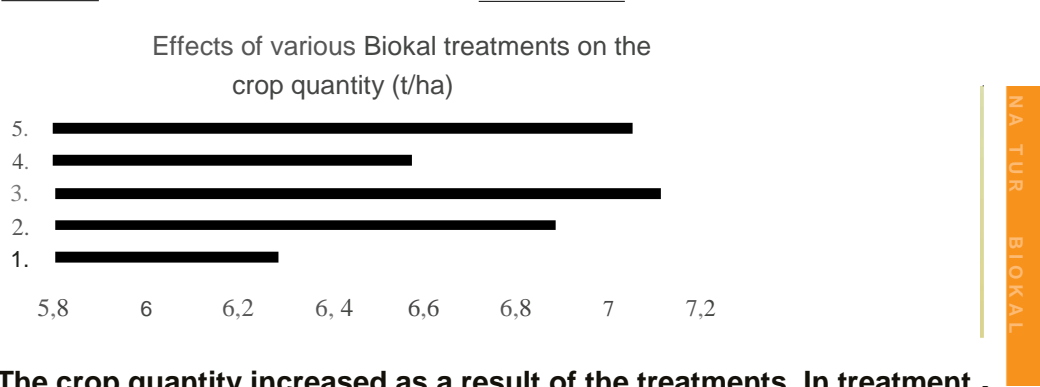
The use of Natur Biokal 01M keeps heteroptera and aphids away,

and will also stimulate the growth of wheat grains, but it also has an effect on the physiological state of the spikelets. These products cannot be mixed with copper!

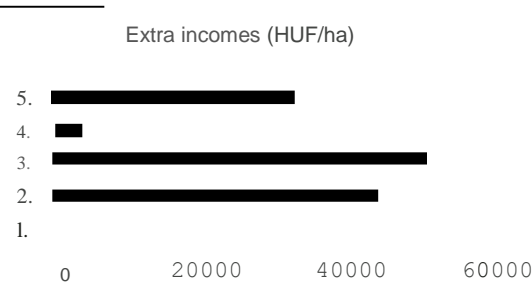


**CPR Europe Kft.**  
**investigated the effects of**  
**the Natur Biokal product**  
**family on the harvest yield**  
**of winter wheat in organic**  
**farming in field**  
**experiments conducted in**  
**Hódmezővásárhely.**

	products	Number of treatments	dosage
1.	control	0	0
2.	Natur Biokal 01	2 End of tiller production Flag leaf fully unrolled	S% VN
3.	Competitor product	2 End of tiller production Flag leaf fully unrolled	4 l/ha
4.	Natur Biokal 01	1 at flowering	S% VN
5.	Natur Biokal 01 Natur Biokal 02	2 End of tiller production Flag leaf fully unrolled	S% VN



**The crop quantity increased as a result of the treatments. In treatment 2, 3 and 4, increased contents of protein and gluten could be observed.**  
**The treatments did not cause phytotoxic symptoms,**  
**and they were safe for the winter wheat.**



**At the experimental site,**  
**no other plant protection**  
**products, yield**  
**enhancement agents that**  
**were permitted for organic**  
**farming were applied**  
**during the experiment.**

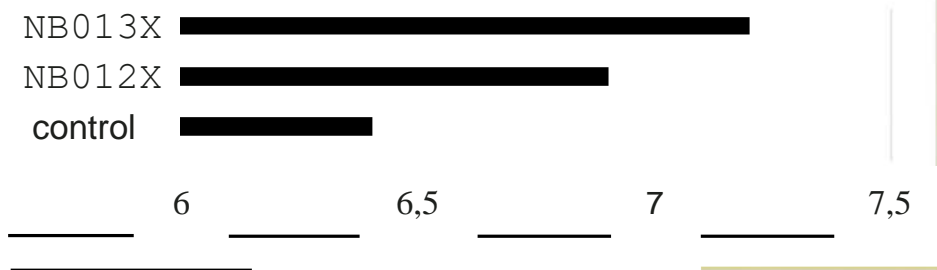
## Farmer Sipos also tested the Natur Biokal 01 product in winter wheat



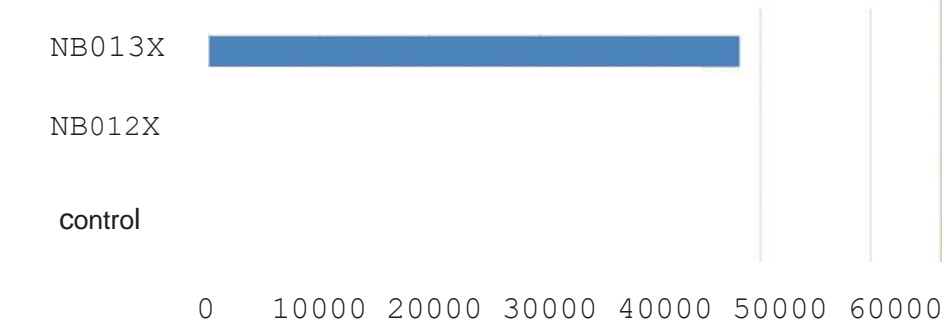
Application in 8 l/ha dosage at varied times:

1. treatment at the start of stem development: 2 April
2. treatment at flag leaf status: 21 May
3. treatment for spike protection: 5 June

Effects of Natur Biokal treatments on the crop quantity (t/ha)



Extra incomes (HUF/ha)



**Farmer Sipos: “Well-developed, healthy plants, fierce green colour. Their ability to resist drought also lasted longer than in the control. Stronger tissue structure is just another advantage.”**

# SEED COATING WITH NATUR BIOKAL 01 PRODUCT

As a result of the withdrawal of seed coating systems, sowing seeds in the soil remain unprotected against soilborne pests. Germination and shooting will be slow and interrupted, so the emerged crop will not be uniform.

## UNTREATED



## TREATED



### Application:

For 1 ton of constant seeds

10 l Natur Biokal 01 + 10 l water

Seed treatment can be performed

- directly after the harvest,
- at any time between harvesting and sowing, or
- before sowing.





**BIOKAL INTERNATIONAL Kft.**  
**PLANT PROTECTION**  
**TECHNOLOGIES**



*FIELD CROPS*



**THE WONDER OF NATURE**

