Sato Hum

Clever by Nature

A SYSTEMIC APPROACH TO INCREASING CROP YIELDS

2023

4Sato® Steps

JSC Organic farming Bel, operating under the brand name **SatoHum®**, is engaged in the study of sapropel and its derivatives – **humic and fulvic acids**.

We develop and produce soil improvers for the creation, restoration and improvement of soils; solid and liquid biostimulants for growth; macro and micronutrition of plants, and special functional compounds for complex tasks and feeding for agricultural animals and poultry.

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CONTENT

4 Sato® Steps

SatoHum® products are developed either for **specific crops**, based on the **objective requirements of their growing cycle and phenological calendar**, or **to solve specific problems:** preparing soils for ecological and organic farming, fertilizing the mother/working solution in hydroponics to compensate for the deficiency of certain meso or microelements, strengthening the walls of grain crops to avoid lodging, etc.

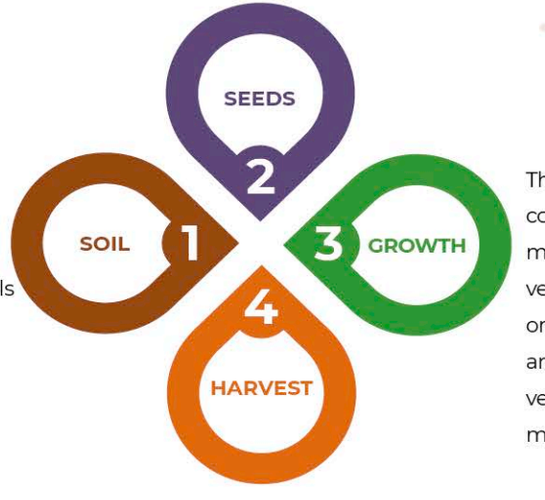
Testing our products on a wide variety of crops, we came to a striking conclusion: if you systematically apply our **SatoSoil® Improvers**, **SatoGrow® Biostimulants**, **SatoHum® Macro and micronutrition**, and **SatoHum®** and **Sato® Special compounds**, not only the assimilation of nutrients increases, which affects the crop yield, but also the **overall need for fertilizers and top dressing** is leveled and **becomes more rational** from season to season.

Therefore, we developed a comprehensive system for applying our products, and we called this **step-by-step instruction 4 Sato® Steps**. Application rates with the system approach **are reduced to a minimum**, the prolonged and cumulative effect of the application lead to optimal results **without overfeeding soils, seedlings and fruits**.

And if **quantitative analysis** shows an **increase in yield** on average **from 20 to 50%**, then a more important criterion for us – **feedback from our customers** – indicates a **significant improvement in the organoleptic properties** of the final product.

It doesn't matter at what stage you **begin using SatoHum® products**, the main thing is to do it competently and systematically, starting from the knowledge of our technologists and accumulated experience, combining an academic approach and professional intuition.

SEED/SEEDLINGS/ VEGETATION BEGINNING step involves the treatment of seeds and seedlings, including greenhouse and hydroponic crops.



Entering at the **SOIL** stage, we prepare arable land and soils for sowing or feed the soils after harvesting.

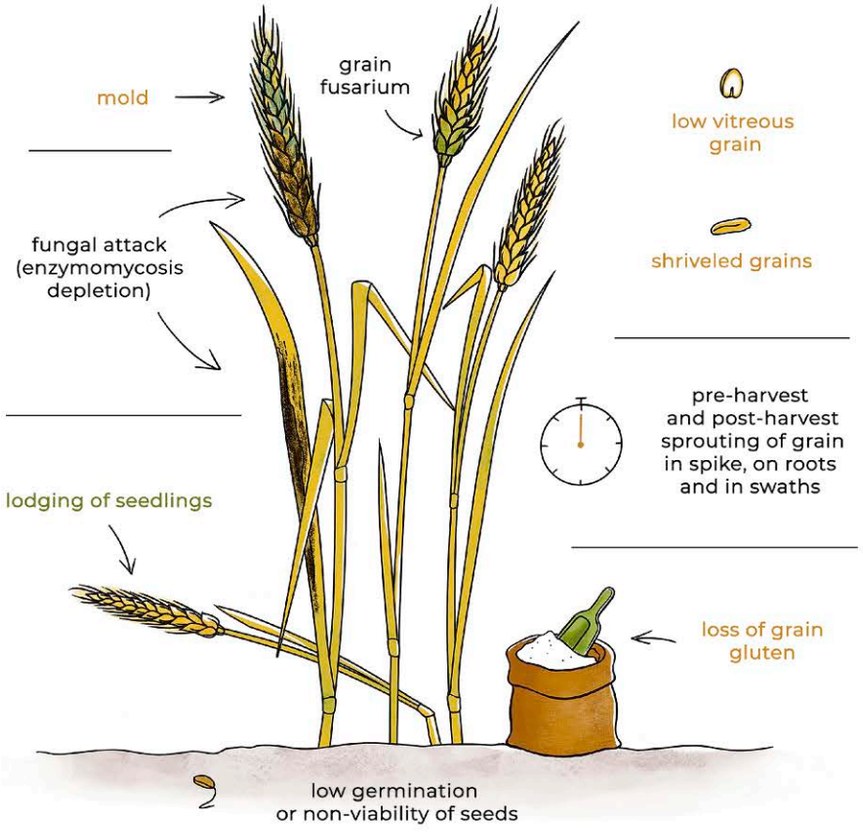
The **GROWTH** phase covers the vegetative mass gain and the development of generative organs, the ovary of fruits and the start of the root vegetables development.

And finally, the most significant stage for the farmer – **HARVEST** – concerns the caliber, «keeping quality» and shelf life of fruits and grains.

Wheat

It is difficult to overestimate the importance of grain crops when ***half of all farmland in the world is occupied by wheat, rye, rice, corn, sorghum, barley and oats****. Being the most demanded crops, the whole complex of agricultural technologies in the cultivation of cereals is aimed at* ***intensifying production****: preserving fertile humus, reducing climate risks and pest attacks, and increasing yields per unit field.*

Risks and defects of wheat



4 Sato® Steps – Recommendations for application

SOILS	SEEDS	GROWTH	HARVEST

SatoSoil® Biome
General recovery of the fertile soil layer (alternate husbandry) incorporation to a depth up to 16 cm or single application with mulch
5 – 10 t/ha

SatoSoil® pHoenix
Improving soil granulosity and seed germination
Removal of nitrates and correction of acidic and saline soils
Deep plowing up to 18 cm, the norm depending on the condition of the soil
5 – 20 t/ha

SatoHum® K or
SatoGrow® NPK/
SatoGrow® N
Watering the soil improver
2 – 6 l/ha

Sato® Seeds
Seed treatment
0,8 l/t seed treatment in a tank mix with disinfectant

SatoGrow® K Granules or
SatoGrow® NPK Granules
Biostimulation of germination
Root top dressing
Gradual release of macronutrients
Winter/Spring Wheat
100 – 300 kg/ha/season

SatoHum® K or
SatoGrow® NPK/
SatoGrow® N
Watering the soil improver
2 – 6 l/ha

SatoHum® Complex
Tillering improvement
Chlorosis – lack of iron
Correcting excess of moisture
First seedlings – 1 l/ha

SatoHum® SiO
Adverse weather conditions (wind, hail, rain)
Stress resistance in the phase of stem extension and grain formation
1,5 – 2 l/ha

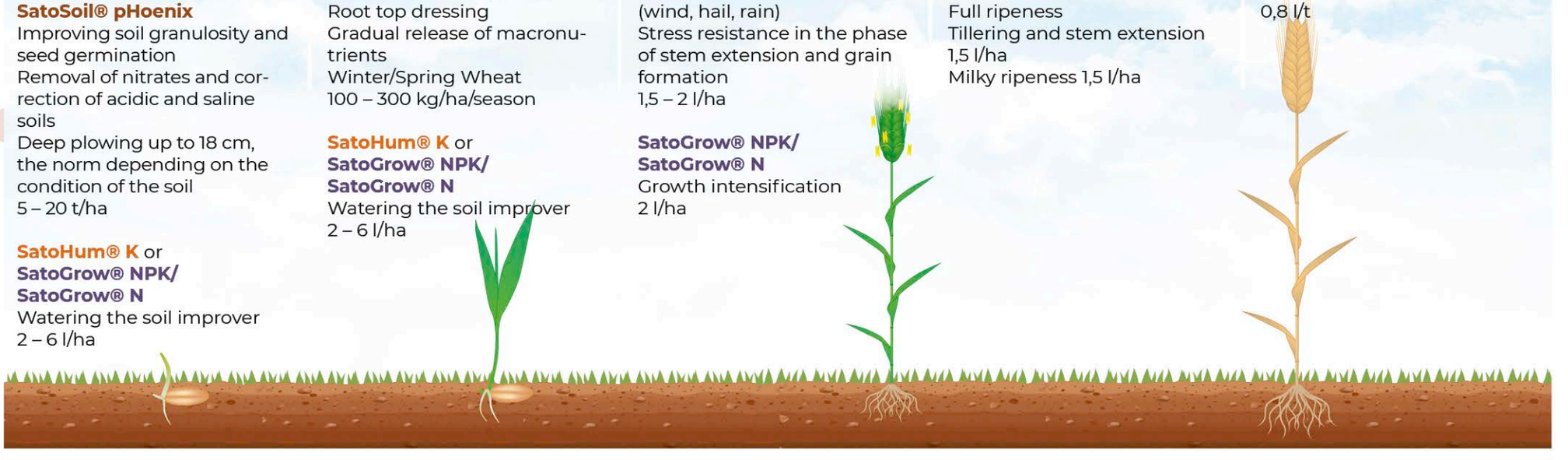
SatoGrow® NPK/
SatoGrow® N
Growth intensification
2 l/ha

SatoHum® K-B-Mo
Plumping and ripening
Grain maturation
1,5 – 2 l/ha

SatoHum® Ca
Milky ripeness
Wax ripeness
Full ripeness
Tillering and stem extension
1,5 l/ha
Milky ripeness 1,5 l/ha

SatoHum® Ca
Prevent germination of grain in the spike or on the roots
Steady state of rest
0,6 – 1 l/t

Sato® Seeds
Harvest treatment
0,8 l/t



WARNING: 4 Sato® Steps is a comprehensive crop care system that provides the basic crop needs for the main 12 macro, meso and micronutrients for an optimal growing cycle and unlocking the potential of each crop.

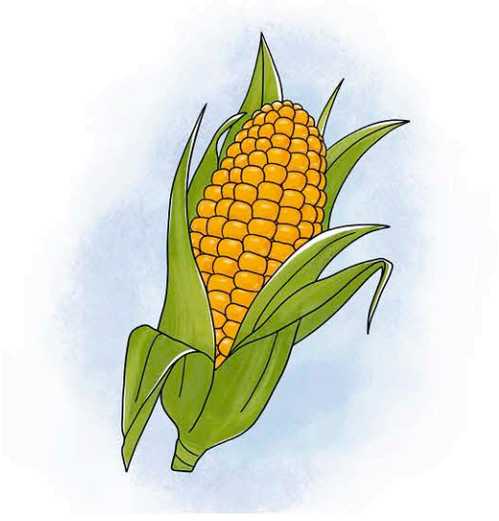
SOILS: In **pre-sowing** application of **SatoSoil® Soil improvers**, the minimum rate is introduced, when **autumn** applying, the maximum rate is recommended. When applying **SatoGrow® Biostimulants** after **SatoSoil® Soil improvers**, the minimum rate is applied; if the soil hasn't been treated, the maximum rate is applied. For irrigation, it's recommended to **activate granulates** (soil improvers or biostimulants) with **SatoHum®** liquid formulations and **SatoGrow®** liquid organo-mineral biostimulants.

SEEDS/SEEDLINGS/VEGETATION BEGINNING: Treatment of seeds and seedlings with **Sato® Seeds** formulation **is compatible with treatment by classical protectants** without reducing the rates of their application, and helps to increase the viability of seedlings, the development of the plant and its fruitfulness.

GROWTH: Our **SatoHum®** solutions have a guaranteed composition with **high content of humic and fulvic acids with amino acids of plant origin**. It is not recommended to exceed the total applying dose of **SatoHum®** liquid formulations over 6 l/ha/season, starting from the germination/seedlings phase.

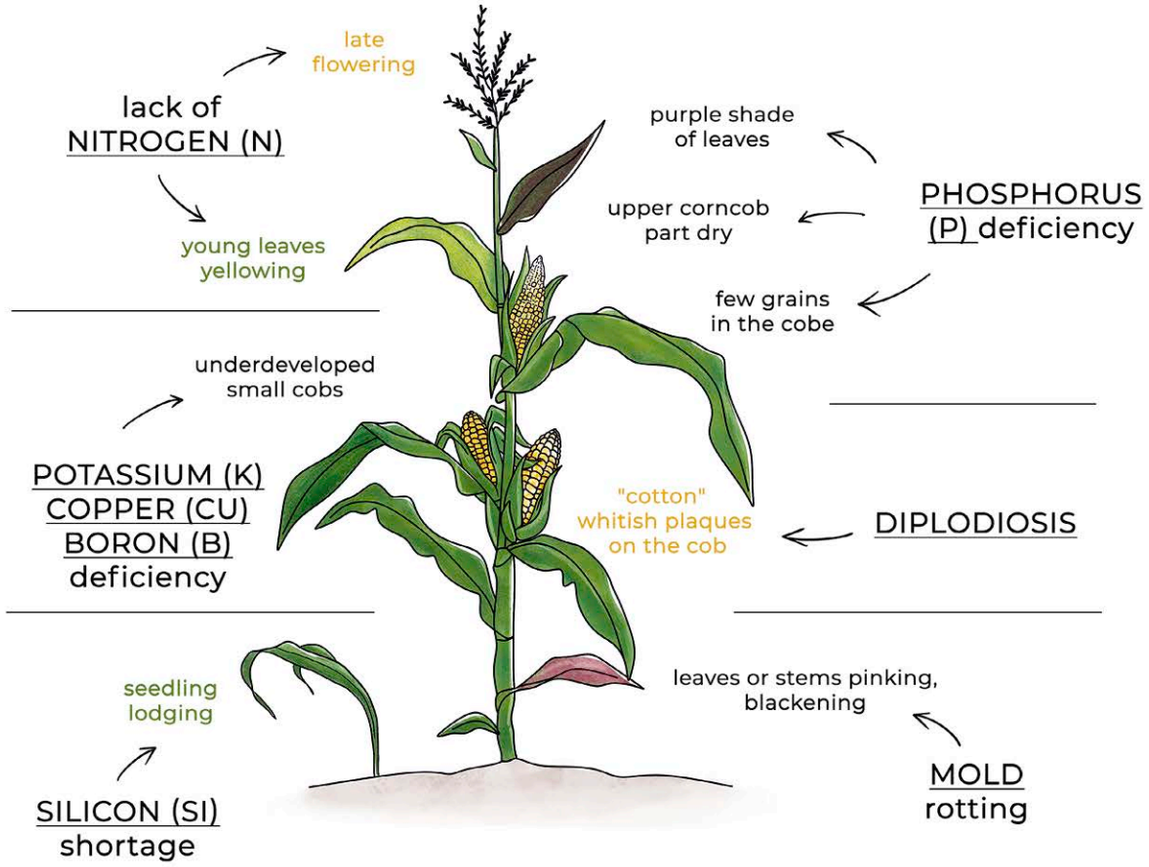
HARVEST: Simultaneous fertilization with several **SatoHum®** products is not expected. **It's not recommended to exceed the specified application rates. For single, not systemic application of SatoHum® products, the maximum dosage of the product is recommended.**

Corn



The economic value of corn is obvious - it is both a table and fodder and industrial crop at the same time, one of the most popular in the world.

Main risks and defects of corn



4 Sato® Steps – Recommendations for application

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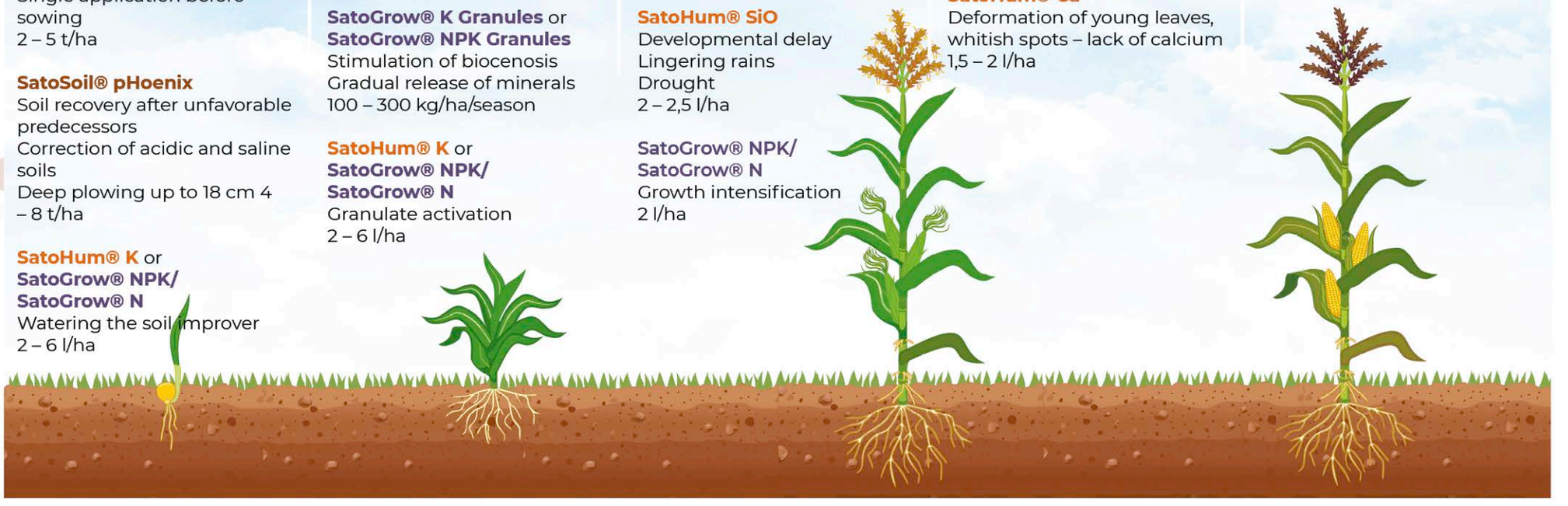
SatoSoil® Biome Preservation of fertile layer during crop rotation Incorporation to a depth up to 16 cm 5 – 10 t/ha Single application before sowing 2 – 5 t/ha	**Sato® Seeds** Viable seeds Coordinated seedlings Pathogen protection 0,8 l/t	**SatoHum® Complex** Prevention of lodging Alignment with the reference crop 1,5 – 2 l/ha	**SatoHum® K-B-Mo** Chlorosis and spots – lack of copper and zinc 1,5 – 2 l/ha
SatoSoil® pHoenix Soil recovery after unfavorable predecessors Correction of acidic and saline soils Deep plowing up to 18 cm 4 – 8 t/ha	**SatoGrow® K Granules** or **SatoGrow® NPK Granules** Stimulation of biocenosis Gradual release of minerals 100 – 300 kg/ha/season	**SatoHum® SiO** Developmental delay Lingering rains Drought 2 – 2,5 l/ha	**SatoHum® Ca** Deformation of young leaves, whitish spots – lack of calcium 1,5 – 2 l/ha
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 2 – 6 l/ha	**SatoHum® K** or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 2 – 6 l/ha	**SatoGrow® NPK/ SatoGrow® N** Growth intensification 2 l/ha	**Sato® Seeds** Increasing the keeping quality of grain and cobs 0,8 l/t



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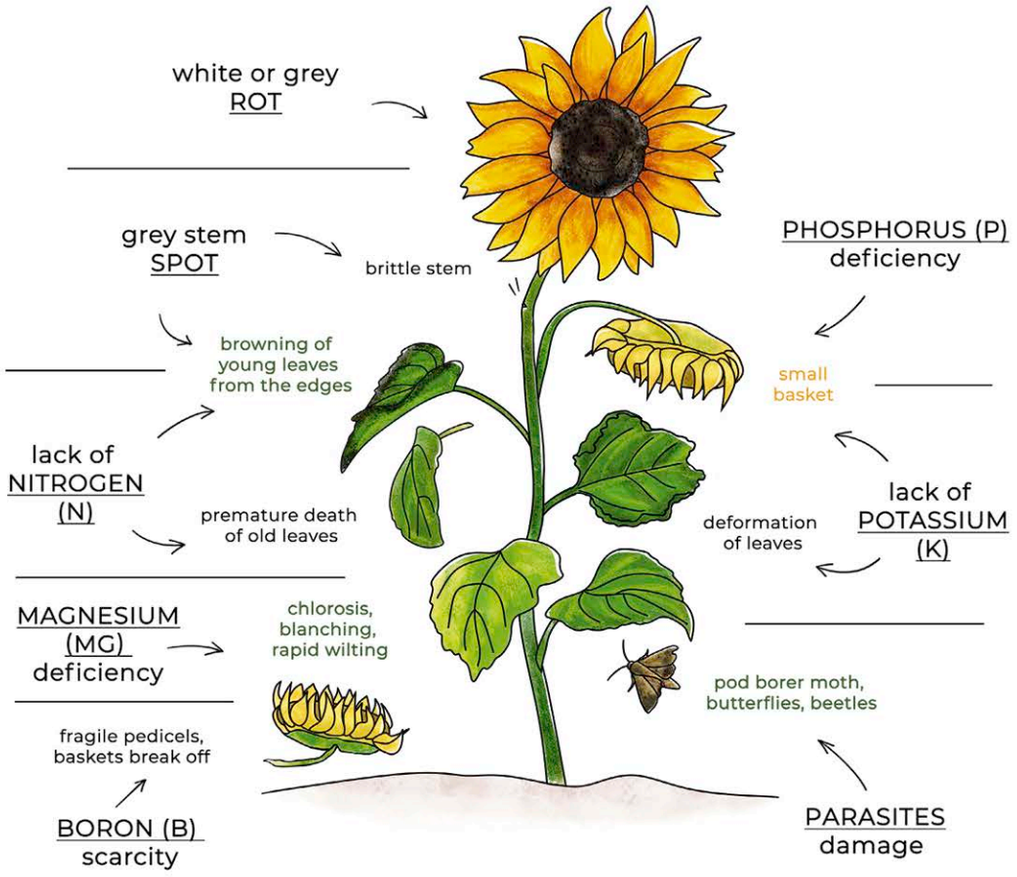
Sunflower

Sunflower is the most popular oilseed crop in the world. Various systems are used for sunflower cultivation – both "No-Till", and intensive and extensive crop production.

Main risks and defects of sunflower



4 Sato® Steps – Recommendations for application

SOILS

SatoSoil® Biome
Preparation of crop rotation after cereals
Incorporation to a depth up to 15 cm or single application with mulch
5 – 10 t/ha
Autumn or pre-sowing application
2 – 5 t/ha

SatoSoil® pHoenix
Humus increasing Correction of acidic soils
Deep plowing up to 18 cm 4 – 8 t/ha

SatoHum® K or
SatoGrow® NPK/
SatoGrow® N
Watering the soil improver
2 – 6 l/ha

SEEDS

Sato® Seeds
Pre-sowing phytosanitary seed treatment
1 l/t

SatoGrow® K Granules or
SatoGrow® NPK Granules
Protection against mineral burns
Prolonged effect
100 – 300 kg/ha/season

SatoHum® K or
SatoGrow® NPK/
SatoGrow® N
Granulate activation
2 – 6 l/ha

GROWTH

SatoHum® Complex
Simultaneous and abundant pollination and flowering
Increasing resistance to external adverse conditions
1,5 – 2 l/ha

SatoHum® SiO
Resistance to drought
2 – 2,5 l/ha

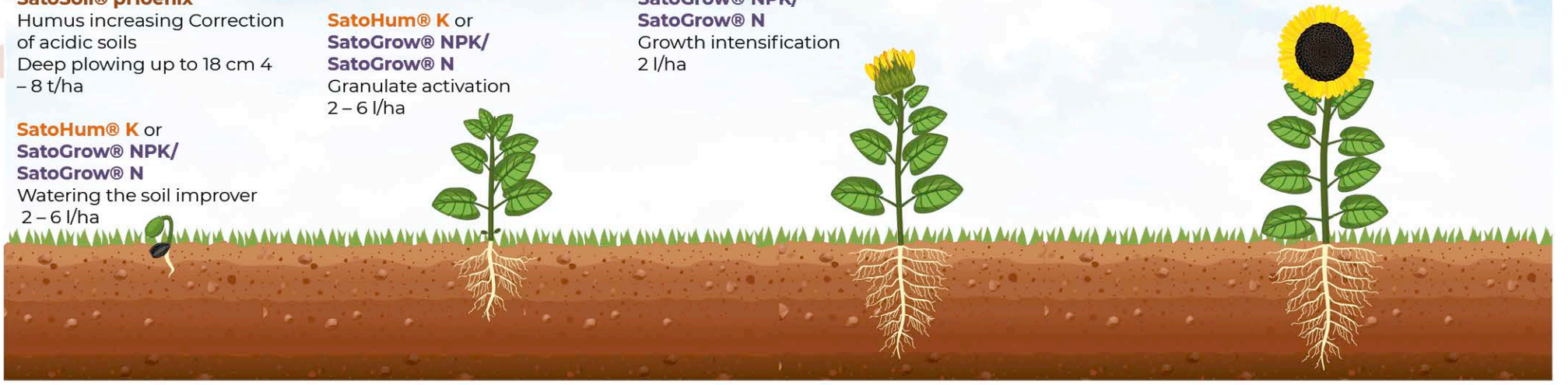
SatoGrow® NPK/
SatoGrow® N
Growth intensification
2 l/ha

HARVEST

SatoHum® K-B-Mo
Sunflower micronutrition
Synthesis of main proteins and phytohormones
1,5 – 2 l/ha

SatoHum® Ca
Small baskets and feeble seeds – fertilizing with humates with calcium
1 – 2 l/ha

Sato® Seeds
Improving seed fund
1 l/t



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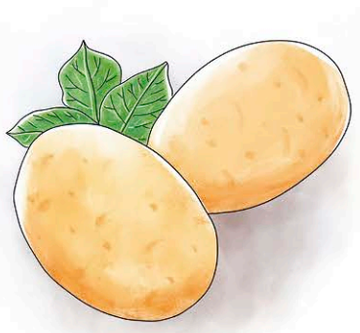
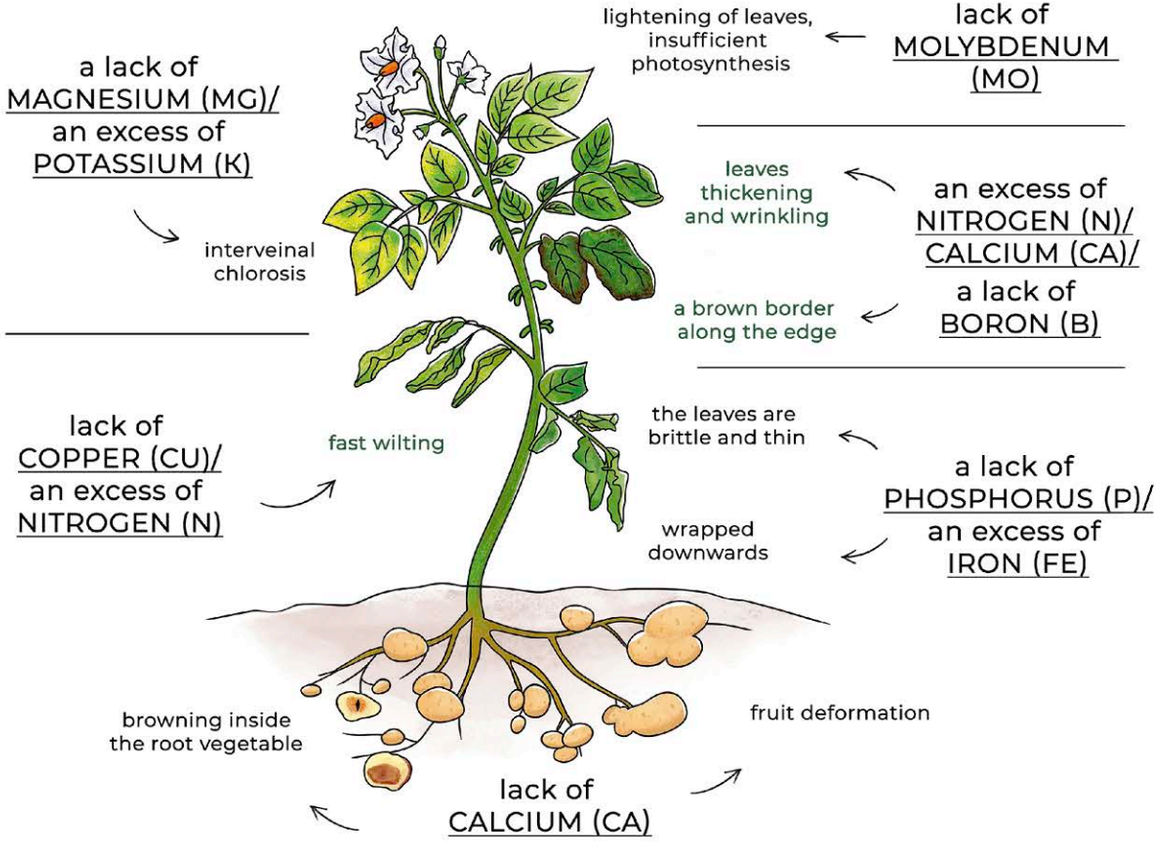
Potato



Potato is one of the most popular table and fodder crops. It's grown in traditional extensive and intensive farmings, and it's also the most common crop in household plots.

Signs of nutrient deficiency in potato



4 SatoSteps - Recommendations for application

SOILS	SEEDS	GROWTH	HARVEST
SatoSoil® Biome Preparation of crop rotation after cereals or legumesLand preparation for organic farming Incorporation to a depth up to 15 cm or single application with mulch 5 – 10 t/ha	**Sato® Seeds** Treatment of seed tubers Pre-sowing germination 30 ml/10 l of water	**SatoHum® Complex** Complex top-dressing 5-7 leaves: 1 – 1,2 l/ha Bud development 1,8 – 2,8 l/ha	**SatoHum® K-B-Mo** Correcting deficiencies of boron and molybdenum 1,2 – 1,6 l/ha	**Sato® Seeds** Treatment of seed tubers 30 ml/10 l of water
SatoSoil® pHoenix Converting fallow for growing potatoes Correction of saline and acidic soils Deep plowing up to 16 cm 5 – 10 t/ha	**SatoGrow® K Granules** or **SatoGrow® NPK Granules** Protection against mineral burns Prolonged effect 150 – 300 kg/ha/season	**SatoHum® K** Enhances vegetative mass growth No more than 2 applications/ cycle: 1 – 2 l/ha	**SatoHum® Ca** Even weight gain of root vegetables Tuber formation phase 1,2 – 1,6 l/ha	
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 2 – 6 l/ha	**SatoHum® K** or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 2 – 6 l/ha	**SatoHum® SiO** Strengthening the cell walls Reduction of plant diseases Bud development 2,0 – 2,5 l/ha **SatoGrow® NPK/ SatoGrow® N** Growth intensification 2 l/ha		

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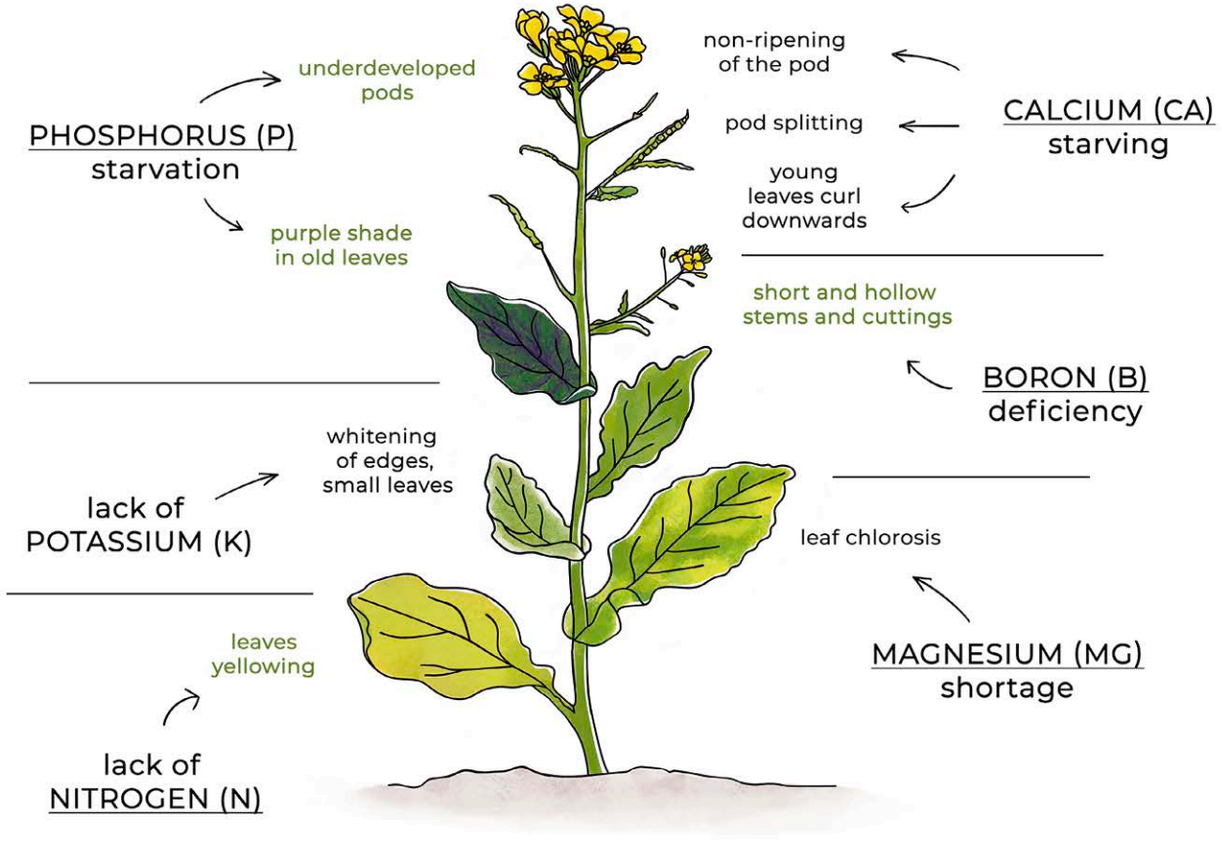
Colza

Colza is an oilseed crop widely cultivated for fodder and industrial purposes. Rapeseed is cold-resistant, unpretentious in care, grows on almost any soil, and gives optimal yield after cereals, fodder, legumes and potatoes.

Main risks and defects of colza



4 Sato® Steps – Recommendations for application

SOILS

SatoSoil® Biome
Pre-sowing soil fertilization
Incorporation to a depth up to 15 cm or single application with mulch
5 – 10 t/ha

SatoSoil® pHoenix
Fallow nutrition
Correction of saline and acidic soils
Deep plowing up to 18 cm 4 – 8 t/ha

SatoHum® K or
SatoGrow® NPK/
SatoGrow® N
Watering the soil improver
2 – 6 l/ha

SEEDS

Sato® Seeds
Pre-sowing seed treatment
Increasing seed survival and coordinated seedlings
0,6 l/t

GROWTH

SatoHum® Complex
Foliar systemic feeding
No more than 2 applications/ cycle:
1 – 2 l/ha

SatoHum® K-B-Mo
Potassium and boron starvation
Molybdenum deficiency correction
1,2 – 1,8 l/ha

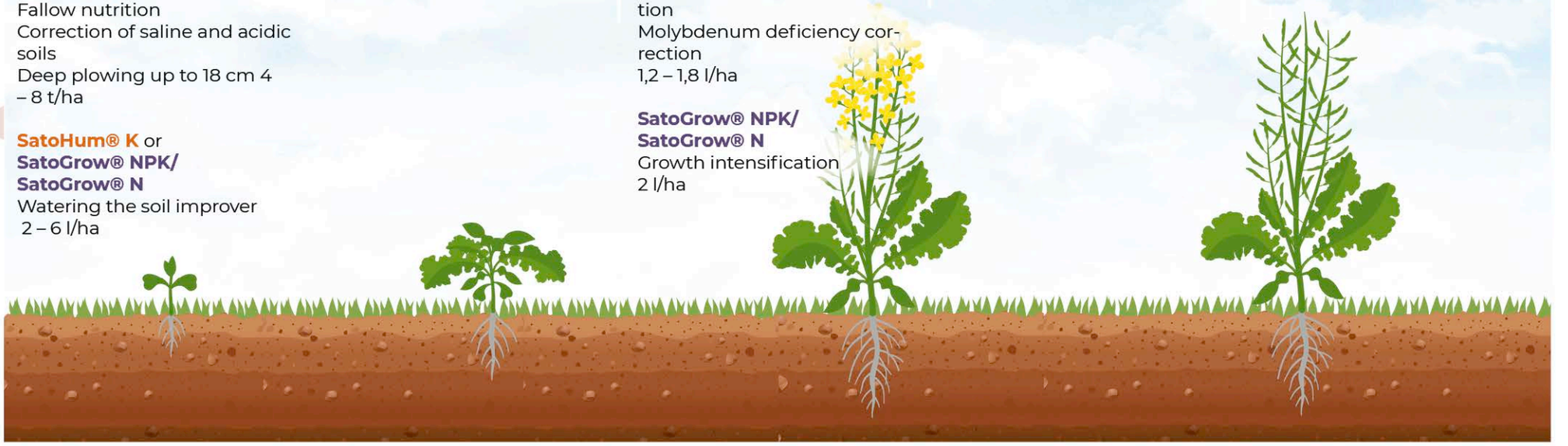
SatoGrow® NPK/
SatoGrow® N
Growth intensification
2 l/ha

SatoHum® SiO
Resistance to drought
Stem elasticity
1 – 2 l/ha

SatoHum® Ca
Even budding and stemming
1 – 1,5 l/ha

HARVEST

Sato® Seeds
Handling pods for storage
0,6 – 0,8 l/t



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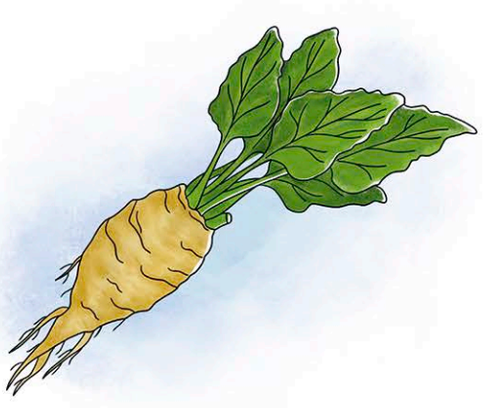
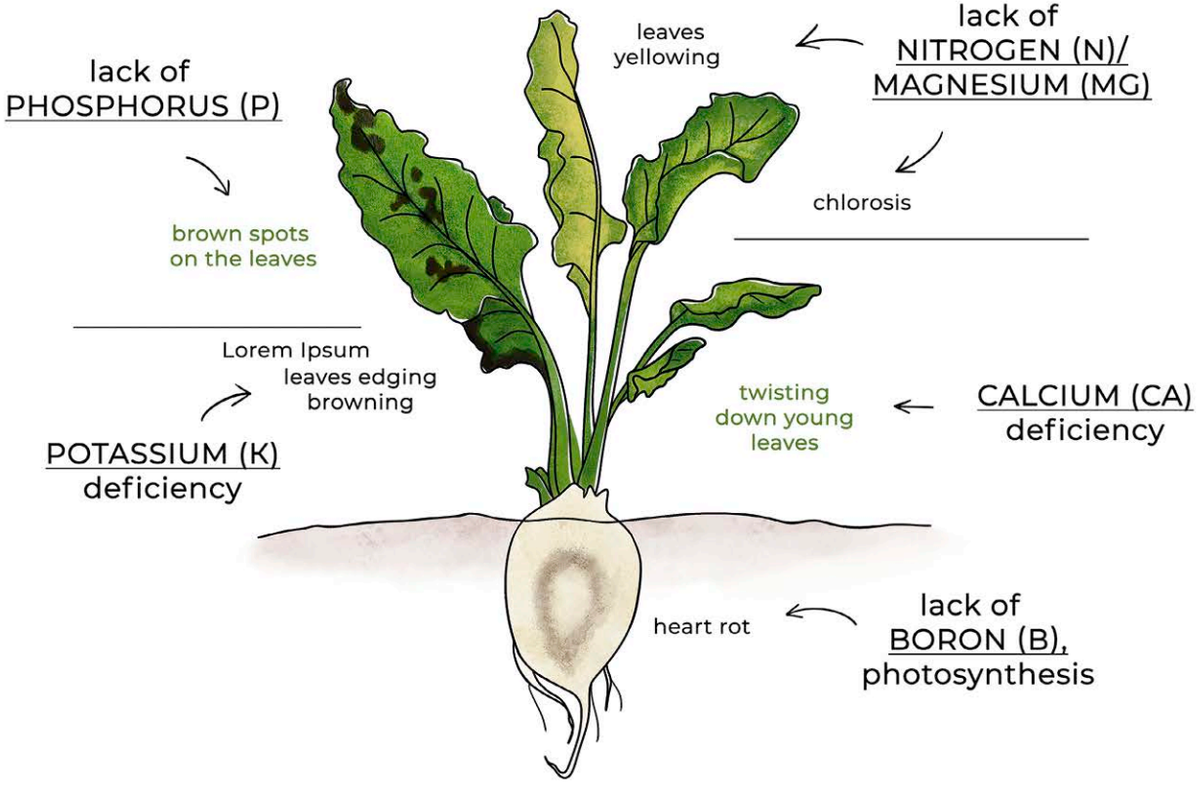
Sugar beet



Sugar beet is a rather capricious and traditionally industrial crop. Beets are demanding on the fertile soil layer, sensitive to field weediness and to predecessors. Sugar beet is not the most profitable crop, although it's almost waste-free: root crops have industrial and table value, and tops and processed products of the sugar industry – sludge and pulp, are used in feeds and fertilizers.

Signs of nutrient deficiency in sugar beet



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SatoSoil® Biome Soil feeding after green manure Incorporation to a depth up to 15 cm 5 – 10 t/ha Pre-sowing application on clean fallows 2 – 3 t/ha and abundant watering	**Sato® Seeds** Planting material treatment Pre-sowing germination 20 – 30 ml/10 l of water Adding to the dragee mass 30 ml/1 kg	**SatoHum® Complex** Complex top dressing of crops No more than 3 applications/cycle: 1 – 2 l/ha Last application no later than 3 weeks before harvesting	**SatoHum® K-B-Mo** Correction of micronutrient deficiencies 1,5 – 2,2 l/ha
SatoSoil® pHoenix Correction of saline and acidic soils Fallow lands treatmentLand preparation for organic farming Deep plowing up to 16 cm 5 – 10 t/ha	**SatoGrow® K Granules** or **SatoGrow® NPK Granules** Targeted organo-mineral biostimulation 150 – 300 kg/ha/season	**SatoHum® K** and **SatoHum® K Plus-** Development of vegetative organs Green biomass growth No more than 3 applications/cycle: 1 – 2 l/ha Last application no later than 3 weeks before harvesting	**SatoHum® Ca** Even weight gain of root vegetables 1,6 – 2,4 l/ha
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 2 – 6 l/ha	**SatoHum® K** or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 2 – 6 l/ha		

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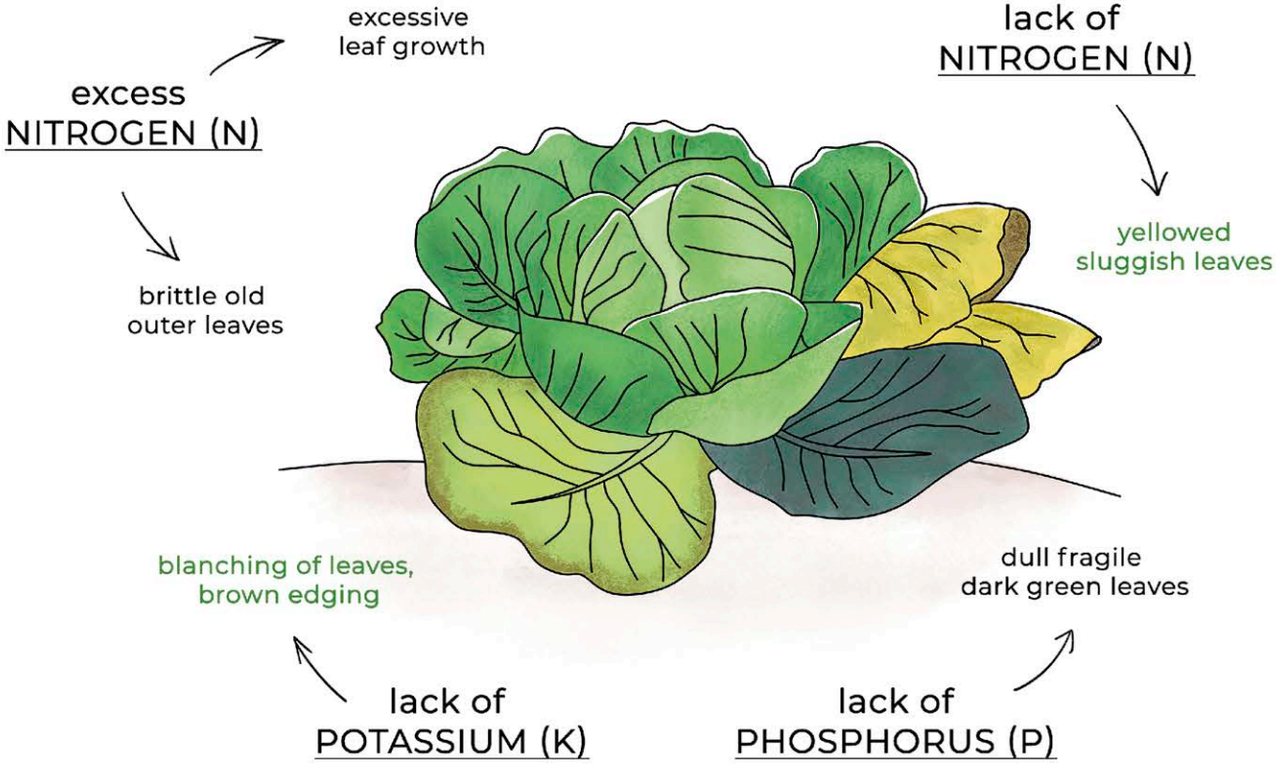
Cabbage

The cabbage family has up to fifty species, many of which are valued for their nutritional qualities. The most traditional in Europe are white, Savoy, Brussels, cauliflower and red cabbage, kohlrabi and broccoli.

Signs of nutrient deficiency in cabbage



4 Sato® Steps – Recommendations for application

SOILS	SEEDS	GROWTH	HARVEST	
SatoSoil® Biome Pre-sowing application Incorporation to a depth up to 15 cm or single application with mulch 5 – 10 t/ha	**Sato® Seeds** Seed fund treatment without pre-growing seedlings Pre-sowing germination for seedling method 20 ml/10 l of water	**SatoHum® Complex** Balanced feeding of the foliar system No more than 3 applications/ season: 1,8 – 2,2 l/ha	**SatoHum® K-B-Mo** Micronutrition of generative organs 1,2 – 1,8 l/ha	**SatoHum® Ca** Long shelf life of cabbage Preservation of organoleptic Before harvesting 1,2 – 1,5 l/ha
SatoSoil® pHoenix Correction of saline and acidic soils Fallow lands treatmentLand preparation for organic farming Deep plowing up to 16 cm 5 – 10 t/ha	**SatoGrow® NPK Granules** Complex biostimulation of seedlings Row application 5 – 10 g/hole Top dressing 15 – 25 g/m²	**SatoHum® K** Promotes sugar synthesis and weight gain during head formation No more than 3 applications/ season: 1,8 – 2,2 l/ha	**SatoHum® Ca** Increasing own plant protection Beginning of cabbage growth 1,2 l/ha	
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 2 – 6 l/ha	**SatoHum® K** or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 2 – 6 l/ha			

WARNING: 4 Sato® Steps is a comprehensive crop care system that provides the basic crop needs for the main 12 macro, meso and micronutrients for an optimal growing cycle and unlocking the potential of each crop.

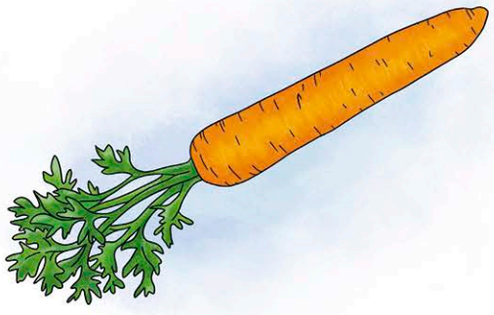
SOILS: In **pre-sowing** application of **SatoSoil® Soil improvers**, the minimum rate is introduced, when **autumn** applying, the maximum rate is recommended. When applying **SatoGrow® Biostimulants** after **SatoSoil® Soil improvers**, the minimum rate is applied; if the soil hasn't been treated, the maximum rate is applied. For irrigation, it's recommended to **activate granulates** (soil improvers or biostimulants) with **SatoHum®** liquid formulations and **SatoGrow®** liquid organo-mineral biostimulants.

SEEDS/SEEDLINGS/VEGETATION BEGINNING: Treatment of seeds and seedlings with **Sato® Seeds** formulation **is compatible with treatment by classical protectants** without reducing the rates of their application, and helps to increase the viability of seedlings, the development of the plant and its fruitfulness.

GROWTH: Our **SatoHum®** solutions have a guaranteed composition with **high content of humic and fulvic acids with amino acids of plant origin**. It is not recommended to exceed the total applying dose of **SatoHum®** liquid formulations over 6 l/ha/season, starting from the germination/seedlings phase.

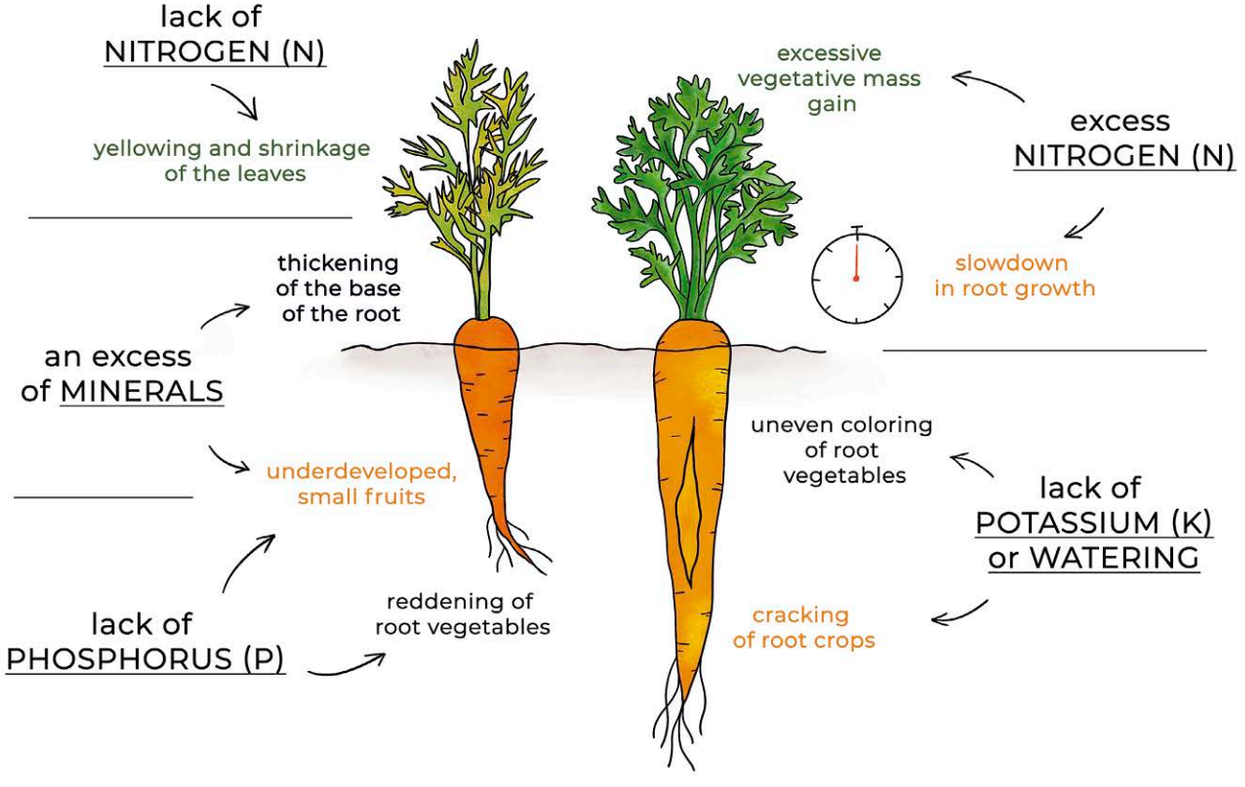
HARVEST: Simultaneous fertilization with several **SatoHum®** products is not expected. **It's not recommended to exceed the specified application rates. For single, not systemic application of SatoHum® products, the maximum dosage of the product is recommended.**

Carrot



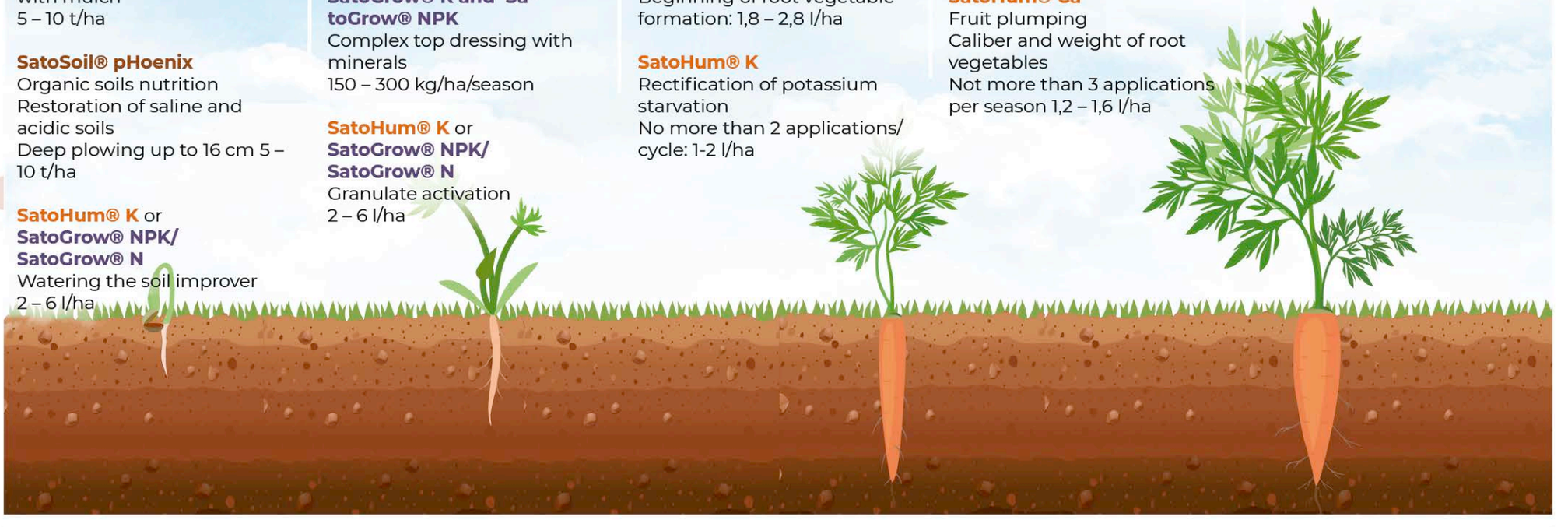
Thanks to its nutritional value and vitamin content, as well as its cold resistance, carrot got particular popularity in regions with a temperate and cold climate. Carrots bear fruit well after cucumber, tomato, cabbage, onion and cereals.

Signs of nutrient deficiency in carrots and fruits defects



4 SatoSteps - Recommendations for application

SOILS	SEEDS	GROWTH	HARVEST
SatoSoil® Biome Autumn or pre-sowing fertilization Incorporation to a depth up to 15 cm or single application with mulch 5 – 10 t/ha	**Sato® Seeds** Pre-sowing seed or seedlings treatment 30 ml/10 l of water	**SatoHum® Complex** System feeding with sprinkling or drip irrigation Green biomass growth 1,8 – 2 l/ha Beginning of root vegetable formation: 1,8 – 2,8 l/ha	**SatoHum® K-B-Mo** Correction of potassium and microelement deficiency 1,2 – 1,6 l/ha
SatoSoil® pHoenix Organic soils nutrition Restoration of saline and acidic soils Deep plowing up to 16 cm 5 – 10 t/ha	**SatoGrow® K and SatoGrow® NPK** Complex top dressing with minerals 150 – 300 kg/ha/season	**SatoHum® K** Rectification of potassium starvation No more than 2 applications/cycle: 1-2 l/ha	**SatoHum® Ca** Fruit plumping Caliber and weight of root vegetables Not more than 3 applications per season 1,2 – 1,6 l/ha
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 2 – 6 l/ha	**SatoHum® K** or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 2 – 6 l/ha		**SatoHum® Ca** Carrot wilting prevention Last application 10-18 days before harvest 1,2 – 1,6 l/ha



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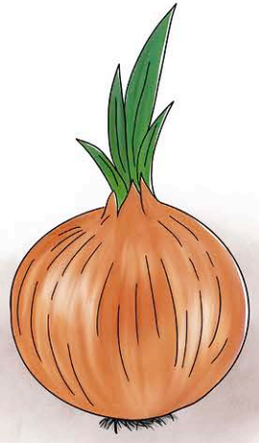
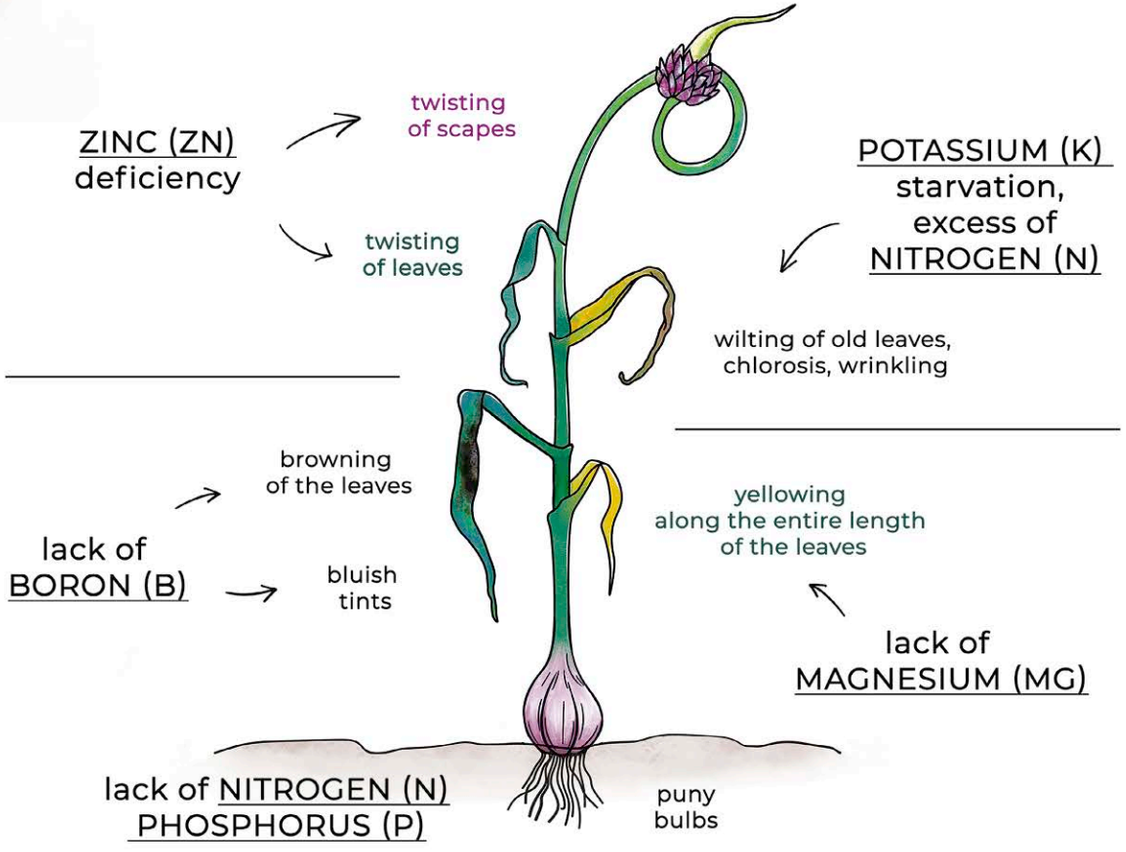
Onion and garlic



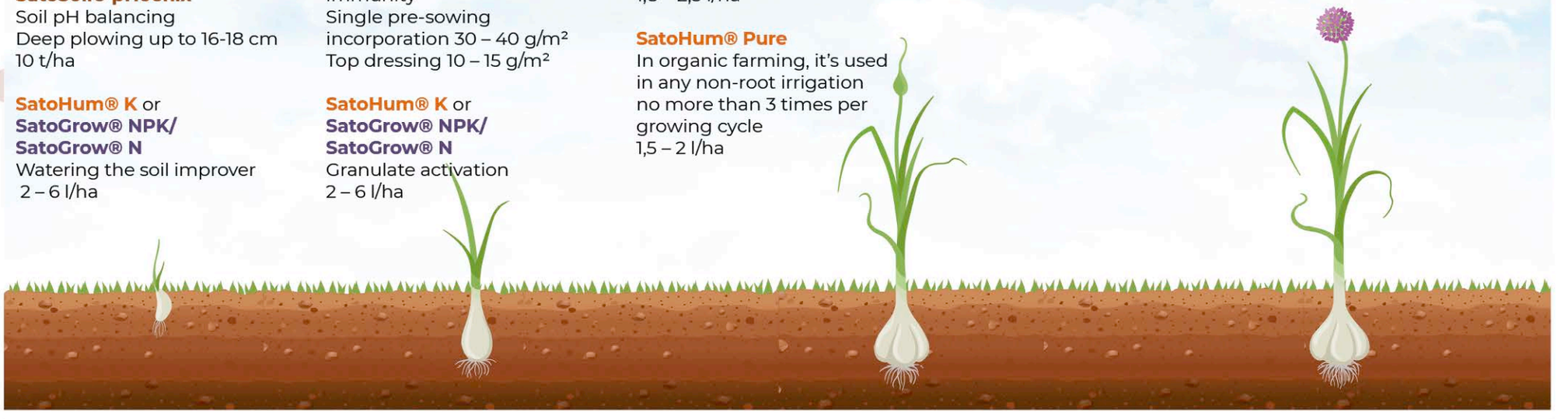
Both onions and garlic are indispensable crops in vegetable growing. Plants are demanding on the agrophysical properties of soils, of the predecessors in the crop rotation, they respond better to cereals, worse to fodder and legumes, it's strongly not recommended to plant after potatoes, tomatoes and other bulbs, since they have common diseases and pests.

Signs of nutrient deficiency in onion and garlic



4 Sato® Steps – Recommendations for application

SOILS	SEEDS	GROWTH	HARVEST
SatoSoil® Biome General recovery of soils Feeding of black fallows Land preparation for organic farming Incorporation to a depth up to 16 cm or single application with mulch 5 – 10 t/ha	**Sato® Seeds** Pre-sowing seed treatment of chives and garlic bulblets Soaking chive for seedlings (24 hours) 10 ml/10 l of water	**SatoHum® Complex** Complex feeding of foliar system No more than 3 applications/ season: 1,6 – 2 l/ha	**SatoHum® K-B-Mo** Correcting secondary nutrients deficiencies 1,4 – 1,8 l/ha
SatoSoil® pHoenix Soil pH balancing Deep plowing up to 16-18 cm 10 t/ha	**SatoGrow® NPK Granules** Gradual release of minerals Increasing the plant's own immunity Single pre-sowing incorporation 30 – 40 g/m² Top dressing 10 – 15 g/m²	**SatoHum® K** Active synthesis of functional phytohormones 1,8 – 2,3 l/ha	**SatoHum® Ca** Increasing the bulbs caliber 1,5 – 2,0 l/ha
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 2 – 6 l/ha	**SatoHum® K** or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 2 – 6 l/ha	**SatoHum® Pure** In organic farming, it's used in any non-root irrigation no more than 3 times per growing cycle 1,5 – 2 l/ha	**SatoHum® Ca** Treatment before drying bulbs 0,6 l/t



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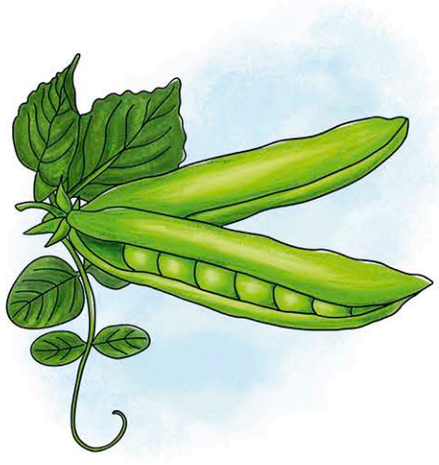
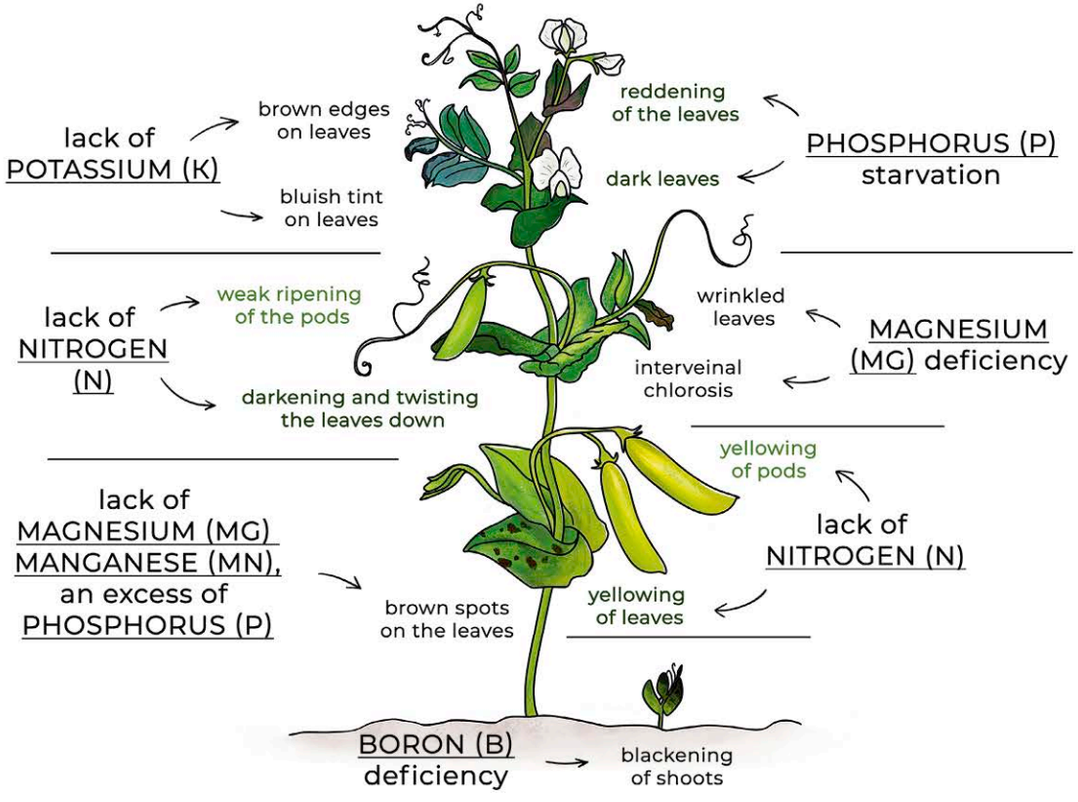
Legumes



After cereals, legumes are the second most popular. This includes ***table, fodder and industrial crops:*** *green and white beans, green and grain peas, lentils, chickpeas (white peas), soybeans and many others. Peas, chickpeas and lentils are among the* ***cold-resistant long daylight hours crops****, and southern legumes – soybeans and beans – are among the more* ***heat-loving short-day crops****. All legumes need crop rotation and cereals are considered the most favorable predecessors.*

Signs of nutrient deficiency in legumes



4 Sato® Steps – Recommendations for application

SOILS	SEEDS	GROWTH	HARVEST
SatoSoil® Biome Preservation of fertile layer Incorporation to a depth up to 15 cm 5 – 10 t/ha Autumn or pre-sowing soil fertilization 5 – 10 t/ha	**SatoGrow® K Granules** or **SatoGrow® NPK Granules** Biostimulation with mineral substances 150 – 300 kg/ha/season	**SatoHum® K** Correction of potassium starvation 1,8 – 2 l/ha	**SatoHum® K-B-Mo** Feeding with micronutrients 1,6 – 2,0 l/ha	**Sato® Seeds** Increasing the keeping quality of grain 0,6 – 0,8 l/t
SatoSoil® pHoenix Restoration of saline and acidic soils Deep plowing up to 18 cm 4 – 8 t/ha	**SatoHum® Complex** Systemic micronutrient feeding 1 – 2 l/ha	**SatoHum® SiO** Increasing plant immunity Stress resistance to pests attacks 1,2 – 1,8 l/ha		
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 2 – 6 l/ha	**SatoHum® K** or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 2 – 6 l/ha	**SatoGrow® NPK/ SatoGrow® N** Growth intensification 2 l/ha		

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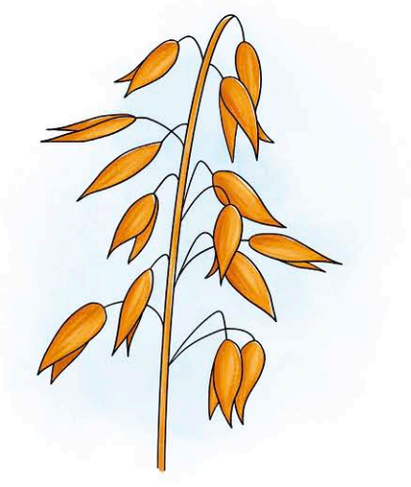
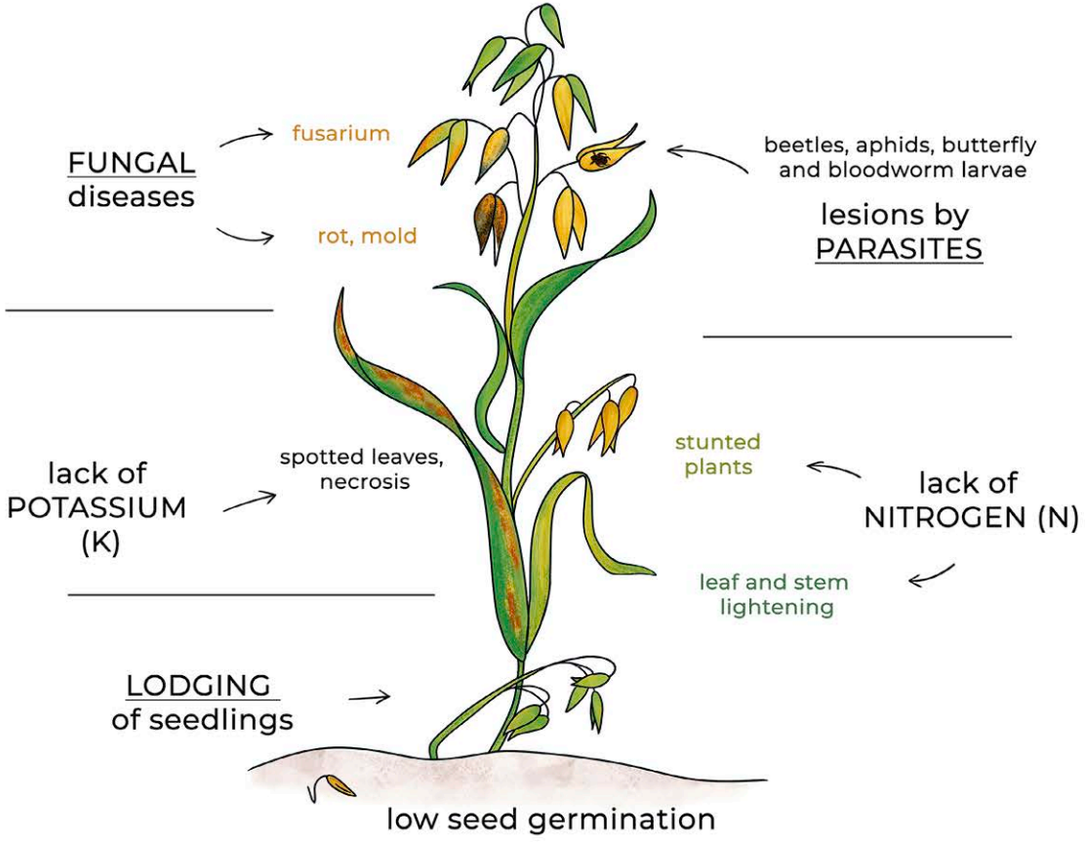
Fodder



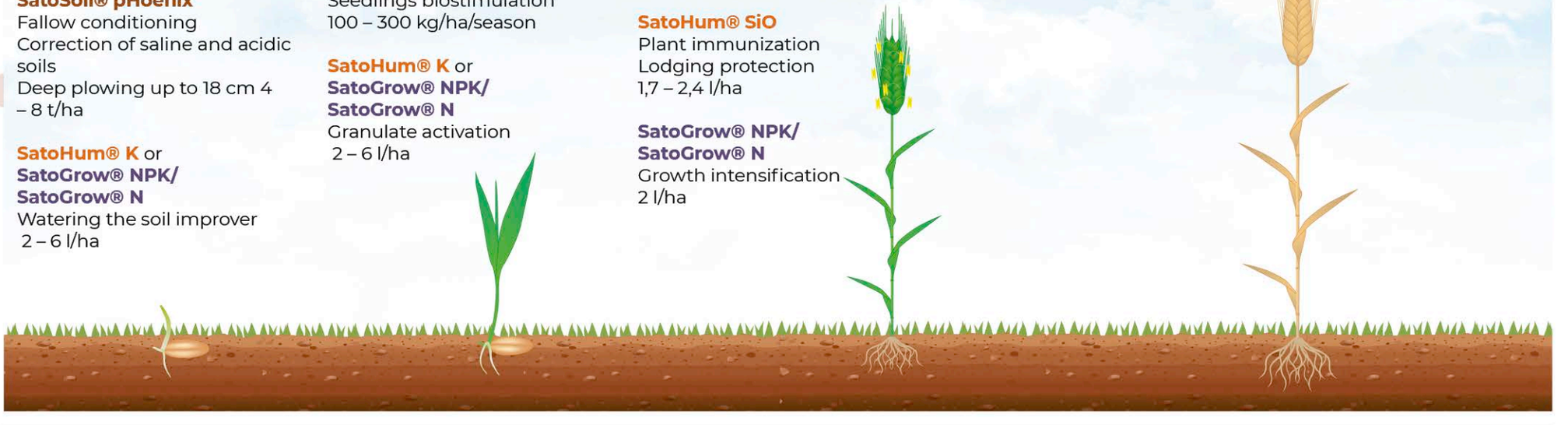
*In industrial crop production, a separate article is occupied by fodders, used to feed all types of livestock and poultry. Traditionally, there are distinguished **grain fodder** (oats, barley, corn, and sorghum), **legumes** (peas, lupins, clover) and **green fodder** (meadow grasses for hay and fresh grasses for hydroponics).*

Main risks and defects of fodder



4 Sato® Steps – Recommendations for application

SOILS	SEEDS	GROWTH	HARVEST
SatoSoil® Biome Preservation of fertile humus during crop rotation Incorporation to a depth up to 15 cm 5 – 10 t/ha Single pre-sowing soil fertilization 2 – 5 t/ha	**Sato® Seeds** Pre-sowing seed treatment of seed fund 0,6 l/t	**SatoHum® Complex** Balanced nutrition with macro and microelements 1,5 – 2 l/ha	**SatoHum® K-B-Mo** Micronutrition of forage crops Stimulation of phytohormones synthesis 1,5 – 2 l/ha	**SatoHum® Ca** Long keeping quality of grain, cobs and pods Raising nutritional value of feed flour Before harvesting 1,5 – 2 l/ha
SatoSoil® pHoenix Fallow conditioning Correction of saline and acidic soils Deep plowing up to 18 cm 4 – 8 t/ha	**SatoGrow® K Granules** or **SatoGrow® NPK Granules** Simultaneous seed germination Seedlings biostimulation 100 – 300 kg/ha/season	**SatoHum® K** Correction of potassium deficiency 1,5 – 2 l/ha	**SatoHum® Ca** Feeding with calcium 1,5 – 2 l/ha	
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 2 – 6 l/ha	**SatoHum® K** or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 2 – 6 l/ha	**SatoHum® SiO** Plant immunization Lodging protection 1,7 – 2,4 l/ha		
		SatoGrow® NPK/ SatoGrow® N Growth intensification 2 l/ha		



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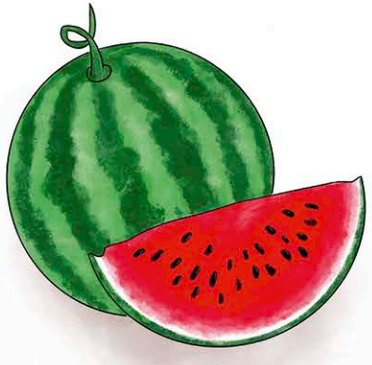
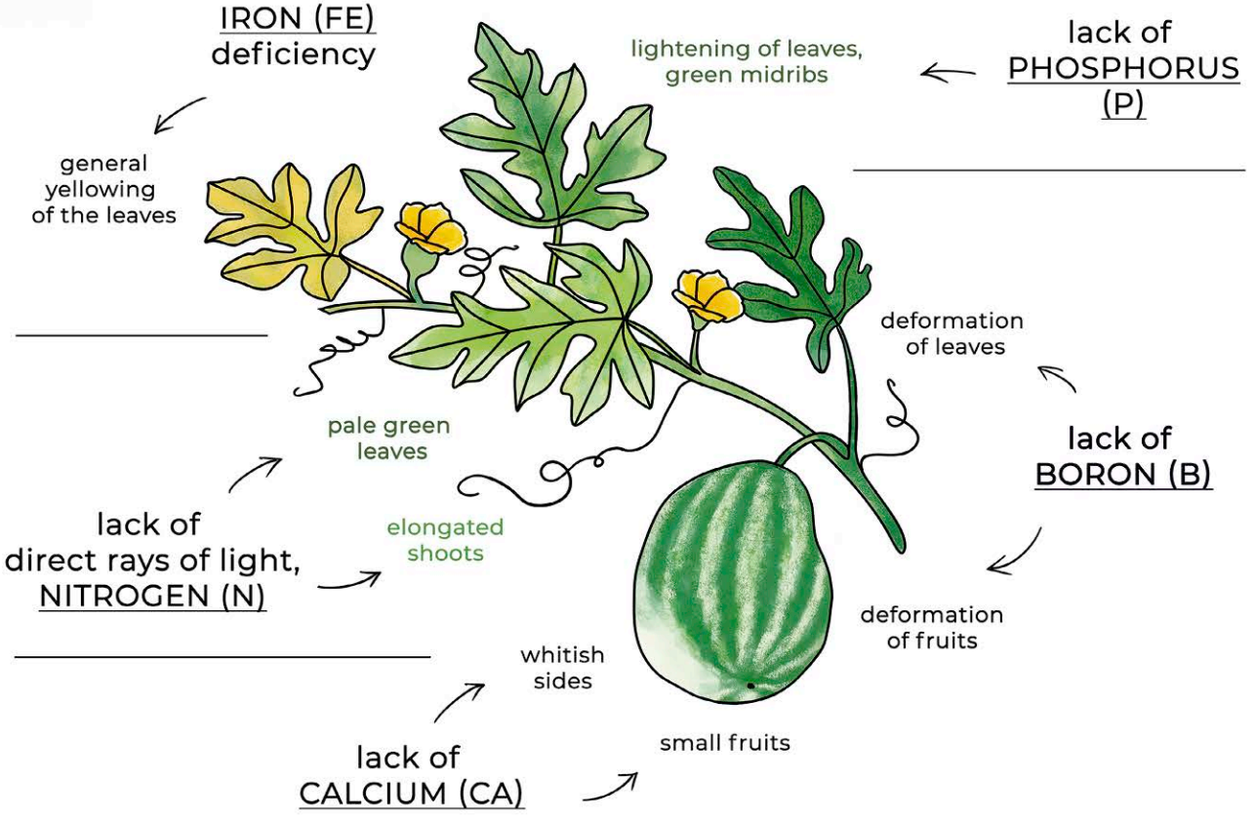
Melons



Watermelon, melon, pumpkin and zucchini are cultivated in industrial volumes both in table and fodder varieties in many arid regions of the world.

Signs of nutrient deficiency in melons



4 Sato® Steps – Recommendations for application

SOILS	SEEDS	GROWTH	HARVEST
SatoSoil® Biome Preservation of fertile humus Incorporation to a depth up to 16 cm 5 – 10 t/ha Single feeding of black fallows 2 – 5 t/ha	**Sato® Seeds** Pre-sowing treatment of seeds or seedlings Soaking seeds for seedlings (18 h) 10 ml/10 l of water	**SatoHum® Potassium soap** Fighting parasites and pathogens 30 – 40 ml/10 l of water	**SatoHum® K-B-Mo** Correction of potassium and secondary microelements deficiency 1,5 – 2 l/ha	**SatoHum® Ca** Long keeping quality of fruits Before harvesting 1,3 – 2 l/ha
SatoSoil® pHoenix Fallow conditioning Correction of saline and acidic soils Incorporation to a depth up to 16-18 cm 5 – 10 t/ha	**SatoGrow® K Granules** or **SatoGrow® NPK Granules** Complex biostimulation of seedlings 70 – 120 kg/ha/season	**SatoHum® K** Abundant budding and flowering 0,8 – 1 ml/10 m²	**SatoHum® Ca** Fruit plumping Sugar synthesis 1,3 – 2 l/ha	
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 2 – 6 l/ha	**SatoHum® K** or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 2 – 6 l/ha			

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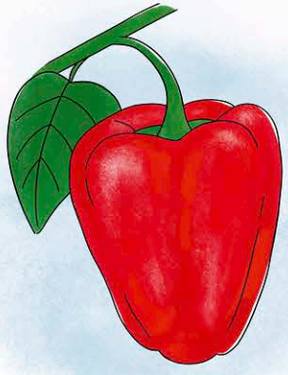
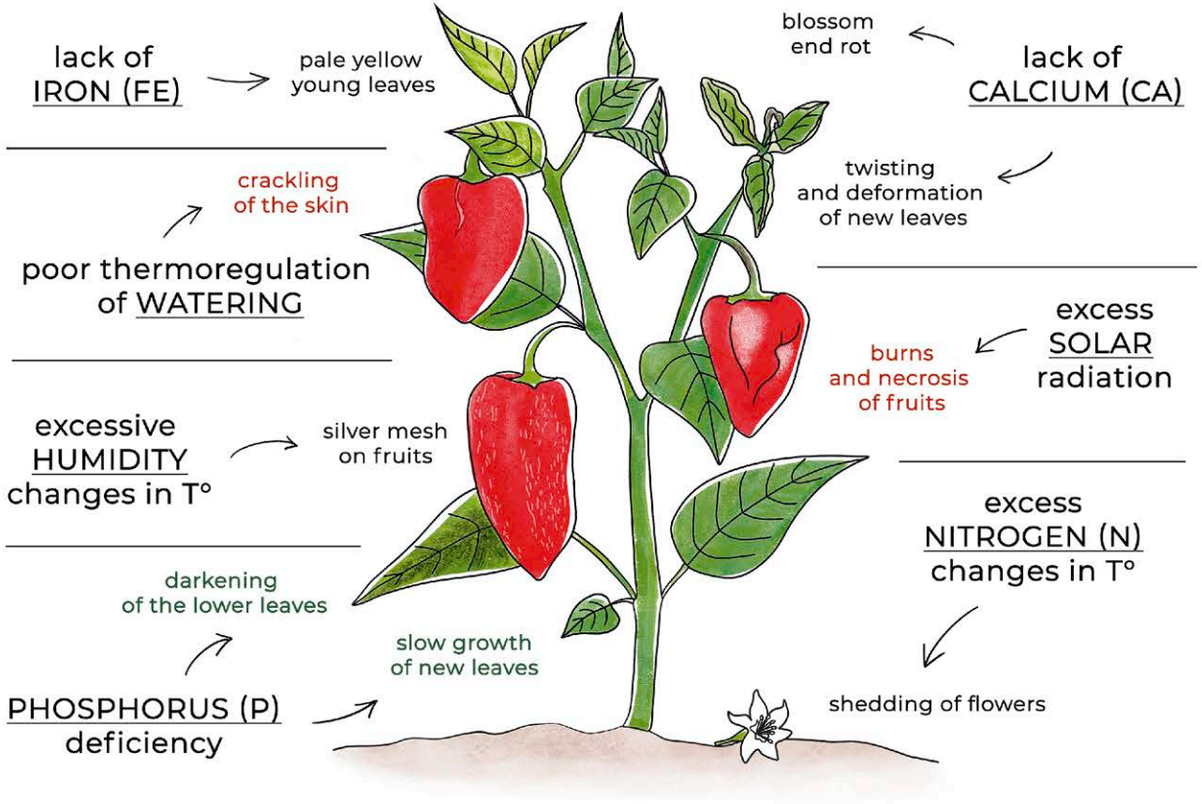
HARVEST: Simultaneous fertilization with several **SatoHum®** products is not expected. **It's not recommended to exceed the specified application rates. For single, not systemic application of SatoHum® products, the maximum dosage of the product is recommended.**

Pepper



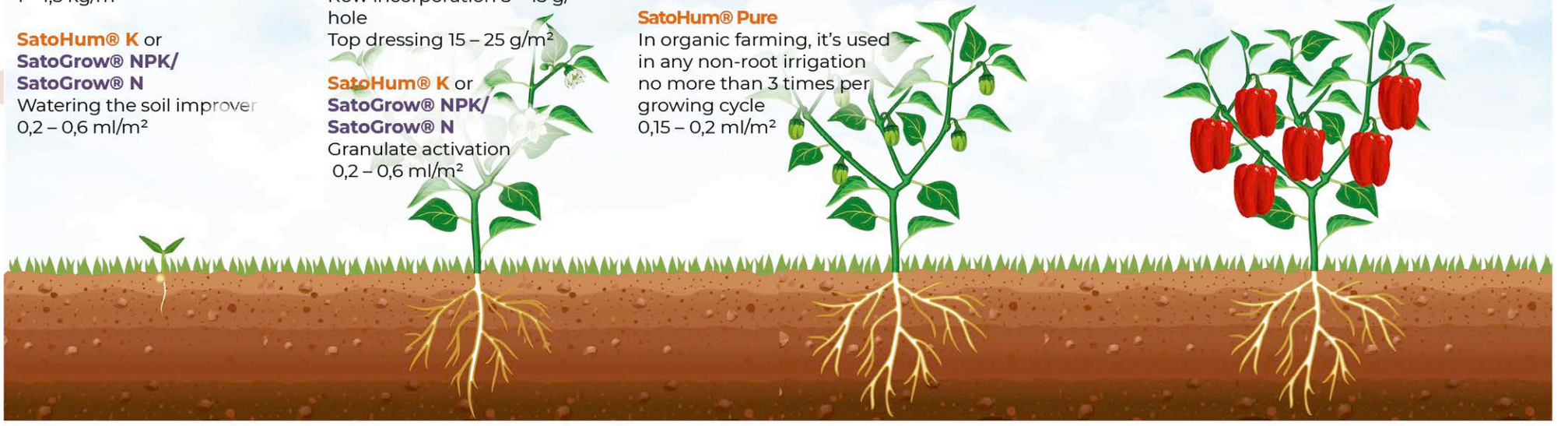
All types of pepper – both sweet and hot – are heat-loving and light-loving crops, therefore, in regions with a cold climate, pepper is more often grown in greenhouses than in open ground. On open ground, it's not recommended to grow pepper after other solanaceous. The seedling method of sowing is more popular.

Signs of nutrient deficiencies and defects in peppers



4 Sato® Steps – Recommendations for application

SOILS	SEEDS	GROWTH	HARVEST	
SatoSoil® Biome Fertilization of open and greenhouse soils Preparation of soils for organic farming 0,5 – 1 kg/m²	**Sato® Seeds** Seedling treatment Soaking 15-18 hours 5 – 15 ml/10 l of water	**SatoHum® Potassium soap** Fighting parasites and pathogens 30 – 40 ml/10 l of water	**SatoHum® K-B-Mo** Uniform ovary, fruit filling 1,6 – 2 ml/10 m²	**SatoHum® Ca** Increasing the fruits caliber 1,2 – 1,6 ml/10 m²
SatoSoil® pHoenix Correction of saline and acidic soils 1 – 1,5 kg/m²	**SatoGrow® K Granules** or **SatoGrow® NPK Granules** Complex biostimulation of seedlings Row incorporation 5 – 15 g/ hole Top dressing 15 – 25 g/m²	**SatoHum® K** Abundant budding and flowering 1,8 – 2,8 ml/10 m²	**SatoHum® Ca** Increasing skin elasticity Plant immunization 1,2 – 1,6 ml/10 m²	
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 0,2 – 0,6 ml/m²	**SatoHum® K** or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 0,2 – 0,6 ml/m²	**SatoHum® Pure** In organic farming, it's used in any non-root irrigation no more than 3 times per growing cycle 0,15 – 0,2 ml/m²		



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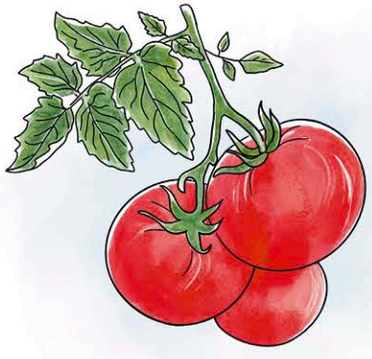
SOILS: In **pre-sowing** application of **SatoSoil® Soil improvers**, the minimum rate is introduced, when **autumn** applying, the maximum rate is recommended. When applying **SatoGrow® Biostimulants** after **SatoSoil® Soil improvers**, the minimum rate is applied; if the soil hasn't been treated, the maximum rate is applied. For irrigation, it's recommended to **activate granulates** (soil improvers or biostimulants) with **SatoHum®** liquid formulations and **SatoGrow®** liquid organo-mineral biostimulants.

SEEDS/SEEDLINGS/VEGETATION BEGINNING: Treatment of seeds and seedlings with **Sato® Seeds** formulation **is compatible with treatment by classical protectants** without reducing the rates of their application, and helps to increase the viability of seedlings, the development of the plant and its fruitfulness.

GROWTH: Our **SatoHum®** solutions have a guaranteed composition with **high content of humic and fulvic acids with amino acids of plant origin**. It is not recommended to exceed the total applying dose of **SatoHum®** liquid formulations over 6 l/ha/season, starting from the germination/seedlings phase. If **SatoHum® Potassium soap** is used for prophylactic purposes, it is recommended to apply the minimum dose. If treatment is carried out to fight active pathogens/ parasites, the dose indicated in the product card for the specific pest shall be applied.

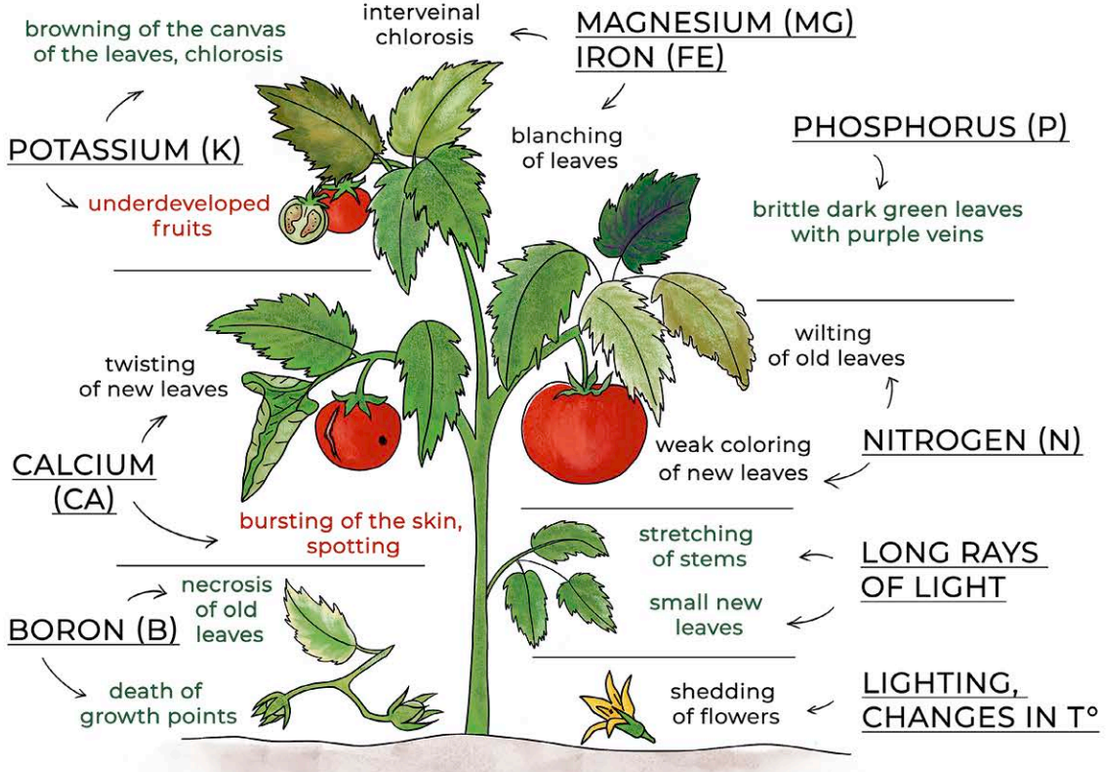
HARVEST: Simultaneous fertilization with several **SatoHum®** products is not expected. **It's not recommended to exceed the specified application rates. For single, not systemic application of SatoHum® products, the maximum dosage of the product is recommended.**

Tomatoes



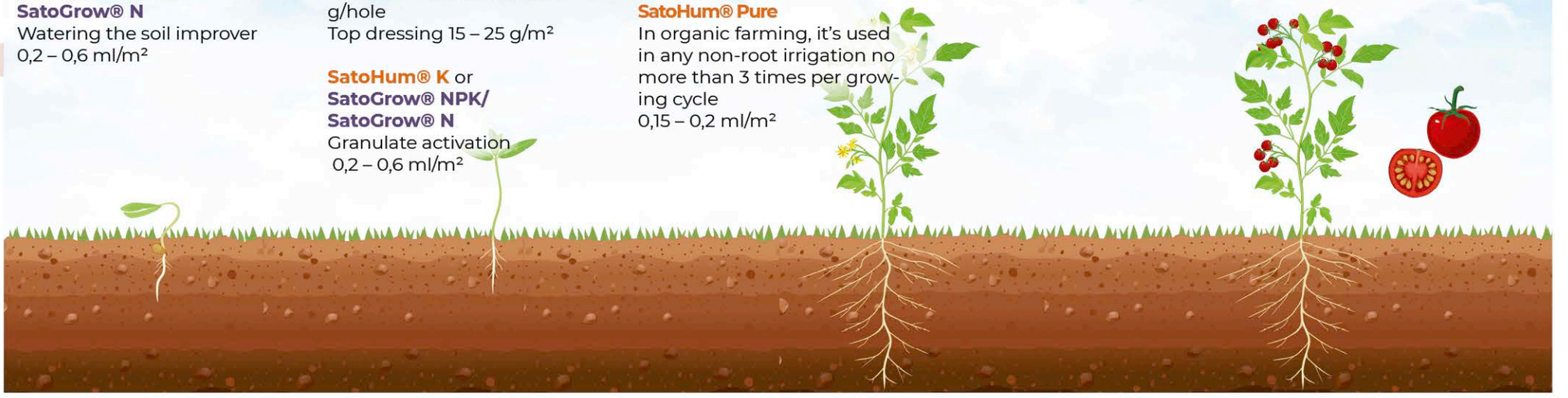
Tomatoes are the most valuable garden crop, popular in many countries both in intensive greenhouse farming and in open ground.

What is the deficiency in tomatoes?



4 Sato® Steps – Recommendations for application

SOILS	SEEDLINGS	GROWTH	HARVEST
SatoSoil® Biome Top dressing of open and greenhouse soils Organic soils nutrition incorporation to a depth up to 16 cm or single application with mulch 0,5 – 1 kg/m²	**Sato® Seeds** Seedling treatment Seeds germination 10 ml/10 l water	**SatoHum® Complex** Balanced nutrition by primary and secondary elements No more than 3 applications/season: 1,6 – 2 ml/10 m²	**SatoHum® K-B-Mo** Rectification of micronutrient deficiencies 1,5 – 3 ml/10 m²
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 0,2 – 0,6 ml/m²	**SatoGrow® K Granules** or **SatoGrow® NPK Granules** Complex biostimulation of seedlings Even vegetative mass growth Single row incorporation 5 – 10 g/hole Top dressing 15 – 25 g/m²	**SatoHum® K** Abundant budding and flowering and ovary formation 1,8 – 2,8 ml/10 m²	**SatoHum® Ca** Improving fruit turgor 1,8 – 2,8 ml/10 m²
	SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 0,2 – 0,6 ml/m²	**SatoHum® Pure** In organic farming, it's used in any non-root irrigation no more than 3 times per growing cycle 0,15 – 0,2 ml/m²	**SatoHum® Ca** Caliber gain of fruits Long keeping quality of fruits 2 – 3,4 ml/10 m²



WARNING: 4 Sato® Steps is a comprehensive crop care system that provides the **basic crop needs** for the main 12 macro, meso and micronutrients for an optimal growing cycle and unlocking the potential of each crop.

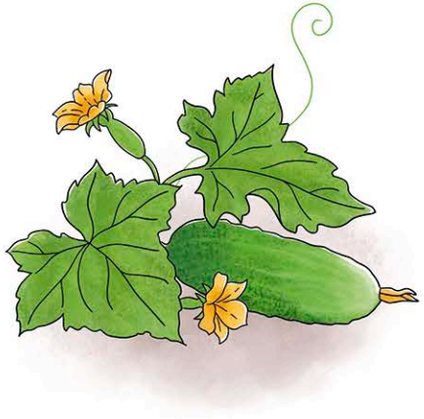
SOILS: In **pre-sowing** application of **SatoSoil® Soil improvers**, the minimum rate is introduced, when **autumn** applying, the maximum rate is recommended. When applying **SatoGrow® Biostimulants** after **SatoSoil® Soil improvers**, the minimum rate is applied; if the soil hasn't been treated, the maximum rate is applied. For irrigation, it's recommended to **activate granulates** (soil improvers or biostimulants) with **SatoHum®** liquid formulations and **SatoGrow®** liquid organo-mineral biostimulants.

SEEDS/SEEDLINGS/VEGETATION BEGINNING: Treatment of seeds and seedlings with **Sato® Seeds** formulation **is compatible with treatment by classical protectants** without reducing the rates of their application, and helps to increase the viability of seedlings, the development of the plant and its fruitfulness.

GROWTH: Our **SatoHum®** solutions have a guaranteed composition with **high content of humic and fulvic acids with amino acids of plant origin**. It is not recommended to exceed the total applying dose of **SatoHum®** liquid formulations over 6 l/ha/season, starting from the germination/seedlings phase. If **SatoHum® Potassium soap** is used for prophylactic purposes, it is recommended to apply the minimum dose. If treatment is carried out to fight active pathogens/parasites, the dose indicated in the product card for the specific pest shall be applied.

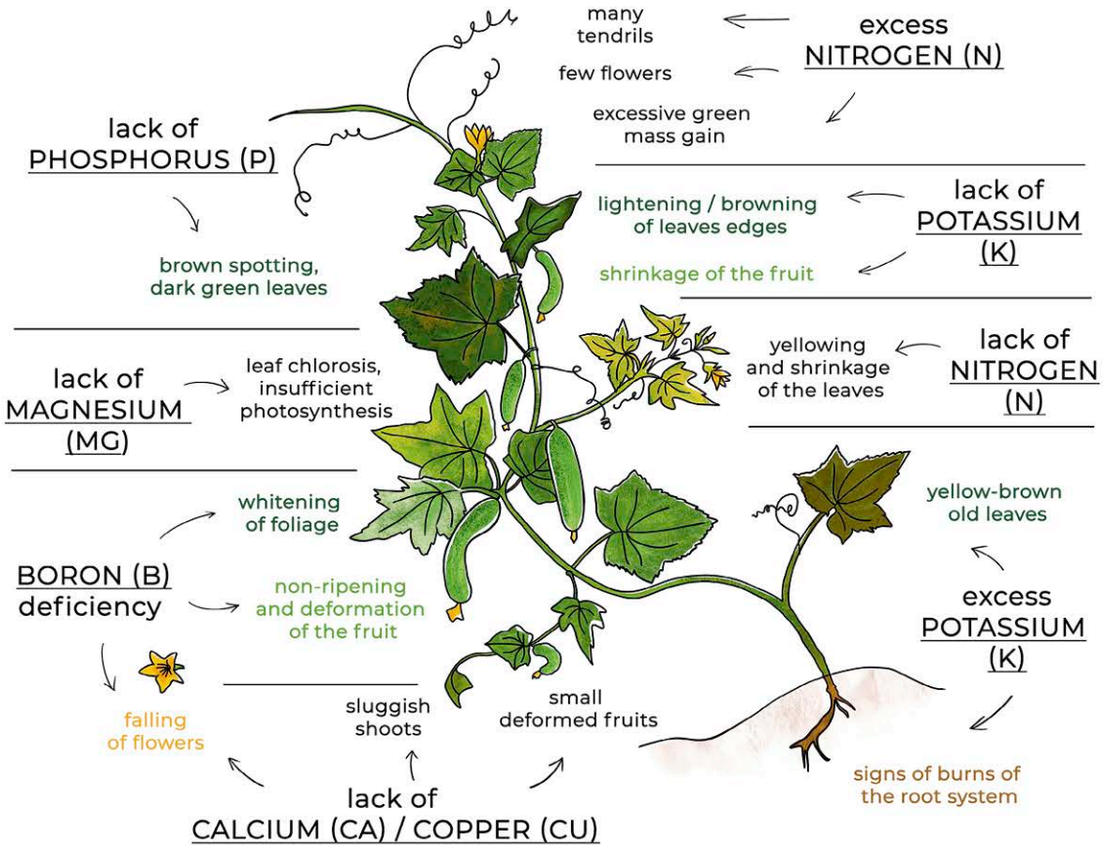
HARVEST: Simultaneous fertilization with several **SatoHum®** products is not expected. **It's not recommended to exceed the specified application rates. For single, not systemic application of SatoHum® products, the maximum dosage of the product is recommended.**

Cucumbers



One of the most popular crops in vegetable growing, it's grown both in open ground and in greenhouses, hydroponic and aeroponic farms. Cucumber is respected not so much for its nutritional value, but for the freshness and taste of the fruit, for the combination with other products, abundance of varieties and the diversity of preservation methods.

Signs of nutrient deficiencies and defects in cucumbers



4 Sato® Steps – Recommendations for application

SOILS

SatoSoil® Biome
Top dressing of open and greenhouse soils
Autumn or pre-sowing fertilization
Organic soils nutrition
Incorporation to a depth up to 16 cm 0,5 – 1 kg/m²

SatoSoil® pHoenix
Restoration of saline and acidic soils
1 – 1,5 kg/m²

SatoHum® K or
SatoGrow® NPK/
SatoGrow® N
Watering the soil improver
0,2 – 0,6 ml/m²

SEEDS

Sato® Seeds
Seed treatment and disinfection of seedlings Soaking 15-18 hours 5 – 10 ml/10 l of water

SatoGrow® K Granules or
SatoGrow® NPK Granules
Complex top dressing with minerals
Row incorporation 5 – 15 g/hole
Top dressing
15 – 25 g/m²

SatoHum® K or
SatoGrow® NPK/
SatoGrow® N
Granulate activation
0,2 – 0,6 ml/m²

GROWTH

SatoHum® Complex
Drip irrigation in greenhouses and nutrient solution in hydroponics
1,6 – 2,5 ml/10 m²

SatoHum® K
Potassium dressing
1,6 – 2,5 ml/10 m²

SatoHum® SiO
Stress resistance
Strengthening stems from lodging
Plant immunization
1,8 – 2,8 ml/10 m²

SatoHum® Potassium soap
Fighting parasites and fungal diseases
30 – 40 ml/10 l of water

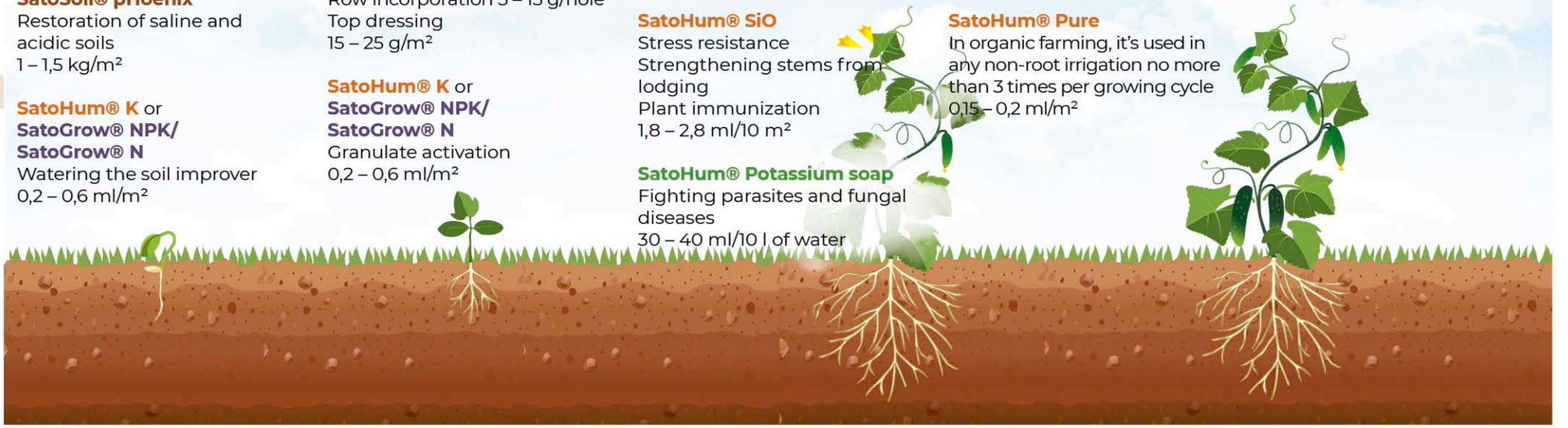
HARVEST

SatoHum® K-B-Mo
Correction of potassium and microelement deficiency
1,6 – 2 ml/10 m²

SatoHum® Ca
Fruit plumping
Improving turgor
1,2 – 1,6 ml/10 m²

SatoHum® Pure
In organic farming, it's used in any non-root irrigation no more than 3 times per growing cycle
0,15 – 0,2 ml/m²

SatoHum® Ca
Long keeping quality of fruits
After the 4th harvest 1,2 – 1,6 ml/10 m²



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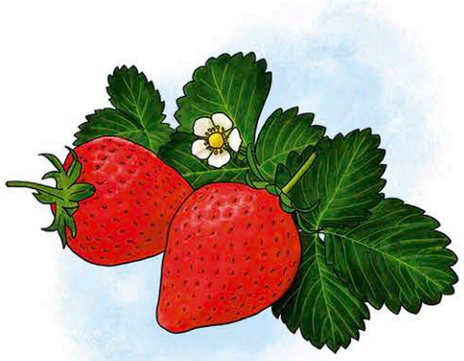
SOILS: In **pre-sowing** application of **SatoSoil® Soil improvers**, the minimum rate is introduced, when **autumn** applying, the maximum rate is recommended. When applying **SatoGrow® Biostimulants** after **SatoSoil® Soil improvers**, the minimum rate is applied; if the soil hasn't been treated, the maximum rate is applied. For irrigation, it's recommended to **activate granulates** (soil improvers or biostimulants) with **SatoHum®** liquid formulations and **SatoGrow®** liquid organo-mineral biostimulants.

SEEDS/SEEDLINGS/VEGETATION BEGINNING: Treatment of seeds and seedlings with **Sato® Seeds** formulation **is compatible with treatment by classical protectants** without reducing the rates of their application, and helps to increase the viability of seedlings, the development of the plant and its fruitfulness.

GROWTH: Our **SatoHum®** solutions have a guaranteed composition with **high content of humic and fulvic acids with amino acids of plant origin**. It is not recommended to exceed the total applying dose of **SatoHum®** liquid formulations over 6 l/ha/season, starting from the germination/seedlings phase. If **SatoHum® Potassium soap** is used for prophylactic purposes, it is recommended to apply the minimum dose. If treatment is carried out to fight active pathogens/parasites, the dose indicated in the product card for the specific pest shall be applied.

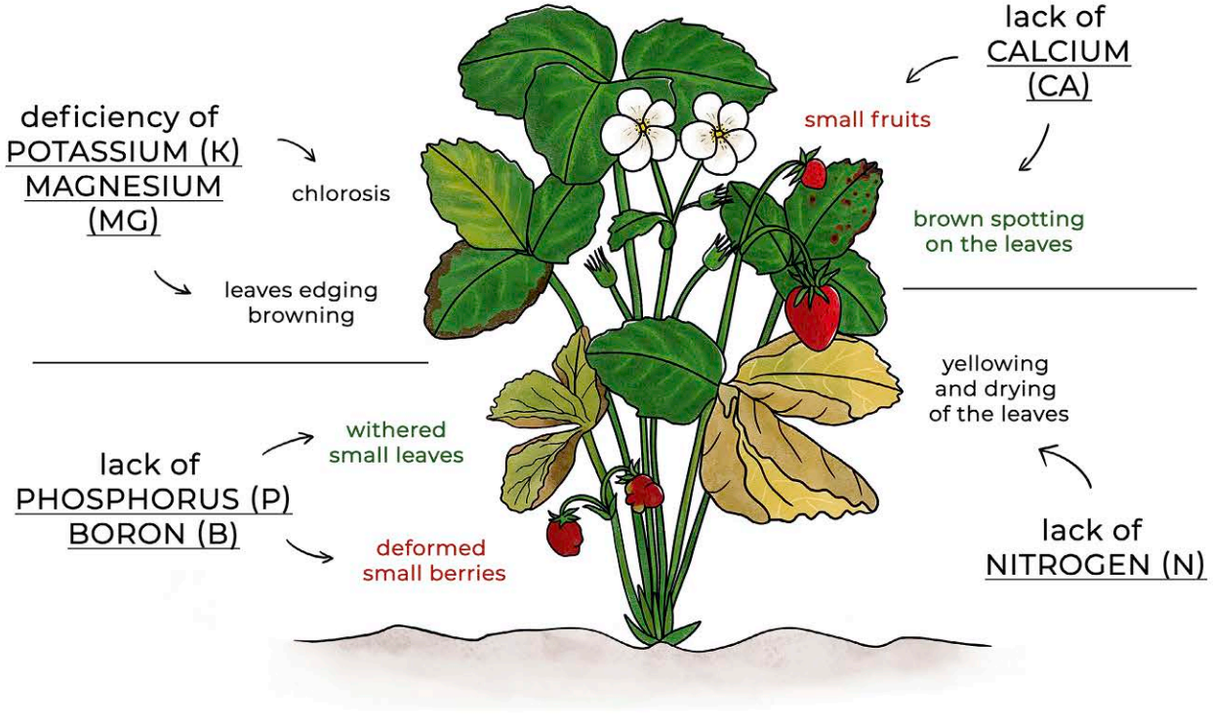
HARVEST: Simultaneous fertilization with several **SatoHum®** products is not expected. **It's not recommended to exceed the specified application rates. For single, not systemic application of SatoHum® products, the maximum dosage of the product is recommended.**

Berries



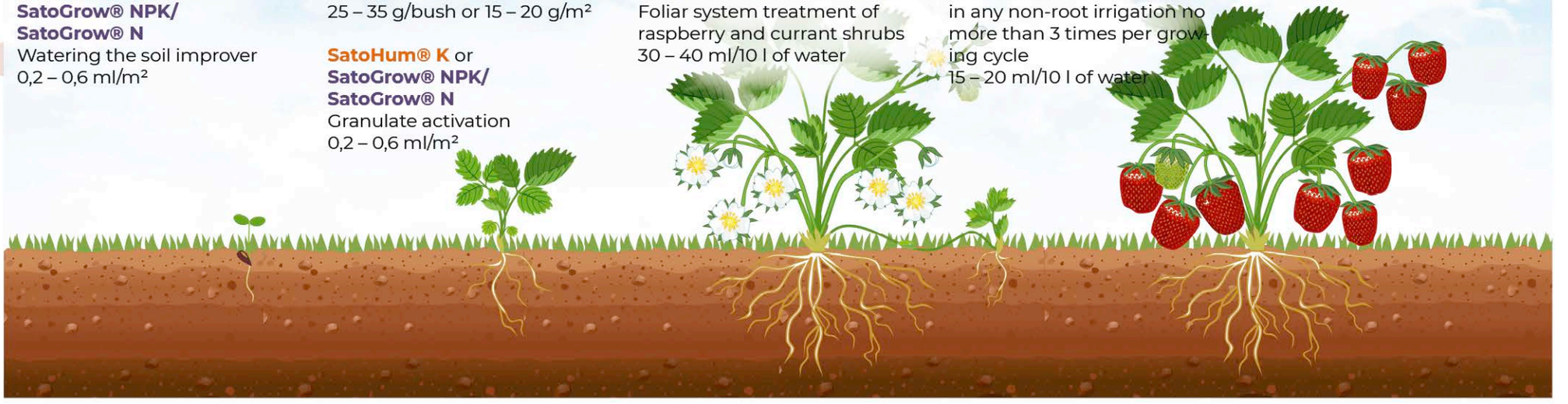
Berries are a cost-effective and at the same time capital-intensive horticultural industry. Among berry crops, ***garden strawberries*** *occupy a special place. Industrial plantations of gooseberries, currants, raspberries, blackberries, cranberries, lingonberries, blueberries and bilberries are less popular.*

Signs of nutrient deficiency in berries



4 Sato® Steps – Recommendations for application

SOILS	SEEDLINGS	GROWTH		HARVEST
SatoSoil® Biome Top dressing of open and greenhouse soils 0,5 – 1 kg/m² Single pre-sowing soil fertilization 0,5 – 1 kg/m² Organic soils nutrition Incorporation to a depth up to 16 cm 0,5 – 1 kg/m²	**Sato® Seeds** Seedling treatment 10 ml/10 l water Seeds germination	**SatoHum® Complex** Application through fertigation systems 1,8 – 2,8 ml/10 m²	**SatoHum® K-B-Mo** Correction of potassium and boron starvation 1,5 – 3 ml/10 m²	**SatoHum® Ca** Berry filling Increasing caliber and sugars 2 – 3,4 ml/10 m²
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 0,2 – 0,6 ml/m²	**SatoGrow® K Granules** or **SatoGrow® NPK Granules** Simultaneous seedlings germination Starting complex nutrition with minerals 25 – 35 g/bush or 15 – 20 g/m²	**SatoHum® K** Correction of potassium deficiency 1,8 – 2,8 ml/10 m²	**SatoHum® Ca** Feeding with calcium 1,8 – 2,8 ml/10 m²	
	SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 0,2 – 0,6 ml/m²	**SatoHum® Potassium soap** Foliar system treatment of raspberry and currant shrubs 30 – 40 ml/10 l of water	**SatoHum® Pure** In organic farming, it's used in any non-root irrigation no more than 3 times per growing cycle 15 – 20 ml/10 l of water	



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SOILS: In **pre-sowing** application of **SatoSoil® Soil improvers**, the minimum rate is introduced, when **autumn** applying, the maximum rate is recommended. When applying **SatoGrow® Biostimulants** after **SatoSoil® Soil improvers**, the minimum rate is applied; if the soil hasn't been treated, the maximum rate is applied. For irrigation, it's recommended to **activate granulates** (soil improvers or biostimulants) with **SatoHum®** liquid formulations and **SatoGrow®** liquid organo-mineral biostimulants.

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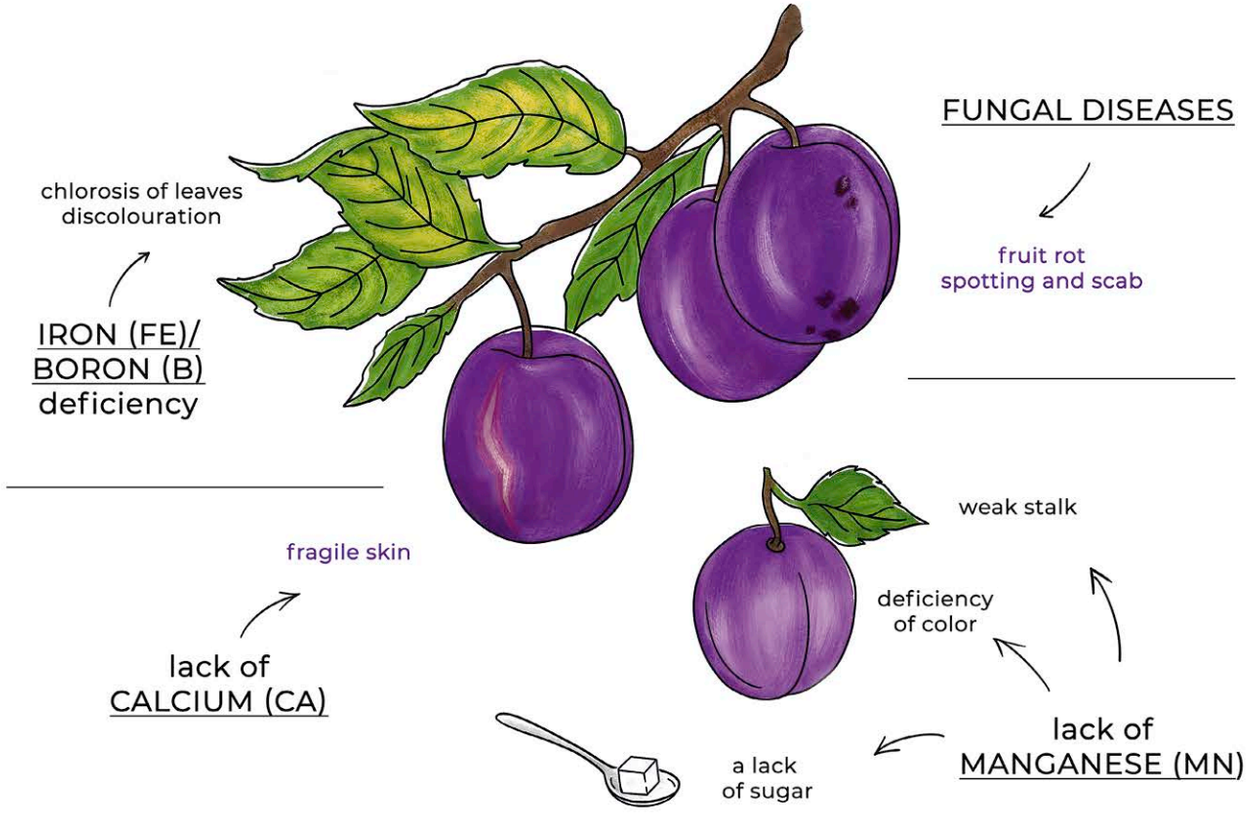
GROWTH: Our **SatoHum®** solutions have a guaranteed composition with **high content of humic and fulvic acids with amino acids of plant origin**. It is not recommended to exceed the total applying dose of **SatoHum®** liquid formulations over 6 l/ha/season, starting from the germination/seedlings phase. If **SatoHum® Potassium soap** is used for prophylactic purposes, it is recommended to apply the minimum dose. If treatment is carried out to fight active pathogens/parasites, the dose indicated in the product card for the specific pest shall be applied.

HARVEST: Simultaneous fertilization with several **SatoHum®** products is not expected. **It's not recommended to exceed the specified application rates. For single, not systemic application of SatoHum® products, the maximum dosage of the product is recommended.**

Stone fruits

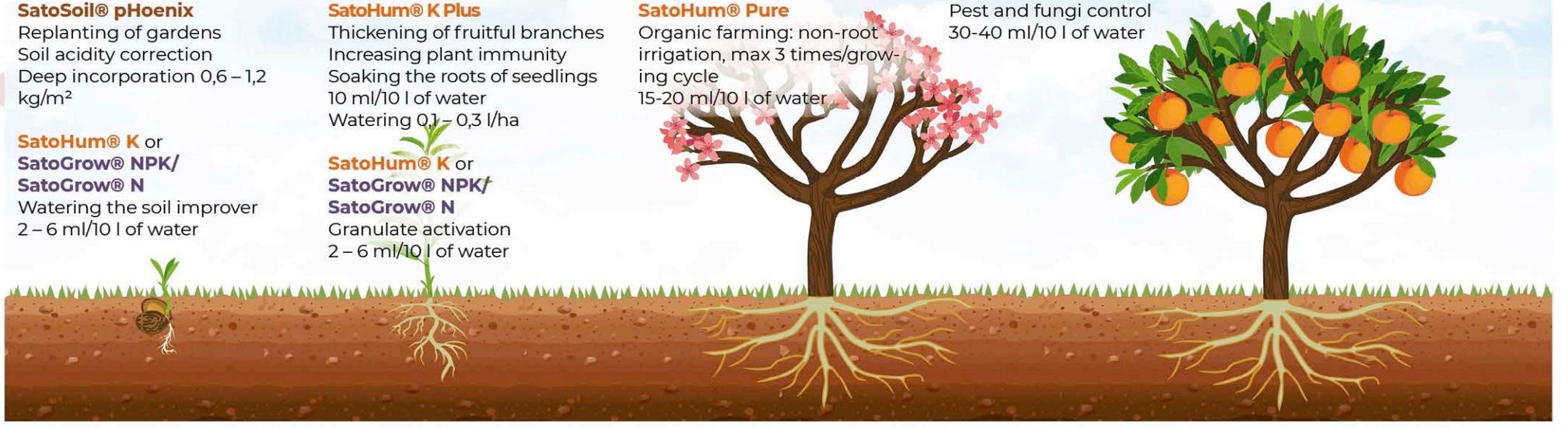
A common characteristic of popular stone fruits – sweet cherries, cherries, plums, apricots and peaches – is ***the love of these cultures for warmth and light****. Among the serious risks of stone fruit trees, experts distinguish* ***winter injury and spring frosts****: staying at excessively low temperatures and in the wind leads to freeze the roots.* ***Stone fruits are not cold-resistant fruit trees****, are easily damaged by frosts and are* ***more susceptible to fungal diseases*** *– moniliosis, clasterosporiasis and coccomycosis.*

Defects and diseases of stone fruits



4 Sato® Steps – Recommendations for application

SOILS	VEGETATION BEGINNING	GROWTH	HARVEST	
SatoSoil® Biome Reducing overwatering Raising of cold resistance Reducing the number of non-viable (dead) trees Wind load Trunk mulching Deep incorporation or mulching 0,5 – 1 Kg/tree	**SatoGrow® K Granules** or **SatoGrow® NPK Granules** Top dressing of planting material in greenhouses and nursery gardens Reducing risks of burns of the root system when applying nitrogen fertilizers 30 – 75 g/tree	**SatoHum® Complex** Abundant budding and flowering No more than 3 applications/ season: 0,1 – 0,3 l/ha	**SatoHum® Ca** Fruit ripening 0,3 l/ha	**SatoHum® Ca** Prevent berry cracking 0,3 l/ha
SatoSoil® pHoenix Replanting of gardens Soil acidity correction Deep incorporation 0,6 – 1,2 kg/m²	**SatoHum® K Plus** Thickening of fruitful branches Increasing plant immunity Soaking the roots of seedlings 10 ml/10 l of water Watering 0,1 – 0,3 l/ha	**SatoHum® Ca** Ovary development 0,3 l/ha	**SatoHum® K-B-Mo** Correction of nutritional deficiencies 0,3 l/ha	**SatoHum® K** Increasing the keeping quality of fruits 0,3 l/ha
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 2 – 6 ml/10 l of water	**SatoHum® K** or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 2 – 6 ml/10 l of water	**SatoHum® Pure** Organic farming: non-root irrigation, max 3 times/growing cycle 15-20 ml/10 l of water	**SatoHum® Potassium soap** Pest and fungi control 30-40 ml/10 l of water	



WARNING: 4 Sato® Steps is a comprehensive crop care system that provides the **basic crop needs** for the main 12 macro, meso and micronutrients for an optimal growing cycle and unlocking the potential of each crop.
General recommendation for fruit bushes and trees: Perennial fruit crops (both shrubs and trees) vary in age, branching, and total crown area. Given that all these plants are perennial, there is no risk of removal of humic or fulvic acids with the end of the season, because all surplus goes into the root system and continues to nourish the tree or bush for the next season, so the dosage for fruit trees and shrubs is calculated per tree/bush.

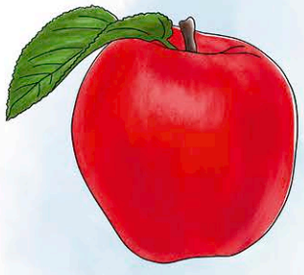
SOILS: The need for macronutrients in fruit trees changes with their age and varies over the vegetative and generative organs of the plant, since there is no same removal of nutrients as in annual crops. Both **SatoSoil® Soil improvers** and **SatoGrow® Biostimulants** are introduced into the trunk circle for precise feeding of the tree/bush. In the **autumn** application, it's recommended to introduce the maximum dose, in the **spring** – the minimum one. For irrigation, it's recommended to **activate granulates** (soil improvers or biostimulants) with **SatoHum®** liquid formulations and **SatoGrow®** liquid organo-mineral biostimulants.

VEGETATION BEGINNING: Treatment of saplings, bushes and flowers of fruit crops with **Sato® Seeds** or **SatoHum® K** compounds **is compatible with treatment by classical protectants** without reducing the rates of their application, and helps to increase shoots viability and ovary development.

GROWTH: Our **SatoHum®** solutions have a guaranteed composition with **high content of humic and fulvic acids with amino acids of plant origin**. It's not recommended to exceed the total dose of **SatoHum®** liquid formulations over 5 l/ha/season, starting from the germination and budding phase. If **SatoHum® Potassium soap** is used for prophylactic purposes, it is recommended to apply the minimum dose. If treatment is carried out to fight active pathogens/parasites, the dose indicated in the product card for the specific pest shall be applied.

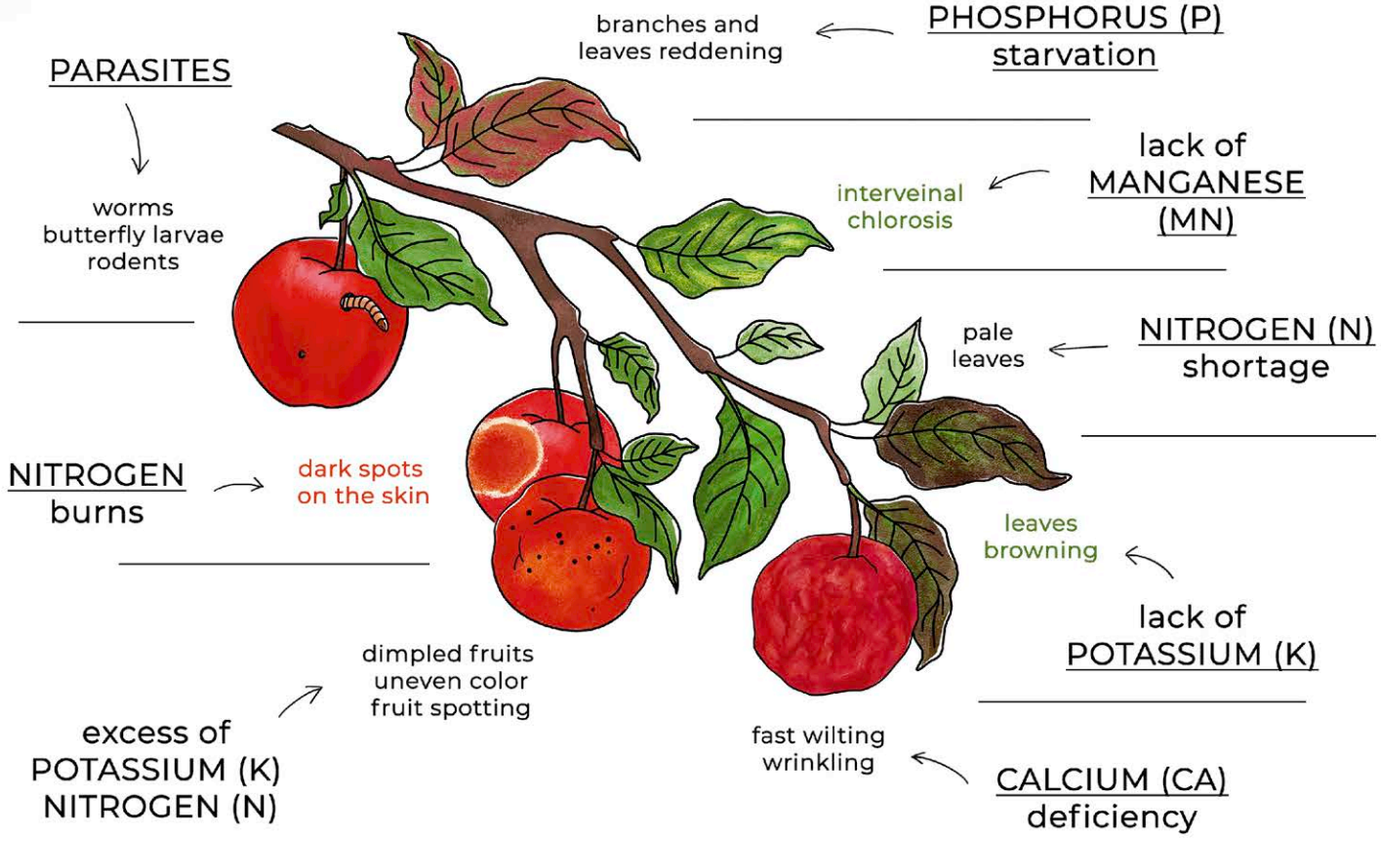
HARVEST: Simultaneous fertilization with several **SatoHum®** products is not expected. **It's not recommended to exceed the specified application rates. For single, not systemic application of SatoHum® products, the maximum dosage of the product is recommended.**

Pome fruits



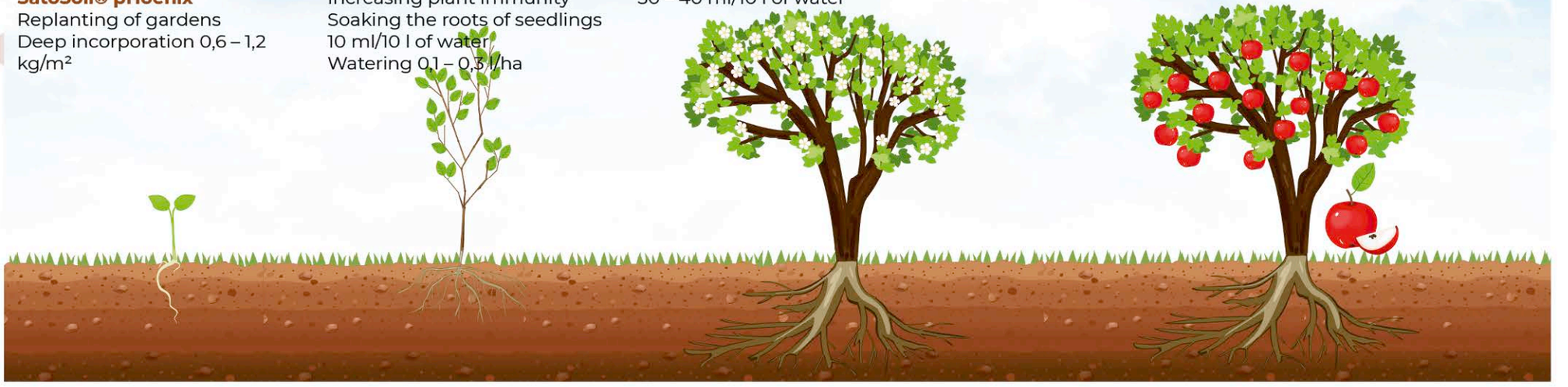
Pome fruit crops include apple, pear, and quince plantations, the most common pome crops in European industrial horticulture. All these crops can be grown in extensive and intensive farms. Pome fruits bring a stable harvest on light soils. ***These cultures love heat, light, but are also cold-resistant.*** *Pear and quince don't tolerate frost.*

Main risks and defects of pome fruits



4 Sato® Steps – Recommendations for application

SOILS	VEGETATION BEGINNING	GROWTH		HARVEST
SatoSoil® Biome Garden sanitation Inter-row feeding Immunization of protective plantings Deep incorporation 0,5 – 1 kg/tree Feeding after harvest Increased winter hardiness 0,5 – 1 kg/tree	**SatoGrow® K** or **SatoGrow® NPK** Top dressing of nursery gardens Beginning of the growing cycle Biostimulation of growth 30 – 75 g/tree	**SatoHum® Complex** Bud development Flowering Ovary No more than 3 applications/season: 0,1 – 0,3 l/ha	**SatoHum® Ca** Fruit ripening 0,3 l/ha	**SatoHum® Ca** Mass gain “Vitreous” fruits, friable and brown fruits, pitted and spotted 0,3 l/ha
SatoSoil® pHoenix Replanting of gardens Deep incorporation 0,6 – 1,2 kg/m²	**SatoHum® K Plus** Supplemental potassium feeding Increasing plant immunity Soaking the roots of seedlings 10 ml/10 l of water Watering 0,1 – 0,3 l/ha	**SatoHum® Potassium soap** Pest control Fungi control (fruit rot and mycosis) 30 – 40 ml/10 l of water	**SatoHum® K-B-Mo** Correction of nutritional deficiencies Fruit corking – boron deficiency Excessively small fruits – lack of potassium 0,3 l/ha	**SatoHum® K** Shelf life of fruits 0,3 l/ha



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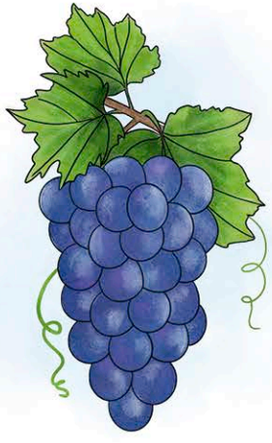
VEGETATION BEGINNING: Treatment of saplings, bushes and flowers of fruit crops with **Sato® Seeds** or **SatoHum® K** compounds **is compatible with treatment by classical protectants** without reducing the rates of their application, and helps to increase shoots viability and ovary development.

GROWTH: Our **SatoHum®** solutions have a guaranteed composition with **high content of humic and fulvic acids with amino acids of plant origin**. It’s not recommended to exceed the total dose of **SatoHum®** liquid formulations over 5 l/ha/season, starting from the germination and budding phase. If **SatoHum® Potassium soap** is used for prophylactic purposes, it is recommended to apply the minimum dose. If treatment is carried out to fight active pathogens/parasites, the dose indicated in the product card for the specific pest shall be applied.

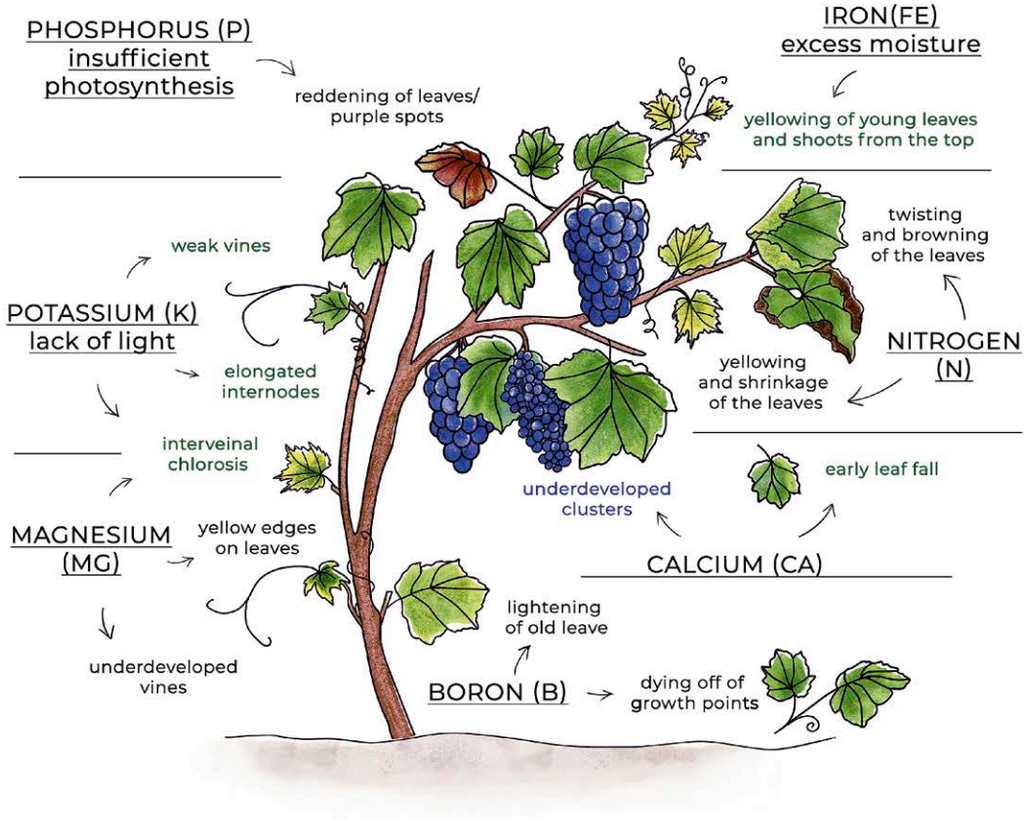
HARVEST: Simultaneous fertilization with several **SatoHum®** products is not expected. **It’s not recommended to exceed the specified application rates. For single, not systemic application of SatoHum® products, the maximum dosage of the product is recommended.**

Grape



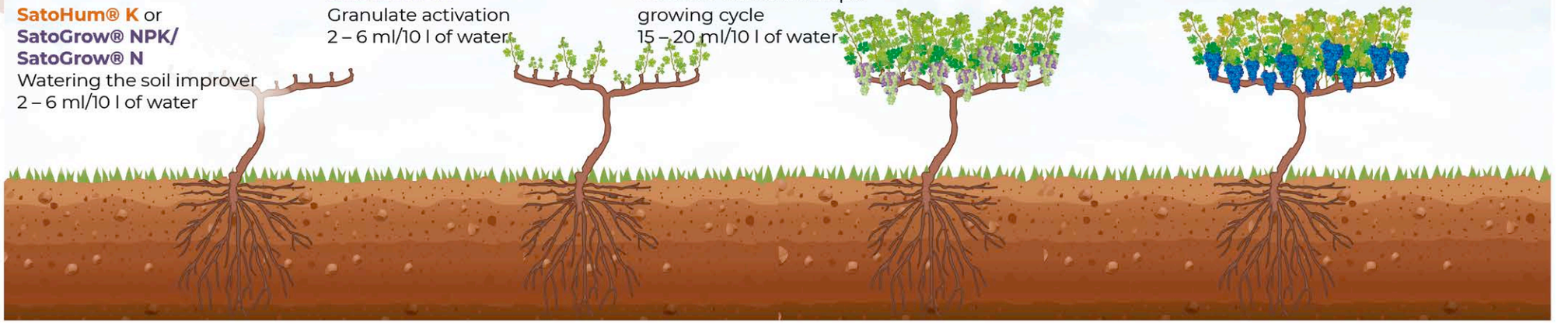
Grapes are divided into two main categories – table and wine. Marketable and agro-technological requirements for each of these categories vary depending on the region of cultivation, traditions and taste preferences. The general trend in viticulture ***prioritizes production and maximum yield of table varieties*** *unlike* ***the priority of quality over profitability in wine varieties.***

What is lacking in grape?



4 Sato® Steps – Recommendations for application

SOILS	VEGETATION BEGINNING	GROWTH	HARVEST
SatoSoil® Biome Preservation of fertile layer Top dressing for mulching trunks Organic soils nutrition Deep incorporation or mulching 0,5 – 1 kg/bush	**SatoGrow® K Granules** or **SatoGrow® NPK Granules** Complex top dressing with minerals 30 – 75 g/bush	**SatoHum® K** Rectification of potassium starvation 0,3 l/ha	**SatoHum® K-B-Mo** Feeding with micronutrients 0,3 l/ha	**SatoHum® Ca** Grape wilting prevention Long keeping quality Before harvesting 0,3 l/ha
SatoSoil® pHoenix Restoration of saline and acidic soils Deep incorporation 0,6 – 1,2 kg/m²	**SatoHum® Complex** Systemic micronutrient feeding 0,1 – 0,3 l/ha	**SatoHum® Potassium soap** Fighting parasites and fungal diseases 30 – 40 ml/10 l of water	**SatoHum® Ca** Fruit plumping Weight gain First buds 0,3 l/ha Ovary of berries 0,3 l/ha	
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 2 – 6 ml/10 l of water	**SatoHum® K** or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 2 – 6 ml/10 l of water	**SatoHum® Pure** In organic farming, it's used in any non-root irrigation no more than 3 times per growing cycle 15 – 20 ml/10 l of water		



WARNING: 4 Sato® Steps is a comprehensive crop care system that provides the **basic crop needs** for the main 12 macro, meso and micronutrients for an optimal growing cycle and unlocking the potential of each crop.
General recommendation for fruit bushes and trees: Perennial fruit crops (both shrubs and trees) vary in age, branching, and total crown area. Given that all these plants are perennial, there is no risk of removal of humic or fulvic acids with the end of the season, because all surplus goes into the root system and continues to nourish the tree or bush for the next season, so the dosage for fruit trees and shrubs is calculated per tree/bush.

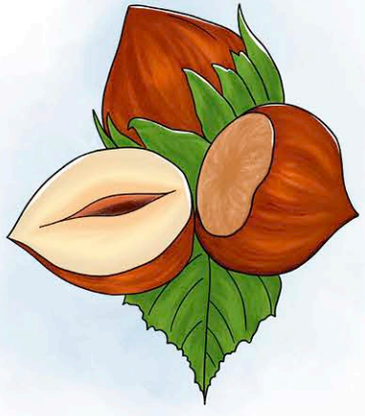
SOILS: The need for macronutrients in fruit trees changes with their age and varies over the vegetative and generative organs of the plant, since there is no same removal of nutrients as in annual crops. Both **SatoSoil® Soil improvers** and **SatoGrow® Biostimulants** are introduced into the trunk circle for precise feeding of the tree/bush. In the **autumn** application, it's recommended to introduce the maximum dose, in the **spring** – the minimum one. For irrigation, it's recommended to **activate granulates** (soil improvers or biostimulants) with **SatoHum®** liquid formulations and **SatoGrow®** liquid organo-mineral biostimulants.

VEGETATION BEGINNING: Treatment of saplings, bushes and flowers of fruit crops with **Sato® Seeds** or **SatoHum® K** compounds **is compatible with treatment by classical protectants** without reducing the rates of their application, and helps to increase shoots viability and ovary development.

GROWTH: Our **SatoHum®** solutions have a guaranteed composition with **high content of humic and fulvic acids with amino acids of plant origin**. It's not recommended to exceed the total dose of **SatoHum®** liquid formulations over 5 l/ha/season, starting from the germination and budding phase. If **SatoHum® Potassium soap** is used for prophylactic purposes, it is recommended to apply the minimum dose. If treatment is carried out to fight active pathogens/parasites, the dose indicated in the product card for the specific pest shall be applied.

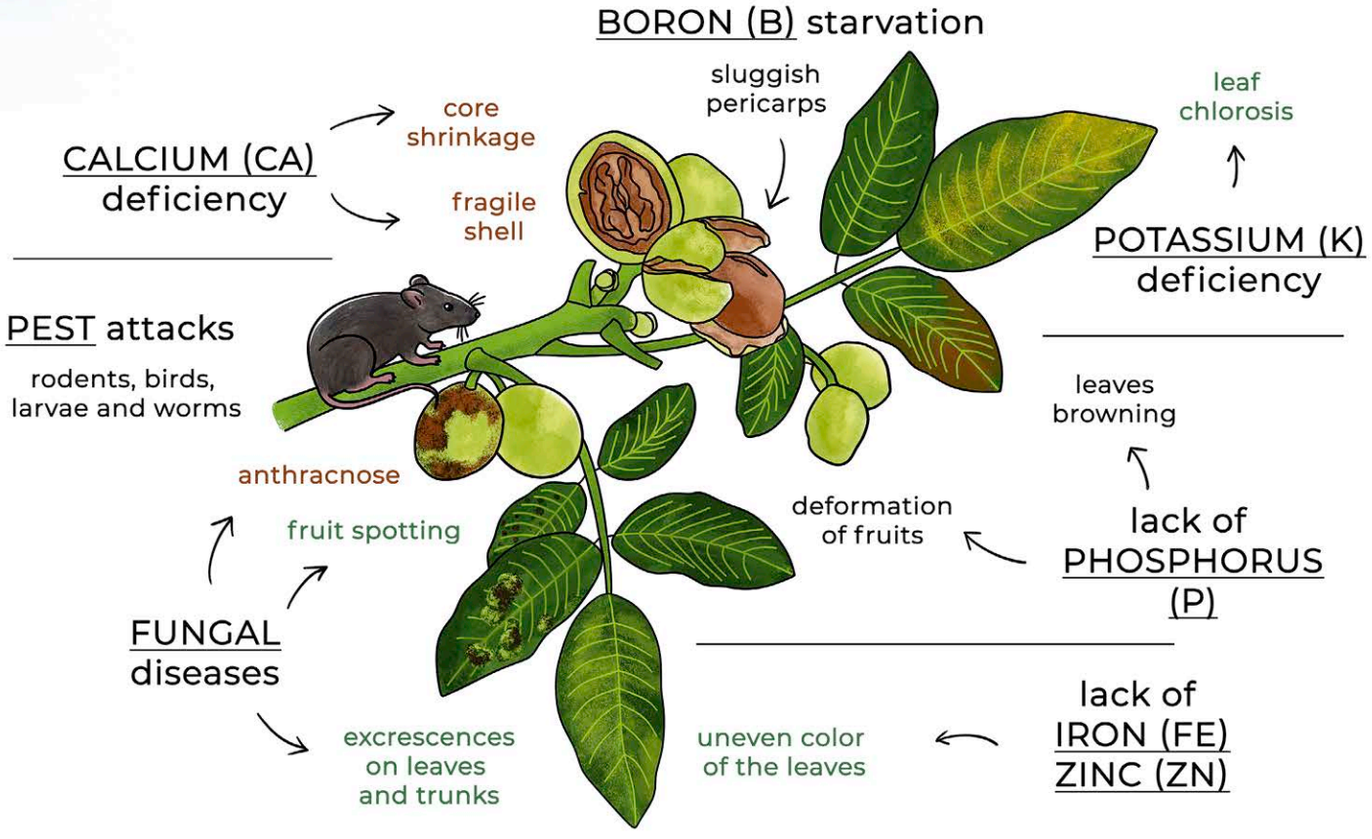
HARVEST: Simultaneous fertilization with several **SatoHum®** products is not expected. **It's not recommended to exceed the specified application rates. For single, not systemic application of SatoHum® products, the maximum dosage of the product is recommended.**

Nuts



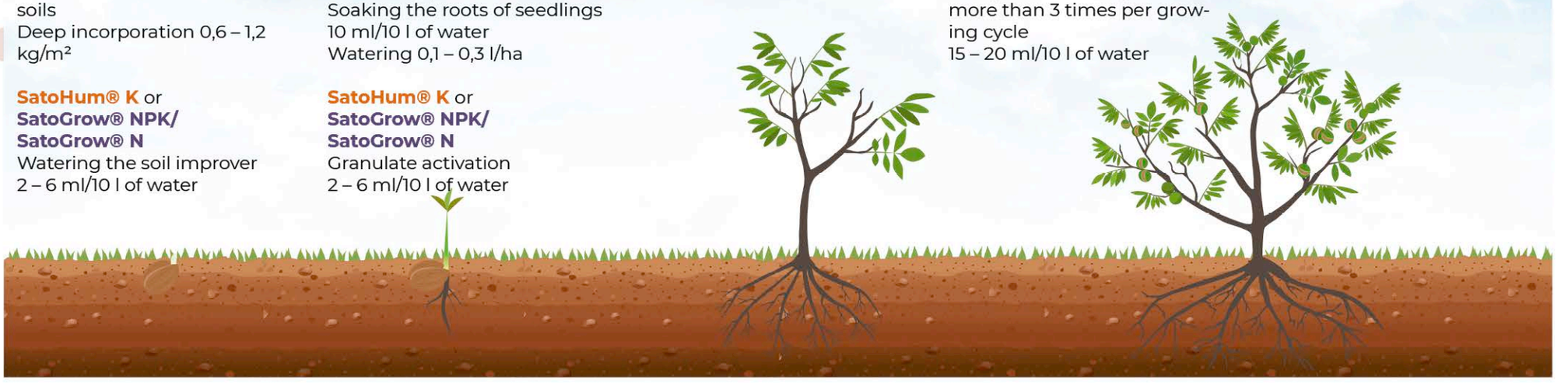
The cultivation of nut crops is especially common in warm regions, since nuts are warm and light-loving plants, although they are cold-resistant, they don't tolerate frost and strong cold winds.

Main risks and defects of nuts



4 Sato® Steps – Recommendations for application

SOILS	VEGETATION BEGINNING	GROWTH	HARVEST	
SatoSoil® Biome Maintenance of fertile layer Immunization of gardening plantations Post-harvest fertilization Raising cold hardiness Deep incorporation or mulching 0,5 – 1 kg/tree	**SatoGrow® K Granules** or **SatoGrow® NPK Granules** Top dressing of nursery gardens Beginning of the growing cycle Biostimulation of growth 30 – 75 g/tree	**SatoHum® Complex** Bud development Flowering Ovary No more than 3 applications/season: 0,1 – 0,3 l/ha	**SatoHum® Ca** Fruit ripening 0,3 l/ha	**SatoHum® Ca** Mass gain of nuts 0,3 l/ha
SatoSoil® pHoenix Replanting of gardens Correction of saline and acidic soils Deep incorporation 0,6 – 1,2 kg/m²	**SatoHum® K Plus** Supplemental potassium feeding Increasing plant immunity Soaking the roots of seedlings 10 ml/10 l of water Watering 0,1 – 0,3 l/ha	**SatoHum® Potassium soap** Pest and disease control 30 – 40 ml/10 l of water	**SatoHum® K-B-Mo** Correction of nutritional deficiencies 0,3 l/ha	
SatoHum® K or **SatoGrow® NPK/ SatoGrow® N** Watering the soil improver 2 – 6 ml/10 l of water	**SatoHum® K** or **SatoGrow® NPK/ SatoGrow® N** Granulate activation 2 – 6 ml/10 l of water		**SatoHum® Pure** In organic farming, it's used in any non-root irrigation no more than 3 times per growing cycle 15 – 20 ml/10 l of water	



WARNING: 4 Sato® Steps is a comprehensive crop care system that provides the **basic crop needs** for the main 12 macro, meso and micronutrients for an optimal growing cycle and unlocking the potential of each crop.
General recommendation for fruit bushes and trees: Perennial fruit crops (both shrubs and trees) vary in age, branching, and total crown area. Given that all these plants are perennial, there is no risk of removal of humic or fulvic acids with the end of the season, because all surplus goes into the root system and continues to nourish the tree or bush for the next season, so the dosage for fruit trees and shrubs is calculated per tree/bush.

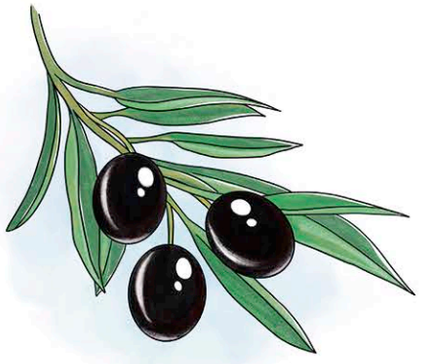
SOILS: The need for macronutrients in fruit trees changes with their age and varies over the vegetative and generative organs of the plant, since there is no same removal of nutrients as in annual crops. Both **SatoSoil® Soil improvers** and **SatoGrow® Biostimulants** are introduced into the trunk circle for precise feeding of the tree/bush. In the **autumn** application, it's recommended to introduce the maximum dose, in the **spring** – the minimum one. For irrigation, it's recommended to **activate granulates** (soil improvers or biostimulants) with **SatoHum®** liquid formulations and **SatoGrow®** liquid organo-mineral biostimulants.

VEGETATION BEGINNING: Treatment of saplings, bushes and flowers of fruit crops with **Sato® Seeds** or **SatoHum® K** compounds **is compatible with treatment by classical protectants** without reducing the rates of their application, and helps to increase shoots viability and ovary development.

GROWTH: Our **SatoHum®** solutions have a guaranteed composition with **high content of humic and fulvic acids with amino acids of plant origin**. It's not recommended to exceed the total dose of **SatoHum®** liquid formulations over 5 l/ha/season, starting from the germination and budding phase. If **SatoHum® Potassium soap** is used for prophylactic purposes, it is recommended to apply the minimum dose. If treatment is carried out to fight active pathogens/parasites, the dose indicated in the product card for the specific pest shall be applied.

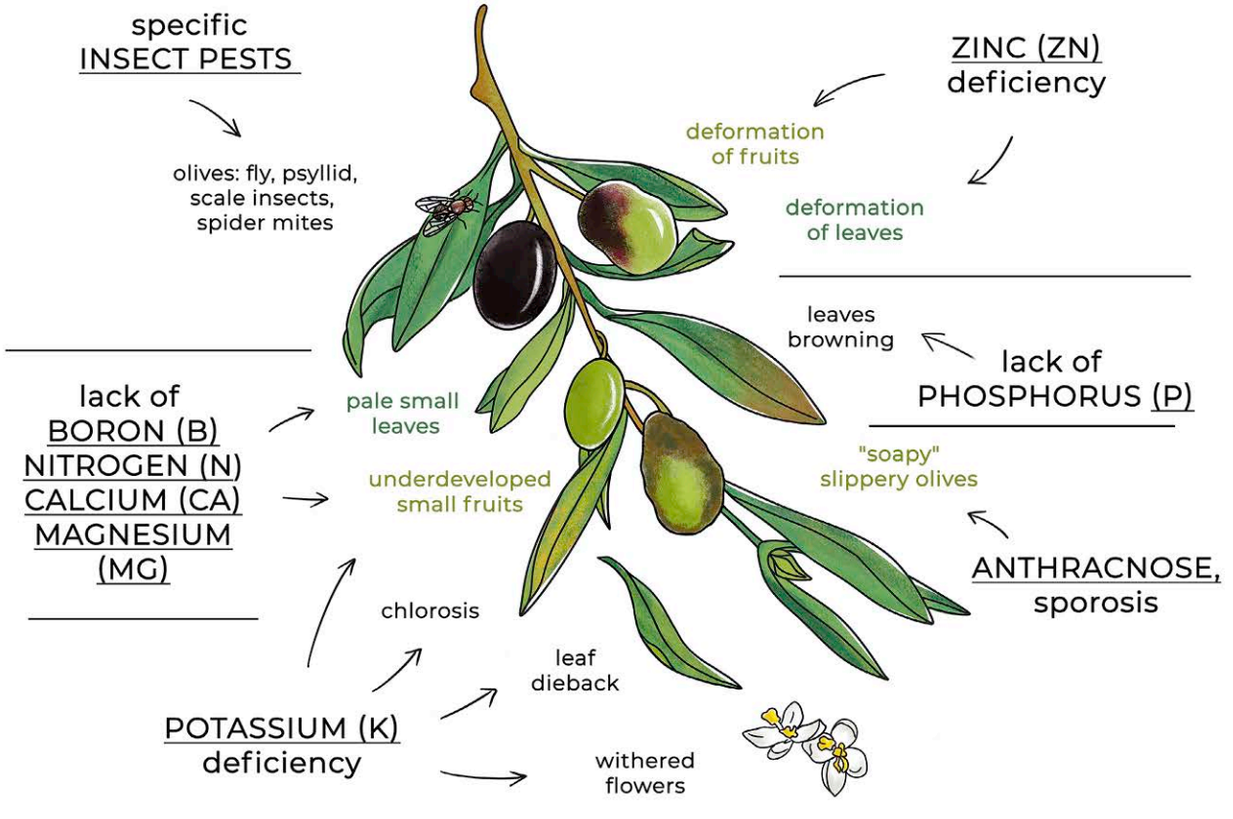
HARVEST: Simultaneous fertilization with several **SatoHum®** products is not expected. **It's not recommended to exceed the specified application rates. For single, not systemic application of SatoHum® products, the maximum dosage of the product is recommended.**

Olives



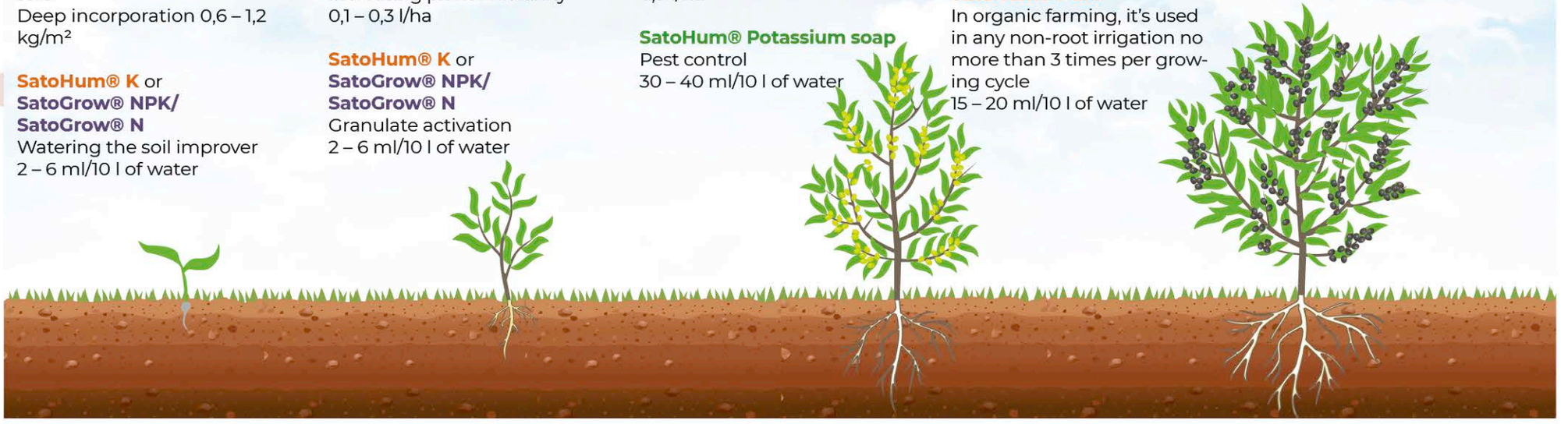
*Olive plantations **of table and oilseed varieties** can be **traditional, intensive and extra intensive**. In traditional olive growing, olives are grown without fertigation, on open ground, using manual labor. Most olive plantations are in Spain, Italy, Portugal, Greece and Tunisia.*

Main risks and defects of olives



4 Sato® Steps – Recommendations for application

SOILS	VEGETATION BEGINNING	GROWTH	HARVEST	
SatoSoil® Biome Preservation of fertile layer Raising of cold resistance Deep incorporation or mulching 0,5 – 1 kg/tree	**SatoGrow® K Granules** or **SatoGrow® NPK Granules** Top dressing of planting material in greenhouses and nursery gardens 30 – 75 g/tree	**SatoHum® Complex** Abundant budding and flowering Flowering No more than 3 applications/season: 0,1 – 0,3 l/ha	**SatoHum® Ca** Fruit ripening 0,3 l/ha	**SatoHum® Ca** Olive splitting prevention 0,3 l/ha
SatoSoil® pHoenix Plantation revitalization Correction of acidic and saline soils Deep incorporation 0,6 – 1,2 kg/m²	**SatoHum® K Plus** Thickening of fruitful branches Increasing plant immunity 0,1 – 0,3 l/ha	**SatoHum® Ca** Ovary development 0,3 l/ha	**SatoHum® K-B-Mo** Correction of nutritional deficiencies 0,3 l/ha	
SatoHum® K or **SatoGrow® NPK/** **SatoGrow® N** Watering the soil improver 2 – 6 ml/10 l of water	**SatoHum® K** or **SatoGrow® NPK/** **SatoGrow® N** Granulate activation 2 – 6 ml/10 l of water	**SatoHum® Potassium soap** Pest control 30 – 40 ml/10 l of water	**SatoHum® Pure** In organic farming, it's used in any non-root irrigation no more than 3 times per growing cycle 15 – 20 ml/10 l of water	



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General recommendation for fruit bushes and trees: Perennial fruit crops (both shrubs and trees) vary in age, branching, and total crown area. Given that all these plants are perennial, there is no risk of removal of humic or fulvic acids with the end of the season, because all surplus goes into the root system and continues to nourish the tree or bush for the next season, so the dosage for fruit trees and shrubs is calculated per tree/bush.

SOILS: The need for macronutrients in fruit trees changes with their age and varies over the vegetative and generative organs of the plant, since there is no same removal of nutrients as in annual crops. Both **SatoSoil® Soil improvers** and **SatoGrow® Biostimulants** are introduced into the trunk circle for precise feeding of the tree/bush. In the **autumn** application, it's recommended to introduce the maximum dose, in the **spring** – the minimum one. For irrigation, it's recommended to **activate granulates** (soil improvers or biostimulants) with **SatoHum®** liquid formulations and **SatoGrow®** liquid organo-mineral biostimulants.

VEGETATION BEGINNING: Treatment of saplings, bushes and flowers of fruit crops with **Sato® Seeds** or **SatoHum® K** compounds **is compatible with treatment by classical protectants** without reducing the rates of their application, and helps to increase shoots viability and ovary development.

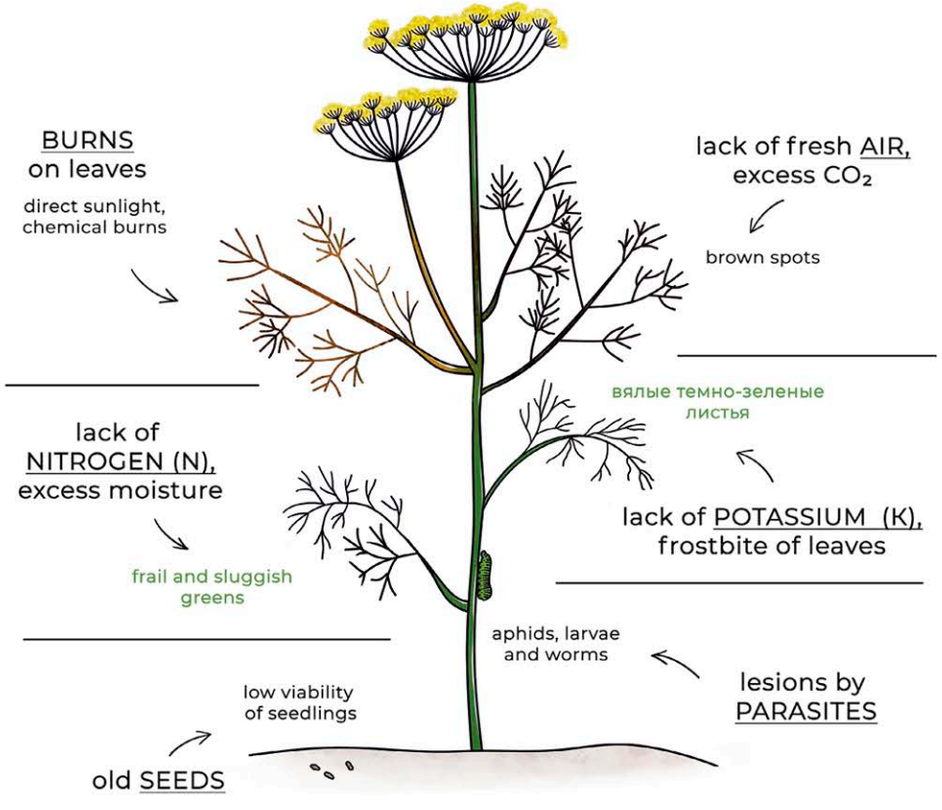
GROWTH: Our **SatoHum®** solutions have a guaranteed composition with **high content of humic and fulvic acids with amino acids of plant origin**. It's not recommended to exceed the total dose of **SatoHum®** liquid formulations over 5 l/ha/season, starting from the germination and budding phase. If **SatoHum® Potassium soap** is used for prophylactic purposes, it is recommended to apply the minimum dose. If treatment is carried out to fight active pathogens/parasites, the dose indicated in the product card for the specific pest shall be applied.

HARVEST: Simultaneous fertilization with several **SatoHum®** products is not expected. **It's not recommended to exceed the specified application rates. For single, not systemic application of SatoHum® products, the maximum dosage of the product is recommended.**

Leaf crops

In intensive vegetable growing, ***leafy annual crops with a short vegetation cycle*** *occupy a special place. These are numerous varieties of leafy, cabbage salads and greens: lettuce, garden cress, romaine lettuce, arugula, parsley, spinach, sorrel, Chinese cabbage, endive, kale, fennel, dill and others.*

Main risks and defects of leaf crops



4 Sato® Steps – Recommendations for application

SOILS

SatoSoil® Biome
Top dressing of open and greenhouse soils
Organic soils nutrition
0,5 – 1 kg/m²

SatoSoil® pHoenix
Restoration of saline and acidic soils
1 – 1,5 kg/m²

SatoHum® K
Watering the soil improver
2 – 6 ml/m²

SEEDS

Sato® Seeds
Seed treatment and disinfection of seedlings
Soaking 15-18 hours 5 – 10 ml/10 l of water

SatoHum® Complex
Drip irrigation in greenhouses and nutrient solution in hydroponics
2,5 - 3 ml/10 l of working solution

GROWTH

SatoHum® K
Rectification of potassium starvation
1,6 – 2,5 ml/10 m²

SatoHum® SiO
Resistance to drought
Plant immunization
1,6 – 2,5 ml/10 m²

SatoHum® Potassium soap
Fighting parasites and fungal diseases
30 – 40 ml/10 l of water

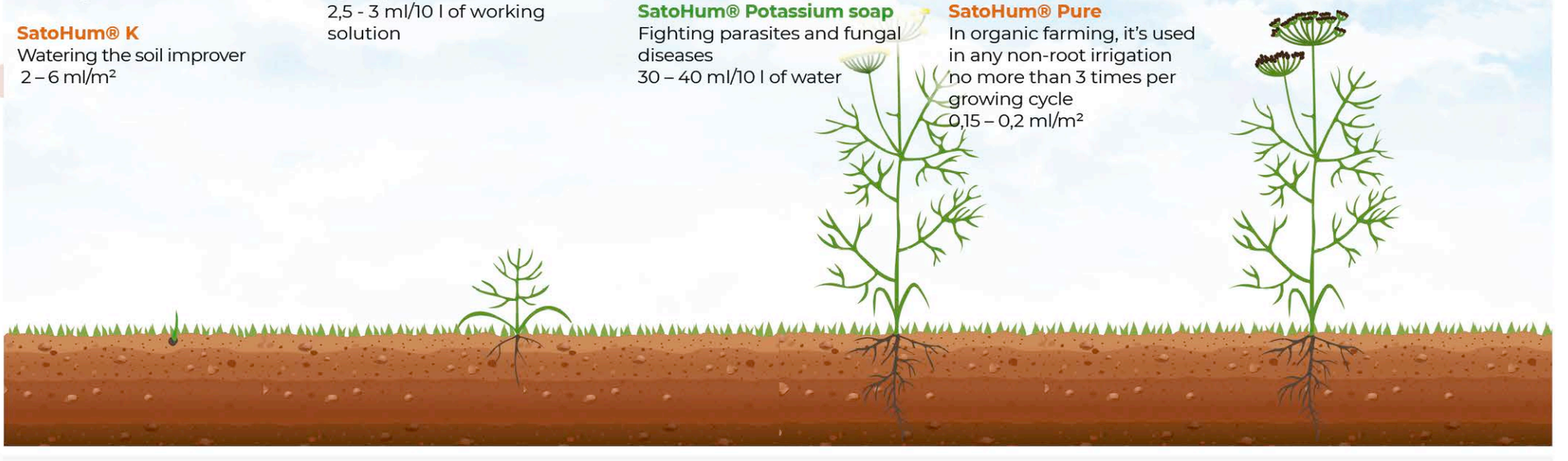
SatoHum® K-B-Mo
Correction of potassium, boron and molybdenum deficiency
1,6 – 2 ml/10 m²

SatoHum® Ca
Bouncy vibrant foliage
1,2 – 1,6 ml/10 m²

SatoHum® Pure
In organic farming, it's used in any non-root irrigation no more than 3 times per growing cycle
0,15 – 0,2 ml/m²

HARVEST

SatoHum® Ca
Long keeping quality of leaf crops
1,2 – 1,6 ml/10 m²



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SOILS: When **pre-sowing SatoSoil® Soil improvers**, the minimum rate is applied. When **autumn** incorporation, the maximum rate is introduced. For irrigation, it's recommended to **activate granulates** (soil improvers or biostimulants) with **SatoHum®** liquid formulations and **SatoGrow®** liquid organo-mineral biostimulants.

SEEDS/SEEDLINGS/VEGETATION BEGINNING: Treatment of seeds and seedlings with **Sato® Seeds** formulation **is compatible with treatment by classical protectants** without reducing the rates of their application, and helps to increase the viability of seedlings, the development of the plant and its fruitfulness.

GROWTH: Our **SatoHum®** solutions have a guaranteed composition with **high content of humic and fulvic acids with amino acids of plant origin**. It is not recommended to exceed the total dose of **SatoHum®** liquid formulations over 6 ml/10m²/cycle. If **SatoHum® Potassium soap** is used for prophylactic purposes, it is recommended to apply the minimum dose. If treatment is carried out to fight active pathogens/parasites, the dose indicated in the product card for the specific pest shall be applied.

HARVEST: Simultaneous fertilization with several **SatoHum®** products is not expected. **It's not recommended to exceed the specified application rates. For single, not systemic application of SatoHum® products, the maximum dosage of the product is recommended.**