# GROWING ORGANIC GARDEN PLANTS GUIDE

**WITH**

**ROKOLAN - ROKOAKTIV - ROKOHUMIN DUPLO - ROKOHUMIN BULK**


SlovakAid
GOOD IDEA SLOVAKIA

ROKOSAN®
RWANDA

# CONTENTS

# WHY GROWING ORGANIC PRODUCE?

***Dear farmer,***

*thank you for your decision to grow organic produce for your family and /or for your clients.*

*You just embarked on the journey to better health for everyone who eats your produce and on the journey of healing the soil and protecting the environment. In recent uncertain times, with the borders closed, the need for food self-sufficiency has been more important than ever. Food self-sufficiency comes hand in hand with food safety. What you are holding now in your hands is a roadmap to food self-sufficiency and safety in Rwanda, thanks to* ***SlovakAid program.***

*Our liquid amino acid fertilizer, soil activator, seed preparator and bulk fertilizer are designed to be used* ***in organic farming*** *and to* ***assure high yield and product quality.***

*Fruits are sweeter and bigger, but more importantly, healthier. Amino acids are essential in crop production in regards to their effect on* ***immunity of the plants itself and quality of the yield.*** *By applying our fertilizer, we strengthen the body's immunity which is important especially in these difficult times when human organisms are being attacked by various viral diseases. Furthermore, fertilizer contains carbon that is so much needed for soil regeneration and revitalization. Strong plants are able to withstand extreme weather conditions such as droughts and floods. The technological process is patented in the* ***USA, Russia, Ukraine and China. Fertilizer is being sold in Europe, Africa, Russia and Latin America.*** *Traditional chemical fertilizers are year by year killing soil bacteria and causing that you need to use more and more of it with aim to get the same yield. Chemicals are penetrating into the ground waters and polluting it as well. Not to mention, that the produce contains toxic substances harmful to human body.*

*With our organic fertilizer products, we are offering you the way out of this vicious circle.*

*We have soil activator –* ***ROKOLAN,*** *that activates soil microflora and increases soil humus, seed preparator –* ***ROKOAKTIV,*** *that stimulates plant growth, fertilizer* ***ROKOHUMIN BULK*** *– replaces bulk NPK/Urea fertilizers and foliar fertilizer* ***ROKOHUMIN*** *– increases yield and quality of the produce.*

*In this practical guide we give you tips how to grow 12 most produced plants in Rwanda the organic way. Our goal in Rwanda is to start producing locally, by using local raw materials, local workforce. We believe that our mission is to make the world better and healthier. We hope that next time you will use our product, it will have stamp:*

**MADE IN RWANDA**


**FOR HEALTHY AND HIGH YIELD USE OUR ENTIRE PRODUCTION LINE**

# SOIL PREPARATION

- Choose sunny spot and fair weather for planting.
- Dig out a foot of soil, fracturing the second foot for easier root penetration, then mix compost/cow manure into the top foot of soil and replaced it.
- The purpose was to create a slightly raised bed, compost as fertilizer, and create an area wide enough to reach for planting, weeding, and harvest without any physical traffic. By eliminating traffic there is limited compaction so the garden bed can be used for continued cycles without heavy tillage.
- Incorporate ROKOLAN into the soil to activate the soil microflora (50 l +150l of water / ha).

ROKOLAN


# SEED PREPARATION

- Before planting, spray the seeds with ROKOAKTIV (mix with water 1:3) and let them dry.
- ROKOAKTIV - stimulates plant growth and development, increases yield, makes plant healthier and more resistant.

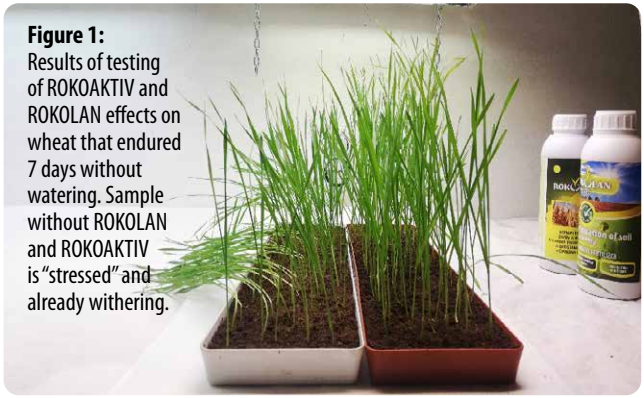


**Figure 1:** Results of testing of ROKOAKTIV and ROKOLAN effects on wheat that endured 7 days without watering. Sample without ROKOLAN and ROKOAKTIV is "stressed" and already withering.

ROKOAKTIV

# ROKOHUMIN DUPLO PREPARATION


- **Mix water with ROKOHUMIN DUPLO in sprayer**
- **12 l sprayer: 0.2 ml of ROKOHUMIN DUPLO + 12 l of water**

1 l of ROKOHUMIN DUPLO+ 60 l of water
1l of ROKOHUMIN DUPLO covers 0.4 hectare
For 1 ha you need 2.5 l of ROKOHUMIN DUPLO +150 l of water

**ROKOHUMIN DUPLO** is a nutritional cocktail of 18 types of amino acids, peptides, humic acids, macro and micronutrients – that's why it's the right choice for plants.

- Allows better rooting.
- Improves root hair formation, root length and thus nutrient intake from the soil.
- Helps increase soil fertility by supporting soil microflora.
- Prevents the accumulation of heavy metals and harmful substances in plants.
- Higher yield + organic produce.

# ROKOHUMIN BULK UNIVERSAL

- **ROKOHUMIN BULK** serves as rich, harmonically balanced source of all nutrients supplied evenly during all vegetation period. It contributes to richness and colorfulness of the flowers, increases fertility and enhances biological activity of the soil.
- Fertilizer **ROKOHUMIN BULK** is intended for growers of vegetables, berries, vine, fruit trees, house threes, ornamental shrubs, garden flowers and lawns (petunias, geraniums, orchids, ferns, bonsai and other). The fertilizer is suitable for all plants sensitive to burning up or over-fertilizing by nitrogen.


**Usage:** Fertilizer ROKOHUMIN BULK should be applied in **spring and autumn,** one-time when preparing the soil for seeding or planting as well as during the whole vegetation period.

**The fertilizer is applied by even scattering and mixing with the soil.**
**With average dosage of 60 g/m2** such application seems to be optimal.
**Minimum dosage of 80 g/m2 is recommended for poorer soils.**
1-2 tea spoons (app. 25g) of fertilizer should be added into the hole under the nursling or if the nursling has been already planted, the fertilizer should be scattered around the nursling.

**DO NOT USE ANIMAL MANURE TOGETHER WITH ROKOHUMIN BULK FERTILIZER, THE CONTENT OF NITROGEN COULD BE VERY HIGH AND BURN THE PLANTS.**

# GARDEN COMPOSITION – CROP ROTATION PRACTICE

Certain crops are closely related to each other and belong into one family. There are many diseases and pests per family that is why it's necessary to alternate the planting spot seasonally, what is also known as crop rotation practice.

Rules for crop rotation are even mandatory for certain crops. Try not to grow the same crop on the same piece of land no more than once every 3 years.

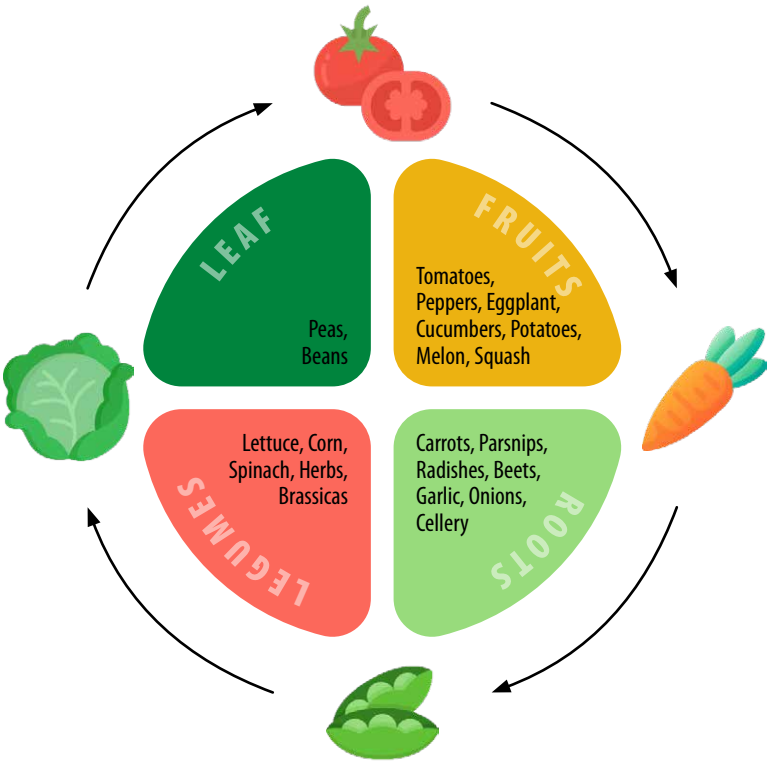
**To simplify, we can divide crops into 4 groups:**

**1. LEGUMES** – fixing nitrogen in the soil, preparing soil for the leaf group

**2. LEAF** – need nitrogen from the soil, preparing soil for fruit group

**3. FRUITS** – need phosphorus, require less nitrogen

**4. ROOTS** – need potassium



# 4 YEAR ROTATION PLAN

| | AREA 1 | AREA 2 | AREA 3 | AREA 4 |
|---|---|---|---|---|
| YEAR 1 |  Leaf |  Fruits |  Roots |  Legumes |
| YEAR 2 |  Fruits |  Roots |  Legumes |  Leaf |
| YEAR 3 |  Roots |  Legumes |  Leaf |  Fruits |
| YEAR 4 |  Legumes |  Leaf |  Fruits |  Roots |

**Tip 1:** Weed early and often. Weeds use up nutrients that crops need, so it is important to take care of them as soon as possible.

**Tip 2:** Keep records of your garden, not only with regards to crop rotation, but you can even measure yield from each plant. The decline in yield may signal that you have to add more nutrients to your soil. Record book is very useful if you plan to sell vegetables and increased yield is crucial.

# BANANA

| Repeat | Growth phase | Dose per ha |
|---|---|---|
| 2-3 x with protection against diseases | 1. Stage of first leaves<br>2. Active tillering phase<br>3. Before flowering | 50 l of ROKOLAN + 150 l of water or<br>ROKOHUMIN BULK 80 g/m$^2$<br>2.5 l of ROKOHUMIN DUPLO + 150 l of water |


Banana is the most important crop in Rwanda occupying 23% of arable land and contributes 60 to 80% of household income in banana growing area. The recent decline in production may be due to both the biotic and abiotic factors. The biotic factors being pests, diseases and weed infestation, while the abiotic factors being mainly poor management, and lack of adequate pruning/desuckering. This, in turn, induces competition between plants for nutrients and water making it easy to attack for insects and pests.

## PLANT REQUIREMENTS

- **Sunny spot.**
- **High NPK content, before planting, use ROKOHUMIN Bulk fertilizer or ROKOLAN to activate the soil.**
- **Evenly moist soil of 5.5-6.5 pH.**
- **Humid conditions, but do not drench the soil.**
- **Mulch to conserve soil moisture and protect shallow roots.**

## PROPAGATION AND PLANTING

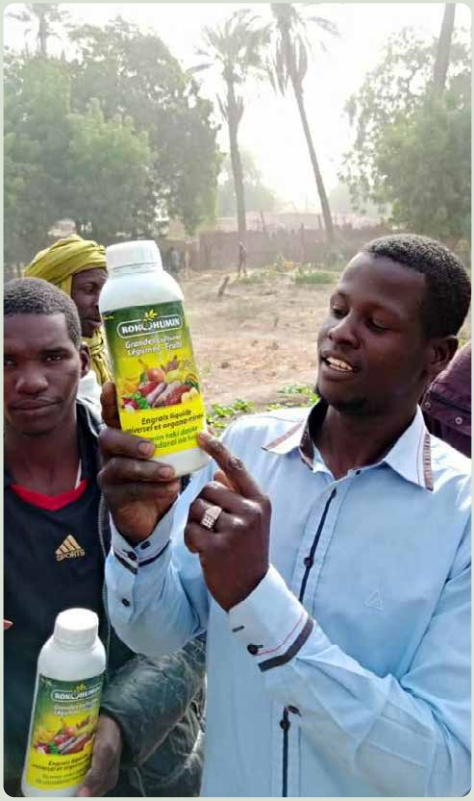
- Bananas are grown from root divisions or cuttings. A portion of the root is sliced off a mother plant and replanted; the division may or may not include leafy growth, called suckers. Using a root division with leafy growth is best.
- Choose a sucker from a vigorous banana plant. Choose a sucker that has small, spear-shaped leaves. A sucker about 30cm tall is optimal. Smaller suckers take longer to fruit and the first banana bunch will be smaller.
- Cut the sucker from the main banana plant with a sharp spade. Cut downwards between the mature plant and the sucker. The sucker must include roots. Plant the sucker into the prepared hole with 1 spoon of ROKOHUMIN BULK fertilizer.
- Cut off all suckers on the north-western side of the banana plant. This is the side where the bunch hangs.
- Allow only one strong stem to fruit; prune away other stems as they develop; this directs the plant's energy to fruit production and away from leafy growth. When the main stalk is 6 to 8 months old, allow a new sucker or stem to begin to develop as a replacement stalk for the following season.
- When fruit is harvested, cut the fruiting stalk back to about 30 inches above the ground; the stub will die back and can be removed after several weeks. New growth will emerge from the plant's undergrown roots.

## COMMON PESTS AND DISEASES

- Root rot can attack bananas in cold, wet soil; make sure the soil is well-drained.
- Snails can climb into plants and eat foliage; trap snails and destroy them.
- Panama Wilt can cause lower leaves to yellow; Panama Wilt is a fusarium fungal disease. Treat plants with a fungicide. Panama wilt often kills infected plants.
- Bacterial leaf spot can cause yellow patches on leaves; these spots will darken and can eventually darken and kill the leaf. Make sure the soil is well-drained; remove diseased foliage.

## RECOMMENDATIONS

Weeds can be controlled by planting low growing carpets of vegetation. Birds and insect predators help control bugs. With these methods, most farmers can reduce the use of insecticides and herbicides.



# SORGHUM

| Repeat | Growth phase | Dose per ha |
|---|---|---|
| 2-3 x with protection against diseases | 1. End of tillering<br>2. Stable<br>3. post-flowering (mild maturation phase) | 50 l of ROKOLAN + 150 l of water or ROKOHUMIN BULK 80 g/m$^2$<br>2.5 l of ROKOHUMIN DUPLO + 150 l of water |


Sorghum is one of the most important cereals grown in Rwanda during the long rainy season.

## PLANT REQUIREMENTS

- **Warm soil to germinate and grow.**
- **Prepare soil with ROKOLAN or ROKOHUMIN BULK.**
- **Apply ROKOHUMIN to invigorate the growth of plant and increase yield.**

## PROPAGATION AND PLANTING

- Sow the seeds that were activated by ROKOAKTIV in 2 cm deep and 20 cm apart.
- You only need to plant one sorghum plant in order to harvest viable seeds. To maintain a variety over many generations, save seeds from between 10-25 plants.
- When stored in cool, dark, and dry conditions, sorghum seeds will remain viable for 10 years.

## COMMON PESTS AND DISEASES

- Protect your sorghum crop from predation by birds by covering maturing seed heads with bags or pieces of row cover.

## RECOMMENDATIONS

- Modified tied ridging involved using a plough to make furrows between crop rows, and "tying" the furrows with soil every meter or two to trap rain water in the field. This operation can be implemented in place of the first weeding.
- Introduction of legume rotations to improve soil fertility.
- Seed priming (this is the practice of soaking the seed overnight in water + ROKOAKTIV, before planting). The purpose is to improve the rate of emergence.

# MAIZE

| Repeat | Growth phase | Dose per ha |
|---|---|---|
| 1-2 x with protection against diseases/pests | 1. 6-8 leaf stage<br>2. Height of stand approx. 1 m (never in blossom!) | 50 l of ROKOLAN + 150 l of water or ROKOHUMIN BULK 80 g/m$^2$<br>2 x 2.5 l of ROKOHUMIN DUPLO + 150 l of water or 5 l of ROKOHUMIN + 200 l of water |


## PLANT REQUIREMENTS

- **Prepare soil with ROKOLAN or ROKOHUMIN BULK.**
- **Apply ROKOHUMIN to invigorate the growth of plant and increase yield.**
- **Needs deep, loose seed-bed, not heavy or too light soil.**

## PROPAGATION AND PLANTING

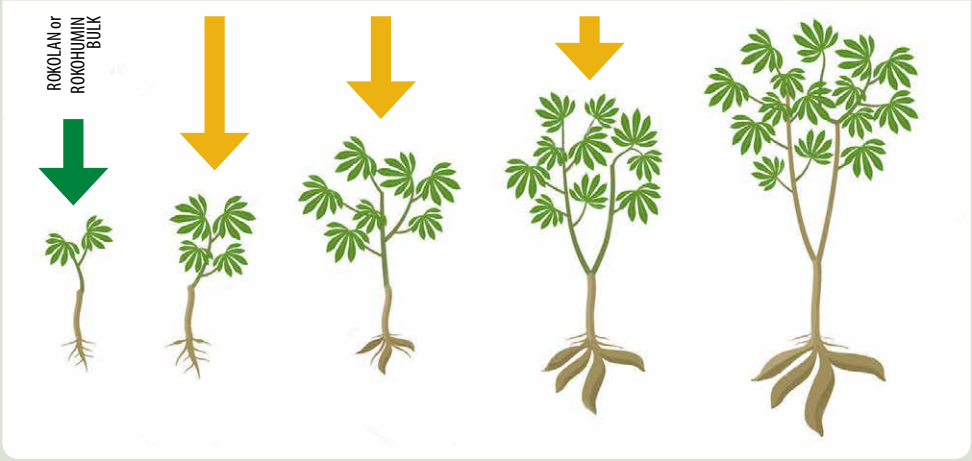
- Sow seeds **2 cm deep and 20 cm apart, in blocks. Thin early varieties to 35 cm apart.**
- **Most sweet corn varieties are complex hybrids, so there are no good results from saving such seeds.**

## COMMON PESTS AND DISEASES

- A fungal disease called "corn smut" causes kernels to become black, swollen and distorted. You can limit its spread by removing infected ears.
- Inch-long striped army worms are common pests of late corn varieties, but early maturing varieties are rarely damaged. Tachinid flies and other beneficials kill large numbers of fall army worms, or you can use a spinosad-based pesticide.

# CASSAVA

| Repeat | Growth phase | Dose per ha |
|---|---|---|
| 3 x with protection against diseases/pests | 1. During spring, leaves covering the soil min.40-50%<br>2. a 3. If the need for application of agents protecting the plants arises | 50 l of ROKOLAN + 150 l of water or ROKOHUMIN BULK 80 g/m$^2$<br>5 l of ROKOHUMIN DUPLO + 200 l of water |




## PLANT REQUIREMENTS

- Cassava does well if annual rainfall is 1000 mm or more; a minimum of 6 months of rain a year with at least 50 mm rainfall per month is needed.
- Soils should be well-drained, and not sandy, clayey, stony, or salt-affected, and at least 30 cm deep.
- In waterlogged land, cassava should be planted on soil mounds or ridges.
- Cassava can be intercropped with other crops such as yam, maize and vegetables.
- If land is severely infested with Imperata (spear grass), apply herbicides before soil preparation to eliminate the grass.
- **Prepare soil with ROKOLAN or ROKOHUMIN BULK.**
- **Apply ROKOHUMIN to invigorate the growth of plant and increase yield**.

## INTERCROPPING

- Cassava and maize.
- Cassava and a legume (cowpea, soybean, groundnuts, pigeonpea).
- Cassava and vegetables (chilli peppers, fluted pumpkin, okra, melon (Cucumeropsis species), spinach, Solanum nigrum and other Solanum species (black nightshade).
- Cassava, yam and maize.
- Cassava, maize and groundnut.

## PROPAGATION AND PLANTING

- freshly harvested (of at least 2 cm diameter and 20-25 cm long), ideally taken from the bottom-end of the stem and not with green bark or still bearing leaves.
- clean-cut, not splintered and bark not chipped off (cut with a sharp implement and handle the cuttings with care to avoid damage).
- kept upright in the shade with the base partly buried in the soil to avoid drying (if there is need for temporary storage).
- Cuttings can be planted on ridges, mounds or, if the soil is soft but not waterlogged, on flat ground. Planting is done manually using a cutlass (machete) to make a hole. Then the cutting should be inserted vertically or at an angle of about 45°. **2/3 of cutting should be underground. Spacing:** 1 m x 1 m, i.e. one cassava plant per square metre. This gives 10,000 plants per hectare. **If intercropping, maintain 10,000 plants per hectare but distance between cassava rows can be increased e.g. 2 m x 0.5 m.** Two rows of soybean and cowpea can be planted between the rows of cassava, while for pigeonpeas, which grow taller, a single row can be sown.

## COMMON PESTS AND DISEASES

- Cassava mealybug, termites , cassava green mite , cassava mosaic disease, cassava bacterial blight.
- Plant cassava early in the rainy season to allow the crop to establish well before the dry season, as a strong plant is more likely to withstand pest attack.
- Avoid burning cassava plantations at harvest as the burning indiscriminately kills insects including the natural enemies.
- Plant only cuttings from healthy plants and regularly inspect fields to remove any plant showing disease symptoms.
- Bury the diseased plant residues just before the onset of the dry season.
- Plant cassava in rotation with other crops

## RECOMMENDATIONS

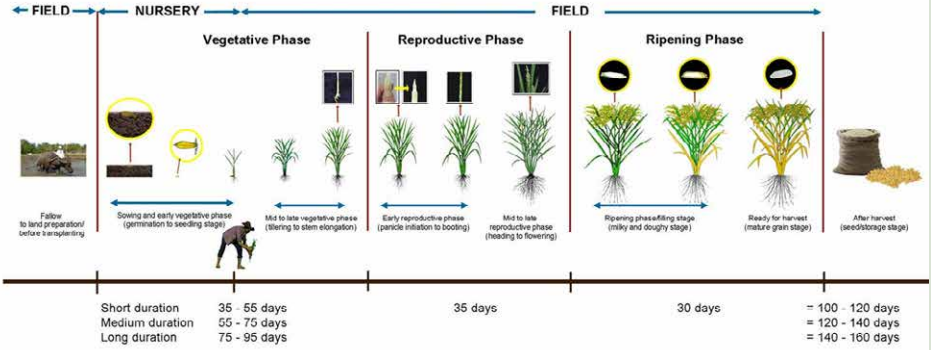
Covering the soil surface with mulch, such as crop residues, or growing cover crops (also called "live mulch") during fallow periods or during cassava establishment. Mulching seedbeds is recommended especially when growing cassava on slopes prone to soil erosion. Sources of good mulching material include dead leaves from alley crops, rice husks, coffee hulls, crop/weed residues and leguminous plants (live mulch).

# RICE

| Repeat | Growth phase | Dose per ha |
|---|---|---|
| 1-3 x with protection against diseases/pests | 1. Stage of first leaves<br>2. Active tillering phase<br>3. Immediately after the start of the late reproductive phase, just before flowering | 2 x 2.5 l of ROKOHUMIN<br>+ 200 l water |

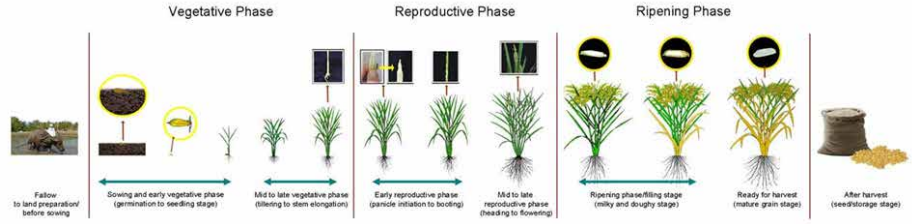
## Transplanted rice

Growth duration




## Direct seeded rice

Growth duration



## PLANT REQUIREMENTS

- **Full sunlight, long warm season.**
- **Reliable water source and a way to drain the water our for harvest.**

## PROPAGATION AND PLANTING

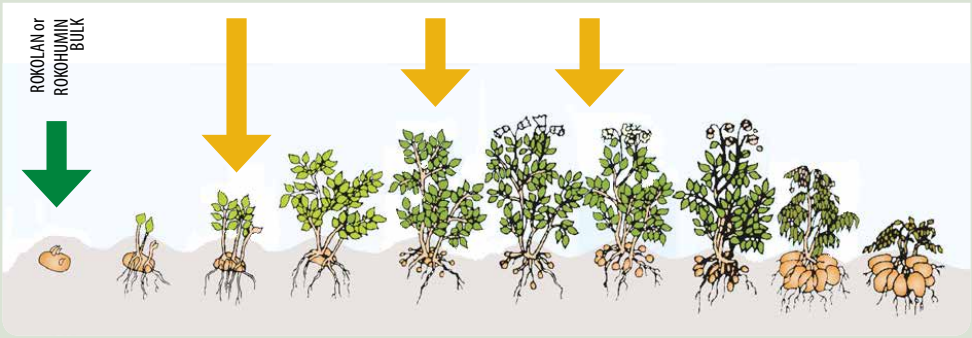
- Soak the seeds in water with **ROKOAKTIV** to prep them for planting.
- Plant seeds in rows with trenches to keep soil wet, maintain 5 cm of water level.
- Mulch to the soil, slightly covering the grains.
- Select the healthy plants and save only clean and sorted grains.
- Keep seed in airtight containers, never polythene bags.

## COMMON PESTS AND DISEASES

Narrow brown leaf spot is a fungal disease which impacts rice plants. Most commonly, rice with narrow brown leaf spot symptoms manifest in the form of narrow darkened spots on rice plants ranging in size. Disease can lead to decreased yields, as well as premature loss of harvests.


# SWEET POTATO

| Repeat | Growth phase | Dose per ha |
|---|---|---|
| 3 x with protection against diseases/pests | 1. At leaves covering the soil min.40-50%<br>2. a 3. If the need for application of agents protecting the plants arises | 50 l of ROKOLAN + 150 l of water or ROKOHUMIN BULK 80 g/m$^2$<br>5 l of ROKOHUMIN DUPLO + 200 l of water |




Sweet potato is a major staple food in Rwanda and one of the second largest produce in terms of tons after bananas.

## PLANT REQUIREMENTS

- **Cold sensitive, temperature between 21 – 29 °C.**
- **Acidic soil.**
- **Prepare soil with ROKOLAN or ROKOHUMIN BULK.**
- **Keep them watered, but late in the season, reduce watering to avoid cracking of the tuber's skin.**
- **Do not prune the vines.**

## PROPAGATION AND PLANTING

- Sweet potatoes grow from "slips"- rooted stem cutting.
- When planting slips, remove lower leaves, leave only the top ones, plant 30 cm apart.
- Water with ROKOHUMIN.

## COMMON PESTS AND DISEASES

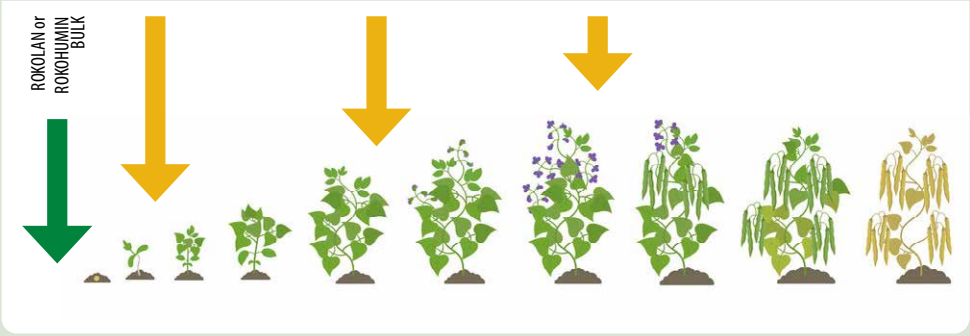
- **Crop rotations helps to prevent disease problems.**
- **Flea beetles, stem rot, sweet potato scurf – avoid overwatering.**

## RECOMMENDATION

- Soil erosion measures to improve soil productivity.

# GREEN BEANS

| Repeat | Growth phase | Dose per ha |
|---|---|---|
| 2-3 x with protection against diseases/pests | 1. Until 7 leaf stage<br>2. Period from main growth till start of flowering<br>3. flowering period - teat formation | 50 l of ROKOLAN + 150 l of water or ROKOHUMIN BULK 80 g/m$^2$<br>2 x 2.5 l of ROKOHUMIN +150 - 200 l of water |




## PLANT REQUIREMENTS

- Beans prefer a slightly acidic to neutral soil pH (6.0–7.0).
- Set up any supports for pole beans prior to planting.

## PROPAGATION AND PLANTING

- Add **ROKOLAN** or R**OKOHUMIN BULK** into the soil prior planting.
- Activate beans with **ROKOAKTIV.**
- Plant beans 3 cm deep in soil and 6 cm apart.
- For a harvest that lasts all summer, plant bean seeds every 2 weeks. If you're going to be away and unable to harvest, skip a planting.
- Mulch soil around bean plants to retain moisture; make sure that it is well-drained. Beans have shallow roots, so mulch keeps them cool.
- **Fertilize with ROKOHUMIN 2-3 x.**
- Pinch off the tops of pole bean vines when they reach the top of the support. This will force them to put energy into producing more pods instead.

## COMMON PESTS AND DISEASES

**Anthracanose – fungal disease that causes dark, sunken lesions on the plants, spreads quickly during rainy seasons. Remove and destroy infected plants. Plant your plants in well drained soil.**

Compost plants or till them under when they've stopped producing pods; you'll avoid attracting bean beetles and other unwanted multi-legged insects.

## RECOMMENDATION

- Soil erosion measures to improve soil productivity.

# TOMATO

| Repeat | Growth phase | Dose per ha |
|---|---|---|
| Every 10-14 days | Every 10-14 days during the period of main growth (it is recommended to use a wetting agent) | 50 l of ROKOLAN + 150 l of water or ROKOHUMIN BULK 80 g/m$^2$<br>2.5 l of ROKOHUMIN DUPLO + 200 l water |


## PLANT REQUIREMENTS

- **Sunny spot.**
- **Watering in the morning, do not overwater.**
- **Poles for tomatoes.**

## PROPAGATION AND PLANTING

- Prepare the seedlings in small pots before planting them directly into the soil: place 2-3 seeds (activated by **ROKOAKTIV**) in each pot, slightly cover by soil and moisten it. It will take approx. 1 week for seeds to germinate.
- When the seedlings have 3 or more leaves and several 15 cm tall you can plant them in the garden. **Prepare soil with ROKOLAN or ROKOHUMIN BULK** and plant the seedlings into the prepared holes. Leave ¼ above the ground.
- Set up poles at the same time as planting seedlings to avoid damaging roots.
- **Fertilize with ROKOHUMIN 2-3x.**

## COMMON PESTS AND DISEASES

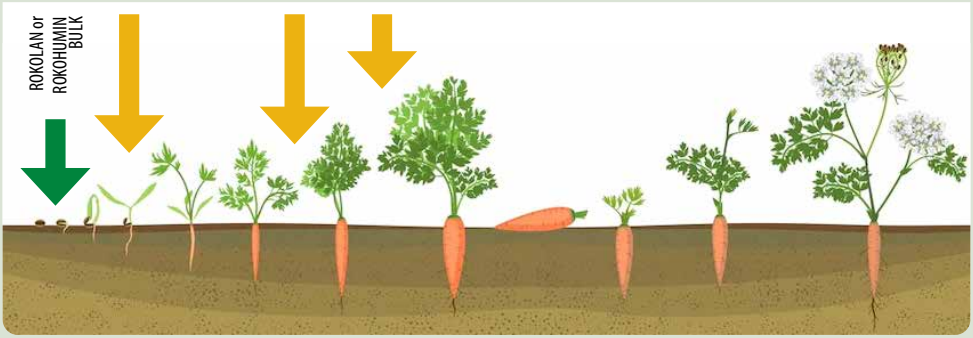
- You can get rid of many pests like aphids by spraying the plants with jet stream.
- Handpick insects like hornworms and put them inside bucket of soap water.
- Destroy infected plants.

## RECOMMENDATION

- Soil erosion measures to improve soil productivity.
- In hot weather, cover the roots with stone, this will save water for the roots.

# CARROT

| Repeat | Growth phase | Dose per ha |
|---|---|---|
| 2-3 x according to the condition of the stand and the weather | During spring, leaf covering of soil by plants min. 40-50%<br>2-3 weeks intervals | 50 l of ROKOLAN + 150 l of water or ROKOHUMIN BULK 80 g/m$^2$<br>2.5 l of ROKOHUMIN DUPLO + 150 l of water |




The carrot is a cool season crop; as a result, the conditions in the western parts of Rwanda are most ideal.

## PLANT REQUIREMENTS

- In hot climates avoid sowing the seeds during the hottest months, and in cold climates wait for spring.
- or plant 3-4 weeks before the last expected frost. You can plant carrots until midsummer in cool areas.
- Need well-drained, deeply dug sandy loam and a sunny spot.
- Add **ROKOLAN** or R**OKOHUMIN BULK** into the soil prior planting.
- **Soil shouldn't be allowed to dry out.**

## PROPAGATION AND PLANTING

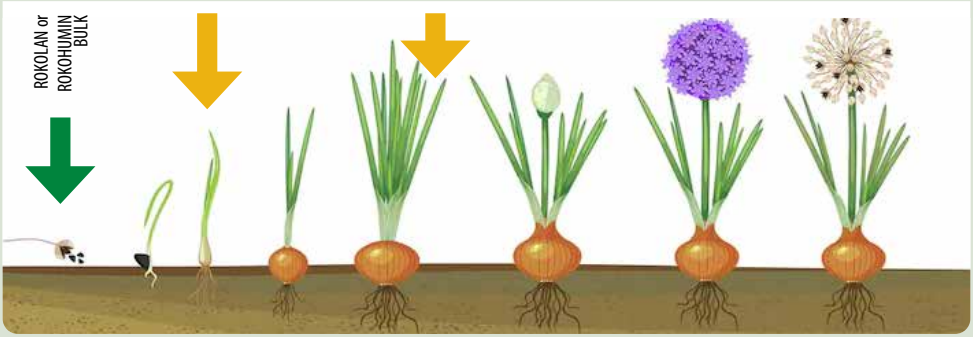
- Carrots cannot be transplanted, but can only be grown from seed.
- **Activate seeds with ROKOAKTIV prior sowing**
- Plant to a depth of **6 mm.**
- To make sure that they are evenly distributed and sown thinly take an old salter enlarge the openings a little, and use this to sprinkle your seeds mixed with sand.
- After planting, spray with **ROKOHUMIN.**

## COMMON PESTS AND DISEASES

- Carrot rust fly - this can be avoided by good crop rotation practices. To prevent carrot fly from attacking your carrots, never leave carrot tops lying about after thinning or after harvesting. The carrot fly is attracted to the smell of the bruised leaves. Water well after thinning to dilute the smell.
- LEAF BLIGHT - If you find blight on your carrots destroy any diseased plant immediately.

# ONIONS

| Repeat | Growth phase | Dose per ha |
|---|---|---|
| 2 x after creating a sufficient leaf area | During main growth stage (on onion, garlic and chives it is essential to use wetting agent) | 50 l of ROKOLAN + 150 l of water or ROKOHUMIN BULK 80 g/m$^2$ 2.5 l of ROKOHUMIN DUPLO + 200 l of water |




The onions are produced throughout the country. However, the Southern Province is the major producer with 48%.

## PLANT REQUIREMENTS

- **Well drained loose soil.**
- **Sunny spot.**
- **Prepare soil with ROKOLAN or ROKOHUMIN BULK.**

## PROPAGATION AND PLANTING

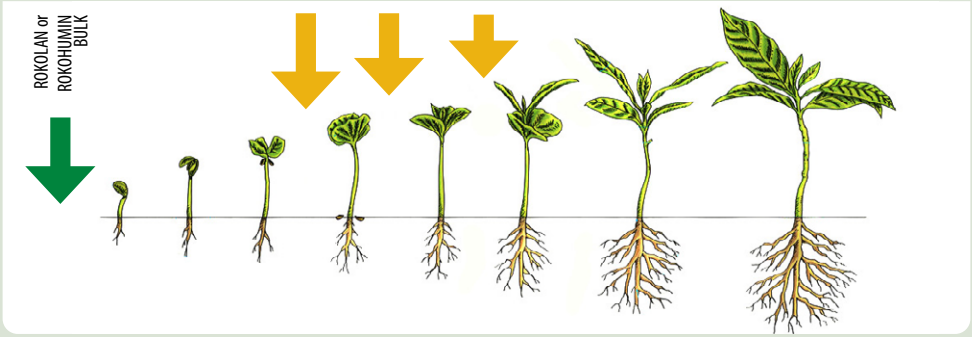
- You can start onion from seeds or sets - small onion bulbs.
- Prepare the seedlings in small pots before planting them directly into the soil: place 2-3 seeds (activated by **ROKOAKTIV**) in each pot, slightly cover by soil and moisten it. It will take approx. 1 week for seeds to germinate and 6 weeks until you can plant it to the garden.
- Plant onion sets 5 cm apart, do not burry them too deep.
- After planting, spray with **ROKOHUMIN.**

## COMMON PESTS AND DISEASES

- **Onion Maggots** – protect the onion with mesh to avoid onion maggots to lay eggs near the plants.


# COFFEE

| Repeat | Growth phase | Dose per ha |
|---|---|---|
| 3 x | Apply the first 2 times before the plant blooms<br>Apply 3. time after the plant blooms | 50 l of ROKOLAN + 150 l of water or<br>ROKOHUMIN BULK 80 g/m$^2$<br>2.5 l of ROKOHUMIN DUPLO + 150 l of water |




Coffee is an important foreign currency earner and important export crop.

## PLANT REQUIREMENTS

- **Well drained fertile soil with high content organic content.**
- **Prepare soil with ROKOLAN or ROKOHUMIN BULK to assure organic and nutrient content.**

## PROPAGATION AND PLANTING

- Coffee plants can be propagated from seed or cuttings. **Activate seeds with ROKOAKTIV prior planting. Prepare soil with ROKOLAN or ROKOHUMIN BULK.**
- After planting, put a small shade to protect seedlings from burning and mulch it to keep the soil moist.
- Weed accordinggly.

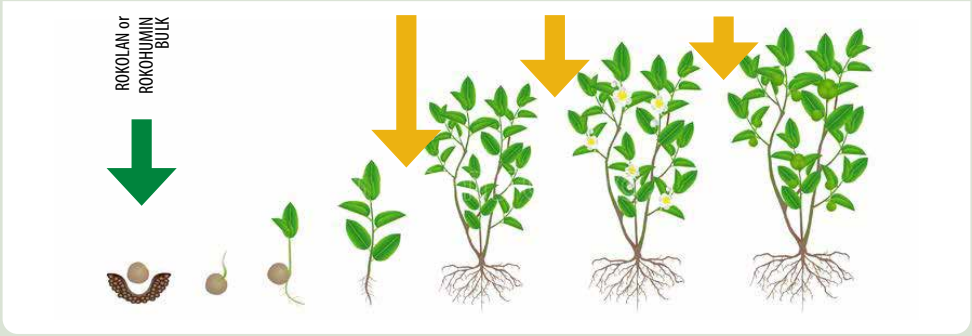
## COMMON PESTS AND DISEASES

- Coffee Berry Borer
- Coffee Bug
- Leaf miners
- Coffee Leaf Rust
- Coffee Berry Disease

Adding more natural enemies, introducing new enemies,weeding, recommended pesticides and insecticides are needed to be applied.

# TEA

| Repeat | Growth phase | Dose per ha |
|---|---|---|
| 3 x | Apply the first 2 times before the plant blooms<br>Apply 3. time after the plant blooms | 50 l of ROKOLAN + 150 l of water or<br>ROKOHUMIN BULK 80 g/m$^2$<br>2.5 l of ROKOHUMIN DUPLO + 150 l of water |




The tea crop is an intensively managed perennial monoculture crop cultivated on large-and small-scale plantations.

## PLANT REQUIREMENTS

- The ideal mean annual temperature is between 18°C and 20°C, with at least five hours' sunlight a day. Relative humidity should be 80% to 90% during the growth period. If it is below 50%, shoot growth is inhibited; if it is below 40%, growth is affected.
- Water: Tea plants grow well on hillsides where the annual rainfall varies between 1 150 mm and 6 000 mm.
- Tea grows best in fertile, well-drained, sandy mountain soil that is slightly acidic (pH 4,5 to 5,5). The soil should be at least 2m deep, be rich in minerals, and have a well-developed humus-containing horizon.

## PROPAGATION AND PLANTING

- Tea plants can be propagated from seed or rooted leaf cuttings; it takes about 4 to 12 for a plant to bear seed and three years before a new plant is ready for harvesting. **Activate seeds with ROKOAKTIV prior planting. Prepare soil with ROKOLAN or ROKOHUMIN BULK.**
- Plantings should be established in single rows, 1,50 x 1,75 m apart.
- After planting, it's necessary to wait two to three years for the first harvest. The shoot and two leaves are picked every one to two weeks during the harvesting period.
- **Apply ROKOHUMIN 3x during vegetation period to increase yield.**

## COMMON PESTS AND DISEASES

**Mites, Mosquito bugs Thrips, Scale insects, Caterpillars, Grasshoppers, Termites, Cutworms, Cricket.**

Adding more natural enemies, introducing new enemies,weeding recommended pesticides and insecticides are needed to be applied.

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