



NABU's Guidebook for the production of herbs, aromatic plants and spices in the Kafa Biosphere Reserve

A manual for practitioners



Imprint

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NABU project

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Introduction

What is this guidebook for?

This guidebook shows you how to plant different spices and herbs. You will find information about seedlings and seed bed preparation, how to plant the seedlings, how to nurse the plants, and explanations on common diseases. Finally, there are information about how to harvest and store the spices and herbs. You can use the guidebook for information, and as reminder, for example of the best time to harvest. You can write down or draw additional information that you think are helpful! Share your experience with other farmers, and find out what works best for your spices and herbs!

At the end of each description you will find a section for your personal observations. Do you have a moist soil and only need to water every two weeks? Make a note, so you can document your experiences.

Which herbs and spices will you find in this guidebook?

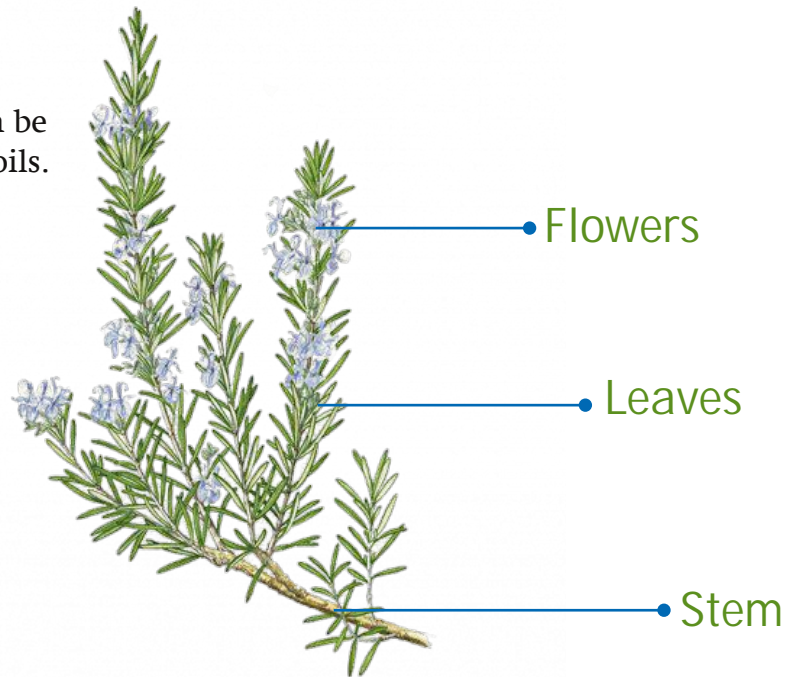
You will find information on the production of the following plants:

1	Rosemary	p. 4
2	Mint	p. 6
3	Lemon Verbena	p. 8
4	Oregano	p. 10
5	Thyme	p. 12
6	Long Pepper	p. 14
7	Afromom Korarima	p. 16
8	Ethiopian Cardamom	p. 18

1 Rosemary (Rosmarinus officinalis)

Good to know:

- Grows best at 20 – 25°C
- Leaves, flowers and stems can be used for producing essential oils.

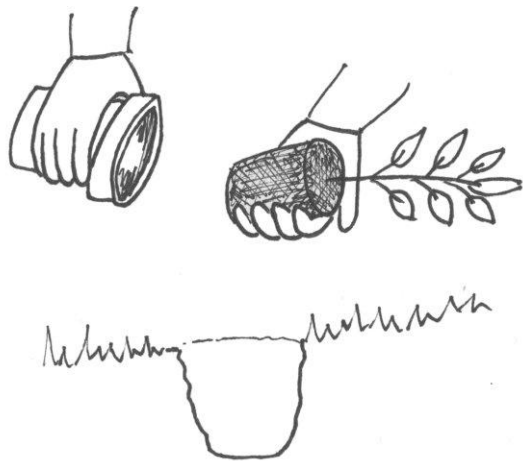


1. Prepare the seedlings

- You can use cuttings from the plant to raise new seedlings: Cut young parts of the plant at 10 – 15 cm length. Do not take flowering parts, old branches or very young branches, they will not be strong enough.
- Use plastic pots to raise seedlings, mix 2 parts of forest soil, 1 part top soil and 1 part sand. You can build a shed for the seedlings so they don't get too much sunlight.
- Water seedlings 2 times per day and weed when necessary.
- 2 weeks before planting seedlings to the field, remove the shed and water only once per day.

The picture shows how a shed for your rosemary plants could look like.





2. Planting seedlings to the field

- Take the seedling out of the pot together with the soil, plant it early in the morning or in the evening when the sun is not so strong any more.
- Put the seedlings immediately in a hole that fits the size of the seedling with the soil.
- Water every 3 days/once per week for 3 weeks after transplanting the seedling

3. Protect your plants

- Weed by hand when necessary. Be careful not to damage the roots, because they are very sensitive!
- Look for signs of diseases and pests: are the leaves green or do they have yellow or brown areas? Do the plants look healthy? Remove all infected parts of the plants to prevent a spreading of the disease.

4. Harvest Rosemary

- Cut the Rosemary 15-20 cm above ground, so you get 2-3 smaller branches.
- Use a sharp tool for cutting like scissors or a knife so you don't damage other parts of the plant.
- Harvest Rosemary early in the morning.
- Store the harvest in a cool and dry place.



My notes:

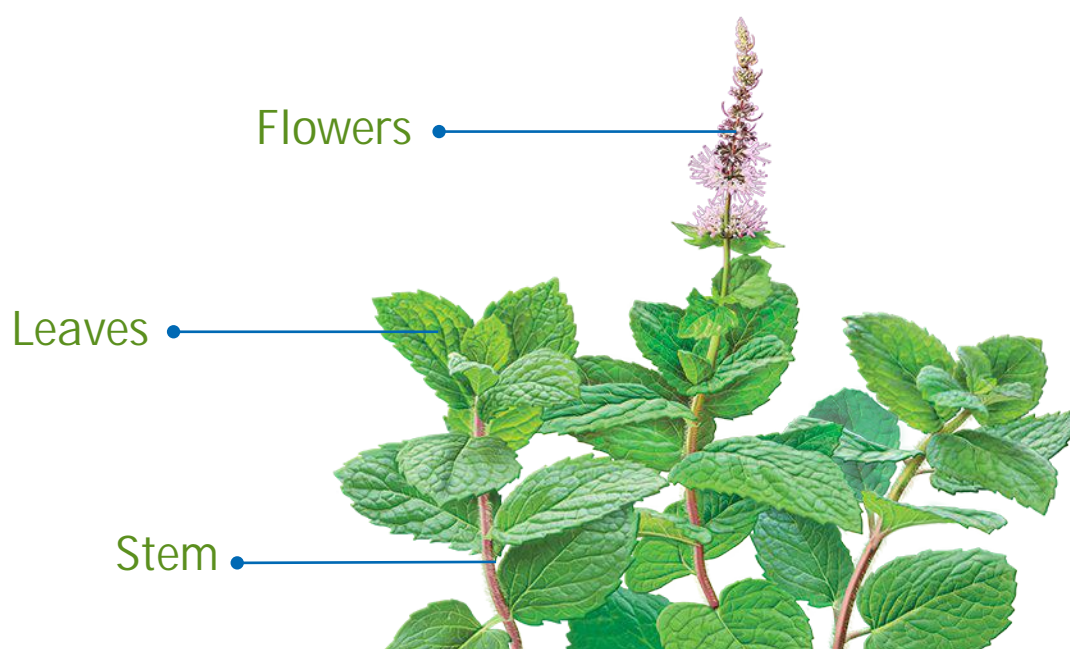
2 Mint (Mentha)

Good to know:

- Japanese mint, spearmint and peppermint are different species, differing in aroma, taste and use.
- Quality is highest under hot days and cool nights.
- Mint is propagated through underground runners. This is called "vegetative propagation".

1. Prepare the seedlings

- Use living underground runners to multiply your mint plants.
- Cut the runners at a length of 8-10 cm and plant them in a pot with a mix of forest soil, top soil and sand.
- Plant seedlings to the field after 4 months.



2. Planting seedlings to the field

- Mint plants need loose soil so the roots can grow easily. You should plough and harrow the field and remove weeds and stones.
- Prepare ridges with 30cm distance between the single rows. Open a furrow in every ridge about 5cm deep in which you can place the seedlings.
- Place the seedlings in the furrow with 10cm space between the seedlings. Cover the roots and runners with top soil.
- Water the planted seedlings! Plant the seedlings in the beginning of the rainy season, then your plants will have enough water.



Underground
runner

3. Protect your plants

- Weed the field 15 days after planting, continue weeding every 20-25 days.
- Water the mint plants every 6-12 days. The soil should be moist but no standing water.
- You can use manure or compost as organic fertilizer in your mint field.
- Observe your plants carefully: Do they look healthy? Do they have any brown or yellow leaves? Do you see any insects that feed on the plants? You should remove all infested plants so you avoid a spreading of the disease.
- Use crop rotation in your mint field. This means that you plant mint on the field for only 3-4 years, than change to beans, peas, or potatoes for 6-7 years. This way you can control diseases and weeds!

4. Harvest Mint

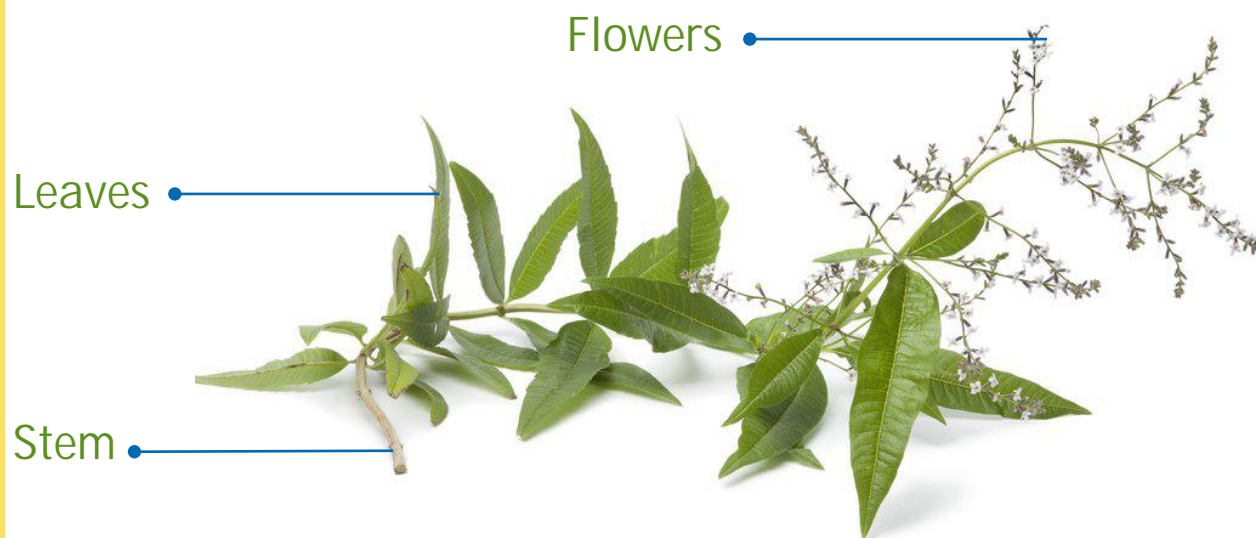
- Harvest mint the first time after 60-90 days, shortly before the plants begin to flower.
- After the first harvest, you can harvest again every 2 months.
- Pick the leaves by hand or cut the mint plant at 2 cm above ground, it will grow again.
- Harvest mint leaves at sunny days without clouds.
- Dry the leaves in the shade for one day before you distil the essential oil.

My notes:

3 Lemon Verbena (*Aloysia citrodora*)

Good to know:

- Grows best under high temperatures and a lot of sun!



1. Prepare the seedlings

- Lemon Verbena is multiplied by stem cutting.
- Choose a healthy stem without flowers and cut it with a sharp knife or scissors.
- Cut the stem below 5 parts of leaves.
- Put the seedlings in a pot with 2 hands sand and one hand top soil.
- Water the seedlings. The soil should be moist at all times.

2. Planting seedlings to the field

- Transplant the seedlings to the field after 3 months.
- Prepare ridges with 60cm distance between the single rows and 30 cm high.
- Take the seedlings out of the pot and place them in a hole of the size of the seedling at top of the ridge. Cover the roots gently with soil. Be careful not to damage the plant or roots.
- Transplant Lemon Verbena in the beginning of the rainy season, so you only need to water directly after transplanting. When rainfall is limiting, you should water your plants every 7-15 days.

3. Pinching

- Your plants produce more leaves when you pinch them. Take out dead branches, or stems that grow too long. Pinch your plants the first time 45 days after transplanting.
- Use the cut branches as seedlings for new plants.

4. Protect your plants

- Hoe and weed the field 2 times in the first month after transplanting. Then weed when necessary.
- Observe your plants carefully: do they have brown or yellow leaves? Can you see any insects? Whiteflies and spider mites might feed on your plants. You should remove all infested plants to avoid that a disease spreads.

5. Harvest Lemon Verbena

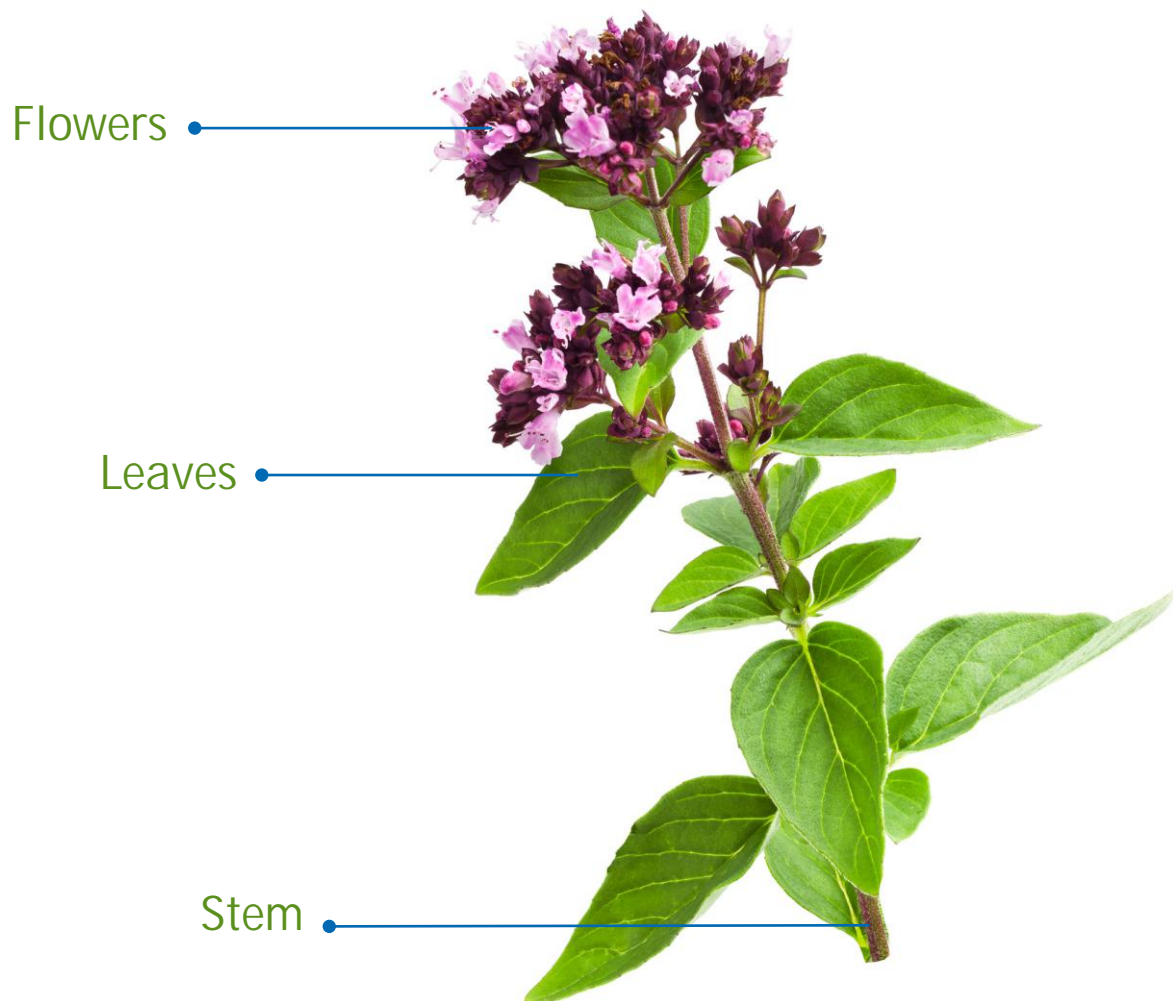
- You can harvest Lemon Verbena just when the plants start to produce flowers.
- Cut the plants at 15 cm height above ground with a sharp knife or scissors. Leave enough stem so that the plant can grow again.
- Dry the harvested leaves. You can dry individual leaves or bundles of stalks. Hang them upside down in a dry and cool place.

My notes:

4 Oregano (*Origanum vulgare*)

Good to know:

- Oregano needs a lot of sunshine.
- Drainage is important, because the roots don't tolerate too much water.



1. Prepare the seedlings

- Oregano produces underground runners. You can get seedlings by cutting stems, similar to mint seedlings.
- Take cuttings from plants before they produce flowers.
- Cut the stem below 5 parts of leaves.
- Cut the stems at sunrise at 12-15 cm height from ground and plant them in pots.
- Make sure the soil in the pots is loose enough so that too much water can drain. Make sure that the soil is moist but not wet! Wet soil will let the roots rot and the oregano plants die.

2. Planting seedlings to the field

- Transplant the seedlings to the field after 2 months.
- Prepare the field carefully: remove all other plants from the field and plough the soil deep. Turn it 2 times so you prevent that seeds from weeds come up.
- Use organic matter to loosen the soil. This will help to drain the soil, and adds important nutrients.
- Prepare the field with rows: space between rows 45-60cm, space between plants 30-35cm. Plant the seedlings in holes of 5-10cm depth and water directly after planting.
- Water the plants 1-2 times per week during the first month.

3. Pinching

- Cut the first pair of leaves at the stem each 30-45 days after planting the seedlings to the field. This way you will stimulate the plant to produce more fresh leaves.
- Cut the flowers, so the plant has more energy for the leaf production.
- Cut back your plants to 15 cm height 2 times during one growth period.

4. Protect your plants

- Weed 2 times during the first month after planting Oregano to the field. Then weed when necessary.
- Check your plants carefully: do they look healthy? Are the leaves of a fresh green? Can you see any animals that feed on the plant, like whitefly, spider mites? Remove all damaged or infested plants to prevent that the disease can spread.
- Protect the lower parts of the plant with soil: earth up the soil after each harvest period to protect the roots.

5. Harvest Oregano

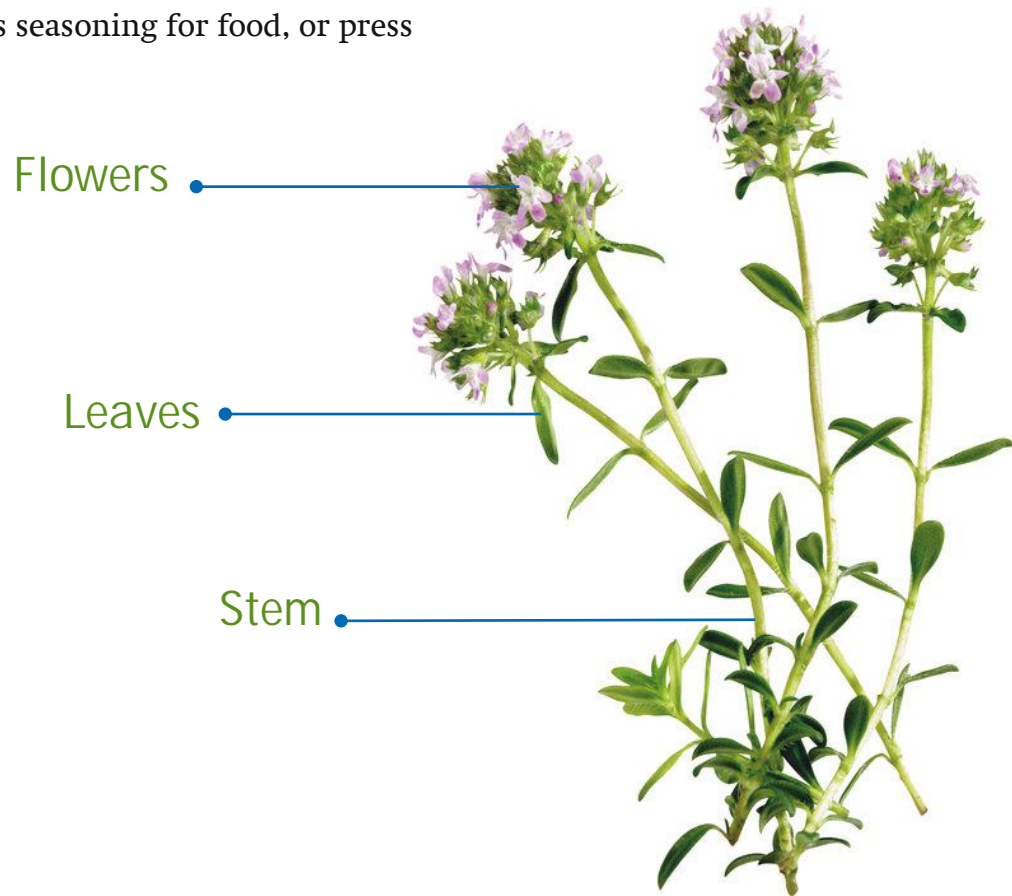
- Harvest Oregano when the plant is 20 cm high, just before it develops the flowers.
- Harvest in the morning, after dew has dried.
- Dry the Oregano, the leaves will have a stronger taste. You can make small bundles of harvested stems and bind them together. Hang them in a dry place.

My notes:

5 Thyme (Thymus)

Good to know:

- Needs a lot of sun, but not a lot water.
- You can use it as seasoning for food, or press



1. Prepare the seedlings

- You can produce seedlings by stem cutting, by dividing the plants at the roots or by sowing seeds.
- Put seeds in 6 mm depth, growth starts after 2 weeks
- Or cut the stem of a healthy plant at a length of 5-10 cm. Put the stem in the soil.

2. Planting seedlings to the field

- Transplant Thyme to the field after 6-8 weeks.
- Thyme grows at very dry places where other plants won't grow.
- Plant at the end of the rainy season with a distance of 15-30 cm between plants and 60 cm space between rows.

3. Protect your plants

- Weed the field regularly so you get the best product.
- The oils in the Thyme leaves act as pest repellent, so only a few insects can harm the plant. Check your plants carefully: do they look healthy? Can you see any whiteflies, spider mites or other insects that feed on the plants? You should remove all plants with diseases so the others won't get infested.

4. Harvest Thyme

- For essential oil, you can harvest the leaves just before the plants start flowering. Use a sharp knife or scissors to cut the stems.
- Cut your plants no lower than 15cm from the ground. There need to be green leaves left on the plant after harvest. Otherwise, your plants can die or get diseases because the plants are weakened too much.

My notes:

6 Long Pepper (*Piper longum*)

Good to know:

- Also called Timiz.
- Grows in the forest and needs 30-80% shade.



1. Prepare the seedlings

- The best way to get seedlings from Long Pepper is with cuttings. You can plant the cuttings directly into the soil.
- Take cuttings with root parts and plant them in a hole 20 cm wide and 20 cm deep at the beginning of the rainy season.

2. Prepare the field

- Remove other plants when you plant Long Pepper on a field. But don't destroy the natural vegetation when you use Long Pepper that grows in the forest.
- Watering of the field is necessary in the dry season only.
- Make sure that in the field the Long Pepper is not shaded too much, the fruits won't ripe when they don't get enough light. So remove some parts of the shade that you have built or some branches of the supporting tree that you planted. But don't destroy the natural forest plants!

3. Harvest Long Pepper

- Pick the ripe spikes, but don't disturb the other parts of the plant!
- The spikes are ripe when the color of the spike turns from green to light yellow.
- Place the harvested spikes in the sun and turn them frequently. Don't let them outside in the rain or during cloudy weather. It can take 1-4 weeks until the spikes are dry. They will have a dark brown or black color when fully dry.
- Store your dried Long Pepper in a cool and dry, well ventilated place.



My notes:

7 Ethiopian Cardamom (*Aframomum corrorima*)

Good to know:

- Needs constantly moist and cool conditions.
- Grows in the shade of the natural forest.



• Capsules

1. Shade plants

- Choose the shade plants: they should be fast growing, dispersed branches and leaves, deep rooted so they don't compete with Korarima roots. You could for example use: Sesbania, Grevillea, Albizia.
- You can also plant Korarima together with bananas, coffee, or under different fruits like avocado, mango or under rubber trees.

2. Prepare the seedlings

- Korarima seedlings are grown from the seeds.
- Select a healthy and strong mother plant. Collect the capsules and remove the seeds.
- Wash the seeds in clean water and then rub them with ash, so they can be sown easily. You should keep the seeds in the shade for 3-5 days.
- Then you can plant them directly in the field or in a plastic pot with forest soil first.
- Make sure that you plant the seeds at places in half shade.

3. Plant seedlings to the field

- After 1-2 months in the half shade, you can increase the level of shade.
- In the beginning of the summer season, after 8-9 months, seedlings are planted to the field.
- Plant seedlings in holes of 30 cm depth and 45 cm width in 2 m per 2 m distances. Water the plants directly after planting.
- Weed when necessary and water your plants during long dry seasons. The soil should be almost moist.

4. Protect your plants

- Observe your plants carefully: do they look healthy? Do they have any brown or yellow spots on the leaves? Remove all infected parts of the plants, this way you prevent a spreading of a disease.
- Make sure that you have enough shade. Korarima really needs the shade for optimum growth. The shade reduces the growth of other plants!

5. Harvest Korarima

- In general, Korarima flowers from May to August and capsules can be harvested in August and September. But you can find flowers and capsules all the year when the conditions are good.
- Capsules ready for harvest have a deep red color, the seeds inside the capsule should be dark brown and have a good taste.
- Take care that you don't damage the capsules during the harvest. They should still be closed when you dry them in the sun.
- You should store the dried Korarima capsules at a cool, dry and clean place, and check the quality. If you find a fungus disease on the dried Korarima capsules, you can wash them in clean water and dry them again.



My notes:

8 Indian Cardamom (*Elettaria cardamomum*)

Good to know:

- Cardamom grows good in places where coffee is found.
- Needs permanent or partial natural shade. When selecting shade trees, pay attention that these keep their leaves in the dry season.

1. Prepare the seedlings

- You can use cuttings or the seeds to raise seedlings.
- When using seeds: wash seeds in clean water, rub them with ash and let them dry for 2-3 days in the shade.
- Mix 3 hands of forest soil, 2 hands of decomposed manure and 1 hand of sand and fill the mix in plastic pots.
- Sow seeds from the end of October until the end of November. Water the seedlings carefully every day.

Leaves



2. Planting seedlings to the field

- Transplant the seedlings after 7 months when the rainy season starts.
- Make sure that your field has the right level of shade. Are there enough trees that shade the cardamom? Otherwise you should plant some additional trees, like Albizia, Jackfruit, Erythrina, Millettia or Grevillia.
- During the dry season, you can already dig the holes (30-45 cm deep, 45-60 cm wide) for the cardamom seedlings and fill them with top soil.
- Plant seedlings with a spacing of 2-3 m per 2-3 m.
- Cardamom can be also planted together with other crops, like enset, banana and coffee.

3. Protect your plants

- During the rainy season, the plants need more light. In the dry season, the shade protects the cardamom plants from drying out.
- Check your plants carefully: do they look healthy? Do they have any brown or yellow leaves or spots? You should remove the infected leaves from the plant and the ground! Remove dead parts of the plant like leaves. This way you can control the spreading of diseases.

4. Harvest Cardamom

- Ripe capsules change their color from green to yellow. You can harvest the ripe, yellow capsules over a period of several days. Be careful not to damage the capsules during the harvest, this would reduce their quality.
- Dry the cleaned cardamom capsules after the harvest, for example on a sheet in the sun.
- Keep the dried cardamom capsules at a dry, cool and clean place. Check the product regularly!



My notes:

NABU, The Nature and Biodiversity Conservation Union, has promoted the interests of people and nature for more than 100 years drawing on its unwavering commitment, specialised expertise and the backing of its 600,000 members and supporters. The NGO is the largest of its kind in Germany.

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