Cabbage is a common vegetable that grows especially well in fertile and well-drained soils. The increasing demand for vegetables has contributed to the growing popularity of this crop, particularly in the urban areas. For the grower keen on maximising cabbage production, knowledge of major cabbage pests and diseases and their control is essential.

Growing requirements

Soils: For optimal growth, cabbages require well-drained soils with a pH of 5.6 to 6.4. Loamy, black cotton and alluvial soils are best suited for this crop.

Climate: The crop does well in cooler climates with adequate and well-distributed rains. It can also flourish under irrigation in the lower altitudes.

Weeding: The crop should be kept free of weeds especially in its younger stages to avoid losses due to competition from weeds; which can also be a source of pests and should be controlled at all times.

Spacing

A 60cm by 60cm spacing is recommended. The further apart you plant the cabbage, the larger the head will develop.

Fertilizer Application

To arrive at the exact amount of nutrients that should be applied to meet the crop’s requirements a number of factors need to be considered:

1. The nutrient level in the soil and rocks
2. Nutrients that can be derived from previous crop residues.
3. Timing of nutrient application, for crops to make best use of the fertilizers.
4. Soil type: this affects fertilizer use efficiency. There's 70 percent efficiency in light sandy soils, 60 percent in medium, clay, silty, organic and peaty soils and 55 percent efficiency in shallow soils over chalk and limestone.
5. Estimation of nutrients gained from use of organic manures
6. Nutrients that must be replaced in order to maintain the soil index level
7. The sources and cost involved in deciding the particular fertilizer one needs to produce required nutrients.

The following is a guide for fertilizer application:

- Nitrogen (NO₃, NH₄) - 250-340 kg/ha,
- Phosphate (P₂O₅) - 100-200 kg/ha and
- Potash (K₂O) - 200-300 kg/ha. Magnesium (MgO) - 100-150 kg/ha.
With the onset of the long rains, farmers should brace themselves for higher and richer cabbage harvests. Monsanto Vegetable Seeds Division offers you Cabbage Victoria F1 which has all you need for a bumper harvest.

**Suitability**

This cabbage is ideal for all markets.

**Attributes**

- Very fast growing
- Vigorous crop
- Has compact heads
- Head weight 4-5 kgs
- Yield Potential 45-56 tonnes/acre
- Maturity 70-75 days from transplanting

**Benefits**

- Easy to sell
- Short maturity period
- Uniform maturity (can be sold at one go).
- Transports well
- High yielding
- High profit margins

**Planting指导**

- A spacing of 60cm x 60cm is always recommended when planting cabbage Victoria F1. You may also use 30cm x 30cm. **Note:** if the spacing is reduced, head size will be reduced. Larger spacing will always result in slightly bigger heads.
- Always transplant with a ball of soil to avoid shocking the plant.

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**Word from Management**

As dry weather prevails and water levels drop throughout the region, it is our hope that the much anticipated rains come in time to save the situation.

Even as we wait for the rain, we at Monsanto K. Ltd are putting in place plans to ensure that our seed supply does not add to any of the uncertainties. Appreciating that seed is one of the most important inputs for any farmer, this edition extensively covers the value of seed and how it should be handled this coming season in reducing wastage.

Seed is an investment which, if treated well, results in a very profitable crop. As farmers prepare their land and as they seed their crops, we are working with them towards ensuring that each seed becomes a productive mature plant. Our team has been across the country training the farmer not to pour seed - mwaga mbeugu' but to plant - ponda mbeugu’ (see story and pictorials on the trainings in this edition).

During this season, we also worked with Tomato Assila F1 farmers and have seen even those in the very hot areas harvesting tomatoes; our variety was able to withstand the Tomato Yellow leaf Curl Virus (TYLCV) despite heavy infestation of white flies.

As you prepare to plant your cabbage this season, remember to ask for varieties by name; Cabbages Victoria F1 and Blue Dynasty F1 are ideal cabbages, the latter is resistant to the very stubborn Diamond Back Moth (DBM).

Water Management

Ample soil moisture is necessary throughout the growing season to produce good cabbage. Irrigation is especially important when planting during the dry spell; this helps the young plants withstand the intense sunlight and heat and supplies the developing heads with sufficient water to develop quickly.

**Key Pests and disease Management**

Proper identification of pests and diseases is an important step in controlling them. Wrong diagnosis will lead to wrong interventions resulting in increased losses and costs. If in doubt, check with a qualified crop protection specialist. Common cabbage pests include Diamond Back Moth (DBM), aphids, while common diseases include Black Rot, Fusarium Ring spot.

**General pest and disease control measures:**

- **Practice crop rotation.** Do not include crops of the same family in the rotation sequence because of nematodes and other pests and diseases
- **Plant certified disease-free seed** treated with an approved fungicide to control seed rats and post emergence damping off
- **Observe field hygiene:** remove the old crop from the fields, control weeds and crop debris since these are source of pests and diseases.

**TIP**

Mulch with 1 to 2 inches of organic matter, keeping the mulch an inch away from the stem of the plant. Mulching helps keep the soil moist, feeds the plants, and controls weeds.

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**Nursery Trainings to Reduce Seed Wastage**

By Nathan Koskei

Monsanto recently conducted trainings for tomato farmers in the Mwea and Lolotoktok areas sensitizing them on the importance of proper nursery management.

The farmers were trained in various aspects of nursery management, ranging from the proper use of seed in avoiding wastage to disease and pest management. They were also introduced to a new nursery technique - the use of seed trays for planting, which also greatly reduces seed wastage.

During the training, Monsanto also gave farmers information on its high-yielding hybrid tomatoes such as tomato Assila F1 and Eden F1. Tomato Assila F1 is popular for its resistance to the deadly Tomato Yellow Leaf Curl Virus (TYLCV) which is of great distress to tomato growers.

From the training, farmers were able to take away the all-important message that a good start is essential for a good crop - hence the need for proper nursery management.

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**Water Management**

Ensure proper crop production practices that provide the right growing conditions for plants (sufficient water and balanced fertilization), particularly when crops are young. Strong healthy plants are more likely to withstand pests and diseases.

**Ensure regular crop scouting for pests and diseases:** as well as weeds, irrigation management and nutrient deficiencies. This helps in detecting problems early and applying control measures on time.

**Harvesting Cabbage**

Cabbage can be harvested anytime after the heads form. For highest yield, cut the cabbage heads when they are solid (firm to hand pressure) but before they crack or split. When heads are mature, a sudden heavy rain may cause them to crack or split wide open. The exposed internal tissue soon becomes unusable. Harvest and salvage split heads as soon as possible.
Red Knight F1 Makes All the Difference for Njoro Farmer

By Esther Muchemi with David Mbogo

Esther Muchemi a farmer from the Njoro area in Nakuru, is one of the many farmers who have been benefiting from Monsanto’s quality hybrids. “When it comes to farming, particularly horticultural innovation, Monsanto leads the way,” she says.

“I closed my shoe boutique business to venture into greenhouse farming and I have no regrets; for one, I no longer dread the landlord’s knock. I have been growing Red Knight F1 for one season and now supply supermarkets both in Nakuru and Nairobi with my produce. In about 7 months I have harvested 2 tonnes from a 200 square metre area and was able to earn 200,000 shillings from this. I was impressed. For my next crop, I intend on doubling production by putting up another green house. What I like about Red Knight F1 is its rich colour; the colour of the fruits is very appealing and always catches first attention from buyers”.

Red Knight F1 is an early maturing; it takes 75 days for it to mature to a rich green and turns red in 90 days. It stays long in the field, giving the farmer a continuous source of income.

Loitoktok Farmer Learns from Assila F1 Experiment

By James Kifuri with Daniel Muyoyika

Faithful as he can remember, James Kifuri Muya has been planting open pollinated tomatoes popularly known as OPVs in Loitoktok, but the returns have never been fulfilling. He has been faced with low yields, pest and disease attacks. Recently, his farming took a dramatic turn when he tried Tomato Assila F1 from Seminis. At first, he was reluctant to plant the variety, uncertain whether the product would match its description.

“I began in a small way, I bought a small pack of Assila F1, and seeded it along with four other competing varieties. I wanted to come to a concrete decision on which tomato variety to purchase.

After 75 days, tomato Assila outperformed its competition. What made Assila stand out against the rest was the fact that it withstood the deadly Tomato Yellow Leaf Curl Virus (TYLCV) which we call ‘Ngumi’ or ‘Gathuri’. Its yield was also high compared to the rest.

I am now convinced that tomato Assila F1 from Seminis is by far the best tomato variety I have come across. The returns are high; it tastes sweet and does spoil when I transport it to the market. I rate it excellent! I have now increased my acreage under tomatoes and will use the proceeds to reinvest in the business as well as for my personal use.”

Tala Farmer Finds Drought Tolerance in DK8031

By Samuel Makau

Michael Kasyoka is an enthusiastic maize farmer growing his crop in the drought-prone Tala area of Kangundo District. Though he has experienced several crop failures over the years, Mr. Kasyoka has never given up on maize farming. Last season, however, he decided to do things a little different.

“Monsanto’s maize hybrid DK8031 is quite popular with farmers in our area; I have been hearing about it but have never tried it. This past season I decided to buy a packet of DK8031 and a packet of each of the other maize hybrids recommended for our area. My intention was to compare DK8031 against the other maize varieties. I planted them all and in spite of the poor rains, I managed to get a crop from my DK8031 plot. It was only the Monsanto maize that yielded a harvest, the rest dried up and were only good as feed for my livestock.”

Drought usually results in water shortage that seriously interferes with human activity, water storage reservoirs empty, wells dry up and crop damage ensues. Drought results to crop failure, hunger and poverty. Risk of crop failure from drought is one of the primary reasons why small-scale farmers in Kenya do not adopt improved farming practices. A more reliable harvest could give farmers the confidence to improve their techniques, health and standard of living.

Although drought cannot be reliably predicted, farmers can plant hardy crops able to withstand harsh climatic conditions. Monsanto’s DK8031 is especially popular with farmers in Ukamboni as it is well adapted to the drier lowlands. Unique characteristics of this variety that endeared it to farmers in the area are its:

- Early maturity which allows it to thrive even with shorter periods of rain
- Drooping cob characteristic that protect the cobs from rot once they are mature
- Medium stature, with thick strong stems enabling it to withstand lodging
- Long, strong extensive root system to extract and absorb water underground.
- Ability to give a reliable yield even under low management.

-season’s grower tips

| Plant Spacing: 30 cm x 75 cm (1 ft x 2½ ft) single seed per hole or 45 cm x 90 cm (1½ ft x 3 ft) double seed per hold |
| Amount of seed: 8 – 10 kilogrammes per acre |
| Fertilizer application: This depends on the fertility of the soil and the type of fertilizer depends on the soil analysis of a given area |
| Weeding: This is very crucial at the early stages of plant growth but should be done at all other stages |
| Harvesting: This depends on the prevailing market and the intention of the grower i.e. whether for green maize or dry grains. |
| Storage: Maize grain should be kept in a well ventilated storage, away from any contamination and with a moisture storage of less than 15 percent. |
Chicken with Okra

By Nashone Mukabane

- 1 large onions, thinly sliced
- 2 cloves garlic, peeled & thinly sliced
- 500 g prepared fresh okra
- 1 tablespoon oregano
- chopped parsley
- salt
- black pepper

Method
1. Rinse and dry the chicken pieces.
2. Place the oil in a wide saucepan and, when hot, fry the chicken pieces on both sides until they become golden.
3. Take the chicken out, add and fry the onion and garlic until they are pale brown.
4. Add the oregano, thyme, tomato paste, tomatoes and water, pressing tomato with a wooden spoon to break them up.
5. Bring to the boil.
6. Season with salt and pepper, add the chicken pieces, cover and cook the chicken for 20 minutes and then add okra on top.
7. The okra should sit in but not be covered by the sauce.
8. Add a little water if needed.
9. Shake the pan and cook slowly for about 30 minutes without stirring, but rotating the saucepan occasionally.
10. Continue cooking until the water has evaporated and the sauce has reduced and thickened.
11. Sprinkle with parsley and serve.

How can you control Diamondback Moth?

- Avoid planting during the hot season, particularly at the end of the dry season.
- Separate seedbed and field to reduce danger of carrying over the pest and to ensure infestation-free planting material.
- Practice proper rotations. Having a break where no crucifers at all are grown will reduce the number of diamondback moth considerably.
- Intercropping; Planting rows of tomatoes alternately with rows of cabbage reduces damage but it does not prevent the attack completely. Trap crops such as mustard also reduce attacks; 15 rows of cabbage followed by mustard rows has been shown to be most effective.
- Frequent irrigation and rain reduce the mating of moths and wash off caterpillars and pupae from plant leaves.
- Prunings of healthy tomato plants can be scattered as a mulch in the cabbage field because of its deterrent effect.
- Adult moths are killed by the heat of the flame and fall into the bowl of water.
- Monitor twice a week. For monitoring pest populations light traps are useful. They show when populations are increasing, meaning preventive or control methods are needed.
- Encourage natural enemies by maintaining natural surroundings with plenty of breeding places, like trees and shrubs. Birds and bats feed on moths and lacewings, wasps, parasitic wasps, spiders and larvae of hoverflies eat the caterpillars of diamondback moths. The most effective natural predator is the parasitic wasp, Diadegma semiclausum, which feeds on the larvae of the Diamond Black moth.
- Sprays at transplanting or within a few days afterwards prevents an early build-up of diamondback moth populations. The spraying liquid should be directed on the underside of the foliage and inside the head where the larvae live.

What is it?

Diamondback moth (DBM) (Plutella xylostella) is a common pest in the cabbage family (Crucifers). The diamondback moth caterpillar causes damage to crops.

Symptoms and Damage

Newly hatched DBM caterpillars feed as leafminers inside the leaf tissue. Older caterpillars feed on all plant parts. They feed on the leaf tissue leaving the upper leaf surface intact. This type of damage is called "windowing", since it gives the appearance of translucent windows on the leaf. In cases of severe infestation, entire leaves could be damaged. Caterpillar and pupae are found on damaged leaves. Older caterpillars are often found around the growing bud of young plants. Their feeding can deform the plant. DBM caterpillars also feed on stems and pods. Heavy damage results in marketable parts being contaminated with excrement, which makes the produce unsaleable. Plants are affected in the seedling stage, vegetative growing stage, flowering stage and fruiting stage.

DBM attacks the growing points, inflorescence, leaves and stems. Under heavy infestations the entire plants may become riddled with holes. Cabbages develop deformed heads which encourages soft rots.

How can you beat the DIAMONDBACK MOTH?

By Nashone Mukabane

Ingredients
- 1 large chicken, jointed
- 1 tablespoon thyme
- 1 ½ cups chopped and peeled tomatoes
- 1 tablespoon oregano
- chopped parsley
- salt
- black pepper

Method
1. Rinse and dry the chicken pieces.
2. Place the oil in a wide saucepan and, when hot, fry the chicken pieces on both sides until they become golden.
3. Take the chicken out, add and fry the onion and garlic until they are pale brown.
4. Add the oregano, thyme, tomato paste, tomatoes and water, pressing tomato with a wooden spoon to break them up.
5. Bring to the boil.
6. Season with salt and pepper, add the chicken pieces, cover and cook the chicken for 20 minutes and then add okra on top.
7. The okra should sit in but not be covered by the sauce.
8. Add a little water if needed.
9. Shake the pan and cook slowly for about 30 minutes without stirring, but rotating the saucepan occasionally.
10. Continue cooking until the water has evaporated and the sauce has reduced and thickened.
11. Sprinkle with parsley and serve.

Mwea Tomato Assila F1 Nursery Training

By Nashone Mukabane

Ingredients
- 1 ¼ cups water
- 4 tablespoons olive oil
- 1 tablespoon tomato paste
- 1 ½ cups chopped and peeled tomatoes
- 1 tablespoon thyme
- 1 large chicken, jointed

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Is there a way I can beat the DIAMONDBACK MOTH?

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- Separate seedbed and field to reduce danger of carrying over the pest and to ensure infestation-free planting material.
- Practice proper rotations. Having a break where no crucifers at all are grown will reduce the number of diamondback moth considerably.
- Intercropping: Planting rows of tomatoes alternately with rows of cabbage reduces damage but it does not prevent the attack completely. Trap crops such as mustard also reduce attacks; 15 rows of cabbage followed by mustard rows has been shown to be most effective.
- Frequent irrigation and rain reduce the mating of moths and wash off caterpillars and pupae from plant leaves.
- Prunings of healthy tomato plants can be scattered as a mulch in the cabbage field because of its deterrent effect.
- Adult moths are killed by the heat of the flame and fall into the bowl of water.
- Monitor twice a week. For monitoring pest populations light traps are useful. They show when populations are increasing, meaning preventive or control methods are needed.
- Encourage natural enemies by maintaining natural surroundings with plenty of breeding places, like trees and shrubs. Birds and bats feed on moths and lacewings, wasps, parasitic wasps, spiders and larvae of hoverflies eat the caterpillars of diamondback moths. The most effective natural predator is the parasitic wasp, Diadegma semiclausum, which feeds on the larvae of the Diamond Black moth.
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Meet our CLIENTS

Faith Agro Inputs - Uganda
A Gem in the ‘Pearl of Africa’

Faith Agro Inputs is located in Mbale, Uganda about 50 kilometres from Malaba Town. The store has branches in Bututa and Bushika and plans are underway for a bigger shop in Kampala, later this year.

The store was started in 2000 with the aim of providing farmers with quality seeds and agrochemicals within the locality. Initially, Faith Agro Inputs used to stock Seminis’ Marglobe and Onyx tomatoes as well as Red Creole onions; today, they boast a wider hybrid range from Monsanto, which includes Onion Jambar F1; Tomatoes Assila F1, Eden F1 and Anna F1; Cabbages Blue Dynasty F1 and Victoria F1 and Early Butternut Squash.

For the proprietor, Mr. Michael Waliaula, the sky has always been the limit and working with the Monsanto Vegetable Division is key to his success stories. “They have been with me in all my growth stages, giving me support through trainings and excellent customer follow-up,” he says. Mr. Waliaula rates Monsanto products as the best in the market. He speaks not only as a stockist but also as an experienced farmer. He grows Monsanto’s Jambar, Victoria and Blue Dynasty.

The success of Faith Agro Inputs is largely due to hard work and the dedication of its staff. Mr. Waliaula always strives to ensure that his employees are equipped with all the relevant skills needed to run the business.

Faith Agro Inputs hopes to further expand the business hoping that it will one day become a household name amongst Uganda’s farming community.

In mid-May this year, Faith Agro and Monsanto plan on holding field days on exposition sites in Kapchorwa and Mbale. The field days will be the first ever events of their kind in western Uganda. At least 1000 farmers are expected to attend; the events will showcase Monsanto’s hybrids.

EVENTS

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