Since tomatoes are perishable, proper after-harvest handling is very crucial for maintaining quality and increasing shelf life. In this issue, we will explain to farmers how to handle their tomatoes after harvest.

Cleaning
Tomatoes should be washed in clean water to sufficiently remove dust and foreign material, then wiped dry with a clean soft cloth. To eliminate the problems with disease build-up that normally occur, wash water should not be reused. When washing ensure the wash water is several degrees warmer than the pulp temperature of the tomatoes to avoid drawing water and disease organisms in the fruit.

Grading
During grading of fruits, damaged, rotten and cracked fruits should be removed. Only healthy, fruits should be selected. The grades are mostly based on the condition and the quality of the fruits and not specifically on their size. However, on the basis of the size, three grades are formed: small (less than 100 g), medium (100-255 g) and large (over 255 g). Retailers normally do size grading for the local market.

Storage: Temperature and Humidity Management
Immediate and thorough postharvest cooling to remove excessive field-heat aids greatly in maintaining quality and substantially lengthens the shelf-life of tomatoes. Cooling and washing can reduce the effects of dehydration and minimize decay. Though postharvest cooling is essential for maintaining quality, it will not improve the quality of a poor product.

Pink or light red tomatoes destined for distant markets should be cooled immediately after harvest to avoid becoming overripe before reaching the consumer. Placing containers of warm tomatoes in a refrigerated space, known as room cooling, is recommended. To aid room cooling and prevent the buildup of respiration heat, containers of tomatoes should be loosely stacked with space between the containers to allow for sufficient air circulation.

Continued on pg. 3...
One of Monsanto’s objectives is to improve farmers’ yields, hence our focus, in this edition, on how to handle vegetables after harvest. Besides diseases and pests, post-harvest handling is a critical factor affecting the quality of farm produce and one that requires the attention of every farmer.

The importance of proper handling of crops after harvest cannot be overstated; if a crop is to attain the economic benefit for which it is grown, it must be handled correctly so that the market is able to use the product. Once the product has been harvested, it should get to the end user in its most ideal condition.

Post-harvest activities are believed to have the ability to improve food supplies. In this issue, you will find out how to handle and transport tomatoes and also read on issues related to the curing of onions. This is in a bid to ensure your product reaches the market at its prime.

To increase yield and crop quality, we are continually innovating and working with farmers in the region. We are already receiving positive feedback on our hybrid short-day brown onion, Mercedes and also from growers across the region who planted our hybrid Watermelon Pata Negra, which is now reaching the end user. As you read through this issue you will also learn from the experiences of farmers who have adopted these varieties.

Innovation is the driver for increased production and better quality and in line with this, we introduce our new varieties. See Hybrid Cucumber Darina as you plan your next crop; it does well both in the greenhouse and outdoors, and is marketed locally.

As we move into the future, rest assured that Monsanto will continue working with farmers towards growing a good crop, with a higher return. To achieve this, we will continue working with the agricultural stockists across the regions through training and enabling knowledge transfer.

Thank you, to the farmers and dealers who have shared their information in this issue and to you the reader who looks to this as a source of information.

Beautiful, Uniform Bulbs, Mercedes F1

By Jared Onduso

Attributes
- Good bolting tolerance
- Very uniform bulbs
- High yield potential of 23 tonnes/acre
- Early Maturity of 90 days after transplanting
- Good scale retention

Benefits
- Long shelf life
- Easy to sell bulbs
- High returns
- Excellent grade out
- High yielding
- Low crop protection cost

Resistance
High resistance to pink rot (Phoma terretri) and Fusarium basal rot

Plant spacing
Depending on bulb sizes required, spacing can be 8cm x 10cm or 10cm x 15cm for export market use a density from 500,000 to 600,000 plants per hectare.
In early May 2011, Monsanto held a day’s training on greenhouse hybrid tomato Anna F1 and hybrid cucumber Darina F1 in Morogoro Tanzania. The event was targeted for regional managers and agronomists working for two NGO’s serving in the southern belt of the country, but also drew in a few farmers.

The group was eager to find out how growers could more than quadruple their yield per tomato plant by adopting Anna F1 in their greenhouses. Also exciting was the new cucumber Darina F1 which provides a perfect rotational crop for greenhouse tomatoes with yields exceeding 35 tonnes/acre, coupled with the additional advantage of its resistance to Cucumber Mosaic Virus, which is problematic in that locality. Cucumber

Darina F1 is pathenocarpic i.e. it produces without pollination giving seedless fruits. Cucumbers are widely consumed across Tanzania.

5,000 Tanzanian farmers spread out between Chalinze and Iringa will undergo training similar to this which will also include information on growing out-door hybrid tomatoes such as Monsanto’s Assila F1 and Eden F1 provided by these 2 NGOs. These farmer groups also get to experience these hybrids first hand by managing the 72 demo sites under their care.

...continued from pg 1

10°C. Longer storage may result in reduced retail shelf-life. Ripe tomatoes may be stored at lower temperatures than mature green tomatoes. Several days at 4.4°C may be acceptable, but longer storage at this temperature will result in loss of color, firmness, shelf life, and especially taste. Under extreme circumstances, firm yet well-ripened tomatoes may be stored for as long as three weeks at 0.6°C to 1.6°C. Pink to firm-red greenhouse grown tomatoes may be stored at temperatures of 10°C degrees to 12.7°C. Less mature tomatoes should be ripened at 21°C before being stored at 10°C to 12.8°C.

Packaging and Transportation
For local markets, the fruits are packed in wooden or plastic crates. The packing should be rigid enough to protect the fruit from being crushed. Plastic crates can be conveniently stacked one on the other as the contoured rim keeps the product safe and allows sufficient air circulation. For exports, the fruits are packed in cardboard telescopic boxes with capacities of not more than 15 kg. Size graded tomatoes are pattern packed in layers to make best use of the box.

Tomatoes are highly perishable in nature hence quick means of transportation is necessary.

Cool Chain:
Maintaining a cool chain is essential during the transport of export quality commodity all the way from the farm to the customer. This helps in maintaining the temperature inside the box at the same low level as is found in cold storage.

The various stages of the cool chain are:
1. Coldstore at the farm.
2. Refrigerated truck from farm to the airport
3. Coldstore at the airport.
4. Building up of the pallet in a coldstore at the airport.
5. Loading the aircrafts directly from the coldstore in a short time.
6. Cargo aircraft maintains coldstore temperature in hold.
7. Off loading direct into a coldstore in the receiving country.
8. Refrigerated truck to the customers.

Post Harvest Disease Management
Tomatoes are subject to a large number of postharvest diseases such as alternaria rot (Alternaria alternata), gray mold or botrytis (Botrytis cinerea), rhizopus rot (Rhizopus stolonifer), and sour rot (Geotrichum candidum). Although the skin of tomatoes offers some protection against infection, it is easily damaged by rough handling.

Pathogens can enter tomatoes through a variety of openings. Wounds such as punctures, cuts, abrasions, and cracks as well as stems and stem scars provide potential points of entry. The entry of pathogens into a surface injury is nearly a certainty. Therefore, tomatoes with surface injury should be separated promptly from sound fruit and discarded before decay can spread.
Sweet Pata Negra F1 Wins Over Kibwezi Farmers

By Daniel Musyoka

Never before have I tasted such a sweet watermelon, now I know why they call it ‘sweet melon’,” Mrs. Mutulu remarked as we cut up and ate the first ripened fruit of Watermelon Pata Negra F1 from her farm in the Kibwezi Kwa Kyai area.

On this field day, about 50 farmers were in attendance. They had come to hear more about this new watermelon variety from the Monsanto team and to see the mature crop, which was proudly showcased by Mrs. Mutulu. They all had a taste of the fruit and were equally impressed with its sweetness.

Beyond the deep green exterior of Pata Negra F1 lie other excellent qualities; it boosts is a crispy, brilliantly red and extremely sweet flesh. Pata Negra F1 is round melon, it produces uniformly sized fruits each weighing about 8kg.

As the day progressed many of the farmers could not hide their eagerness to get a hold of the seed behind the beautiful crop they had seen. They were relieved to discover that getting the seed would not be difficult as it was already available in the local agro-vet stores in this area.

“I will certainly buy this seed; a crop of Pata Negra F1 would give me very good returns. I can see it has exceptional fruits, these will fetch the best price in the market.”

As the field day came to an end one of the farmers exclaimed, “The future is here!” to which several farmers responded “kau ni kaw’o” (you are right).

Kibwezi is ideal for growing watermelon. It has a warm climate and enough water for irrigation; its proximity to Mombasa city, which is a major market for watermelon, also assures the farmers of a ready market.

My Pack of Success with Squash Ambassador F1

By Joseph Kariithi with Isaac Nzuka

I wish to share my experience with fellow farmers who are growing courgette like me. I have been planting ordinary courgette from several seed companies on my 1 acre piece of land in the Aberdare. In March this year, I bought a pack of Monsanto’s Squash Ambassador F1 from Kangari Farmers store which is in my neighbourhood, from this, I reaped a great harvest. I was able to get a good quality harvest of 4.8 tonnes from my land, compared to the usual 2 tonnes per acre.

Ambassador F1 has very attractive dark green fruits with a good texture. When you decide to grow courgette or baby marrows as they call it, grow Monsanto’s Squash Ambassador F1.”

About Squash Ambassador F1:
- It matures in 45 days, this variety can be harvested young, as baby marrows, or when they mature.
- Given best crop husbandry, Ambassador F1 can produce over 40 fruits per plant.
- It can be grown in wide agro-ecological zones from cool to warm climate.
- It has good disease tolerance qualities.
Who wouldn’t want to retire gracefully - to a good pension and an active life. Well, farming has the latter part covered, but who pays the farmers’ pension? With a profitable farming business, this prospect does not scare Mr. Joseph Murithi. In his late sixties, Joseph grows maize and other horticultural crops on his farm in Kinoru village on the highlands of Meru.

For the past 3 years Joseph has been growing maize for the green-maize market, each season he sets aside an acre where he plants Monsanto’s DK8053. This season however, he has set aside an additional half acre just to try out DKC90-89, a new entrant to Monsanto’s DeKalb stable.

As Joseph tends to the crop of DKC90-89 growing on his farm, he seems assured that he shall reap the fruits of his carefully planned farming; the weather is good and the plants seem healthy, everything is doing well. “All along I have been waiting to get a variety that matures fast and also fetches money in green-maize market. The arrival of DKC90-89 is a timely answer to this desire,” he says with a smile. “As I watch it grow on my farm it gives me hope; with two big equally sized cobs; I can’t help but see this as a pension plan is in the making.”

- DKC90-89 is a medium maturing variety whose production is between 38-42 bags (90 kilogram) per acre.
- It has high tolerance to many diseases that affect maize.
- It responds very well to any additional nutrients hence its production can be easily determined by the farmer.
- DKC90-89 can also be grown under irrigation in regions where the farmers’ main target is the green-maize market. Its grains are flint, which makes it popular for the green-maize market as it is deemed sweet for roasting.

DKC90-89 which does well in the mid-altitudes now joins other Monsanto varieties, DK8031 which is adapted for mid to low altitudes with a very strong drought tolerance and DKC80-53 for mid altitudes. These Dekalb varieties provide farmers in the mid-altitude ecologies with a wider choice.
Carrot Cake
By Nashone Mukabane

Ingredients
- 325g plain flour
- 225g sugar
- 1 teaspoon baking powder
- 1 teaspoon bicarbonate of soda
- 3/4 teaspoon salt
- 1 tablespoon ground cinnamon
- 225g dark brown sugar
- 4 medium eggs, at room temperature
- 300ml vegetable oil
- 450g carrots, rinsed, trimmed, peeled and grated on the largest holes of a box grater
- 85g macadamia or other nuts, coarsely chopped
- Two 23 x 5cm round cake tins, buttered and the bases lined with discs of buttered baking paper

Cream cheese frosting
- 340g cream cheese, slightly softened
- 85g unsalted butter, slightly softened
- 340g icing sugar, sifted
- 2 teaspoons vanilla extract

Method
1. Set a rack in the centre of the oven and preheat to 190°C/gas mark 5.
2. Combine the flour, granulated sugar, baking powder, bicarbonate of soda, salt, and cinnamon in a medium bowl and whisk to mix; set aside.
3. Place the brown sugar in a mixing bowl and use a large rubber spatula to work in the eggs, one at a time. Whisk in the oil.
4. Whisk in the dry ingredients about one third at a time. Use a large rubber spatula to fold in the carrots and nuts.
5. Divide the batter between the prepared tins. Bake until risen and firm, 40–45 minutes.
6. Let the cakes stand for 5 minutes in the tins, then unmould to racks, turn right side up and cool completely.

Cream cheese frosting
1. Beat the butter and cream cheese in the bowl until completely mixed.
2. Add the icing sugar one third at a time, beating until absorbed after each addition. After the last addition, the frosting might look dry.
3. Beat in the vanilla until the mixture is no longer dry looking. Continue beating until its smooth and light.
Quality is the most important factor when producing a marketable product. For maximum quality, onions must be properly cured. When excessive rains and unfavorable drying conditions occur in the field, proper curing will be required so that that onions have the longest shelf-life.

Harvesting
Choose a warm, dry day to lift your crops. Onion should be harvested at optimum maturity. Maturity is best determined by pinching the neck of the growing onion. For immature onions necks are stiff, whereas mature onions have soft and limber necks. When the necks are so weak that they cannot support the leaf tops, the onions are over-mature.

However, simply observing the percentage of tops that have fallen over is not a sure indication of maturity; the tops can have been knocked over by strong winds or rain or from lack of moisture.

The Curing Process
Good curing is essential for long-term storage of onions. Curing involves exposing the onions to mild temperatures in a dry, well-ventilated area.

Onions are prone to sprouting if the storage conditions are wrong, resulting in seed-heads at the top of the bulb stem and softening of the bulb. The first step in avoiding this is to ensure that they are thoroughly dried before you put them away.

Curing of onion bulbs serves several functions:
- First, it dries the outer two-four scales providing mechanical protection and giving an attractive appearance.
- It also dries those roots remaining attached to the bulb following undercutting and the neck left attached to the crown following topping, deterring disease infection.
- Lastly, curing encourages dehydation and sealing of wounds that may have occurred during bulb growth or mechanical damage.

Onion bulbs have a high proportion of water (approximately 90 percent) and drying out of the bulbs must be avoided. Moisture is removed from the skin, roots and stem of onion bulbs by exposing them to dry air.

- To begin curing, spread onions on a wire rack in a well-ventilated and shaded area.
- Make sure they don’t get rained on. This can be done by putting a covering on top of the onions.

When dry, the roots should shatter or break off easily when touched. The stem area should shrink in size and be dried to the surface of the bulb. It should not slide back and forth when squeezed between the thumb and forefinger. Curing should take about two to three weeks. Once the onion has cured properly, it becomes a package sealed by its own skin. This will protect it during shipment.

After curing, sort and inspect onions immediately before shipping or storing. If left unattended for more than one week, inspect them again. Remove diseased onions as these are likely to infect other onions during shipping or storage. Fresh market onions should be in the hands of the consumer within four weeks of harvest.

The storage method chosen is dictated by the market window being targeted. Onions for the fresh market window may be kept in cold storage; this should be done within one week of being undercut, any delay encourages disease growth.

Handling and Storage
- During and after harvest, every effort should be made to prevent excessive exposure to the sun as this blisters the onions.
- After onions have field-dried for 3 to 5 days under sunny dry conditions, the roots and tops of the onions should be trimmed. Trim tops to approximately 1.5-2 inches above the bulb and roots to about 1 inch. NOTE: Cutting near the neck of the onion increases the likelihood of disease infection. During clipping, care should be taken to prevent injury to the bulbs with shears.

Always handle onions carefully to avoid damage, especially when loading them onto the hard surfaces. Avoid walking or standing on bags of onions. Two types of damage can occur during the handling of onions.
- Surface (external) injuries made in the field by cuts or punctures.
- Bruising (internal) injuries made by impact shocks or vibration damage in the field or at the packing shed.

Surface injuries are obvious, but bruising is more subtle, often not showing up until onions leave the shed.

Storage may either be in net bags, crates, in pallet boxes that hold about a half ton of loose onions, or in bulk bins. When stored in bins or boxes, there should be at least 6 percent vent space. Bags of onions are frequently stored on pallets and should be stacked to allow proper air circulation.

The closer to 0° Celsius, the longer the onions will keep; however, they should not be exposed to freezing temperatures for long periods of time.
Lessos Veterinary Supplies Ltd. is located on Kenyatta Street in the Heart of Eldoret, a busy agricultural town. Lessos Vet, as it's popularly known, opened its doors in 1993 as an animal-health products distributor.

Over time the business has grown; from its original store, Lessos Vet now has another branch in Eldoret, also on the Kenyatta Street, and one on Nakuru’s Kenyatta Avenue. The business has also expanded its product offerings; they now stock a wide range of agricultural inputs that which serious farmer might need; this includes hybrid seed.

On the vegetable seed front, they started off selling the Royal Sluis seed brand which has since changed to Seminis – now a prominent brand of the Monsanto Vegetable Division. Monsanto’s products on their shelf include Anna F1, Butternut, Nantes, Eden F1, Victoria F1, Jambar F1 and Blue Dynasty F1.

Lessos Veterinary Supplies Directors, Dr. & Mrs. Mwangi and their entire team have great faith in Monsanto’s products and are grateful for the support that Monsanto staff give to their customers, including the many farm visits they make. “Our hope is that Monsanto continues providing our customers with their superior range of products, as this is what helps grow our business,” says Mrs. Mwangi. “We are happy to partner with Monsanto, the products they provide never disappoint; they keep farmers coming in for more and more,” she adds.

Do you know our new varieties?

1. It’s a dark green, sweet, high-yielding hybrid Watermelon
2. This hybrid cucumber is great for both greenhouse and outdoor planting
3. It’s a variegated, sweet hybrid watermelon

For answers, go to page 5

Monsanto’s Nathan Kaskei with Lessos Vet Supplies personnel Charity and Margaret Mumbi

EVENTS

<table>
<thead>
<tr>
<th>JULY</th>
<th>AUGUST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nakuru ASK Show</td>
<td>Nane Nane Show</td>
</tr>
<tr>
<td>Field Day</td>
<td>Mombasa ASK Show</td>
</tr>
<tr>
<td>Farmers’ Training</td>
<td>Morogoro - Tanzania</td>
</tr>
<tr>
<td>Wambugu ATC</td>
<td>Mombasa</td>
</tr>
<tr>
<td>Uganda</td>
<td></td>
</tr>
<tr>
<td>Waruhiu</td>
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</tr>
</tbody>
</table>