

## Dutch team to promote hydroponics in Kenya



Selected Kenyan growers are to benefit from trials involving cutting edge Dutch technology that could make horticultural production in the country environmentally friendly, sustainable and less costly.

Initially, three to five farmers will be selected to participate in the trials that are expected to come to a close towards the end of 2011. Once they commence, the trials will

approximately cover between 1,000 and 5,000 square metres and are meant to convince Kenyan growers to adopt hydroponics.

The selected farmers will be required to devote about 1,000 square metres of land and to contribute new plant materials as well as purchase their own substrates and cultivation gutters. They will also be required to share such information as the length of stems, colour of flowers among other data with other participants and with the entire horticultural sector. The trials are supported by the Green Farming, an initiative of the Dutch government and Dutch companies operating in East Africa.

Announcing this, the Secretary of Greenfarming, Jelle Posthumus, told Horticultural News that his organization will hire a local adviser who will be visiting the relevant farms twice a week to check the status of the trials. "It is on the basis of this data that we will make (any) adjustments," he said.

The announcement was made during a one-day workshop staged to promote technological solutions that could rid horticultural farms of diseases, ensure economical use of fertilisers and water and save on chemical use. It is believed that this would make it easier for Kenyan growers to satisfy requirements made by third party certification schemes besides promoting commercial as well as environmental benefits.

During the workshop, GreenFarming personnel introduced participants to a number of substrates including a rockwool product, Grodan, that is used in the production of rose, tomatoes, cucubers and sweetpepper in many parts of the world. Extracted from basalt rock, stone wool is preferred because it requires less use of water and chemicals and contains no traces of heavy metals. If used to raise roses, the substrate is said to ensure higher quality and better prices per stem. Green Farming experts say growers using stone wool can raise 312 stems from a metre of land which is over and above the 250 stems per metre that can be harvested from ordinary soil. They say farmers using stonewool can therefore generate profits of up to 46.80 Euros per square metre as compared to 37.50 Euros generated from stems grown in ordinary soil. Further, stonewool allows for better control of oxygen, pH and temperature. It is preferred because as a sterile material, farmers using it do not need to disinfect the ground. This saves on both chemicals and labour.

### **Jittu using stone wool**

Although East African growers are yet to start using stonewool, an Ethiopian grower, Jittu Horticulture PLC, has been experimenting it on some 2,500 square metre field with advice from Dutch experts. Started in 2006, Jittu is

reputed to be one of the largest vegetable growers in Ethiopia producing 46 different types of products mainly for export to the United Arab Emirates and Saudi Arabia. The company applies stonewool not only to ensure efficient use of fertilisers and water but also to avoid the nagging problem of nematodes without resulting to disinfecting the ground with either streams or pesticides. Jittu is so upbeat about the substrate that it is said to have planned to cease using soil as a growing media altogether.

Other substrates introduced during the workshop were lava stone (or pumice) and different qualities of coco peat.

The trials are expected to be part of an ongoing initiative in which Dutch suppliers of horticultural technology and advisors have been marketing what they term "appropriate solutions" for horticultural production under local conditions. Included here is research and technical solutions on how growers can use water and fertilizers as efficiently as possible, protect their plants without resulting to chemicals and optimize climate control which helps raise yields for relevant growers.

Re-use of water while at the same time ensuring that the water retains its quality is a technical solution that 'water-stressed' growing areas in East Africa might find supremely useful. Here, reverse osmosis is one of the technical solutions of offer. It entails feeding water into a special installation using membranes which then enables the removal of bacteria, mould or viruses consequently leaving the water as clean as rainwater. In addition, cleaning water by reverse osmosis makes it possible to apply precise dosages of fertilizer which thus saving growers lots of cash.

### **Heat them in the morning**

Use of solar energy for heating greenhouses in the mornings is a technique used to keep diseases at bay while generating higher yields. And because solar is a clean energy source, growers can eradicate the emissions of greenhouse gases and thereby contribute to efforts aimed at stopping global warming. Here, the secret is to apply dry heat in the early morning which prevents the formation of dew on plants. It involves heating water-bearing, black-looking tubes during the day and storing the water in a tank at a temperature of 50 degrees centigrade. The water is then pumped the following morning into the greenhouses to heat them. On its turn, the heated air dries the plants quickly and thereby avoids the formation of moulds. At the same time, having higher temperatures that early in the day ensures rapid growth of the relevant plants.

Bilashaka Flowers is one company that utilises this technology to avoid the risk associated with fungi infestation. It was developed in 2007 by rose growers, Cor, Joost and Judith Zuurbier of Zuurbier & Co. together with engineers from Frans van Zaal Totaal Techniek. Today, their company has placed solar panels to heat the Naivasha farm's 19 hectares of greenhouses increasing yields by 20 percent.

Probably the single most attractive techniques on offer is the integrated pest management (IPM). This is increasingly becoming attractive because the potency of many pesticides has been on a decline as the pests developed resistance. At the same time, the consumers of horticultural products are increasingly becoming averse to products raised using chemicals. It is with this in mind that a public-private initiative bringing together Ethiopian and Dutch researchers has been experimenting on beneficial predators supplied by Koppert BV and Wageningen University of the Netherlands. The technology hinges on getting adequate knowledge of the infestation levels of relevant diseases in particular greenhouse and on training and deploying scouts to recognize, name and quantify the numbers of insects, moulds and diseases in the relevant fields. One farm that has experimented on this technique was the ET Highlands of Ethiopia that is said to have realised such good harvests in 2007 that it decided to switch to IPM in all its 23 greenhouses.

### **Controlling useful organisms**

Green Farming is also keen to introduce technologies that can enable growers to get a grip on the hazards that can result in uncontrolled activities of useful organisms in the root zones of plants. Useful organisms include fungi, nematodes, bacteria and protozoa. Here, the secret is to step in at the right time and with the right

knowledge and technique because each of these organisms could endanger the well-being of plants if not well managed. For instance, fertilizers are able to stimulate the growth of bacteria. But if no controls are put in place, this can result in nutrient flushes. Further, the choice of substrates is crucial because those that are bacteria-infested tend to be susceptible to diseases. On their part, fungi and protozoa enable the attainment of nutrient balance and suppression of diseases. This knowledge is crucial if growers are to benefit from the services of beneficial organisms while avoiding what might go wrong if controls are not put in place.

To boost the usefulness of useful organisms, Green Farming has come up with products that can enhance their management. Among this includes Trianum which contains protective fungus and thus allows the establishment of fungus in the root system of plants. On its part, ProTerrum contains liquid plant extracts and is associated with strengthening plants' metabolism while ProSatus -a microorganism extract- increases the diversity and activity of microorganisms.

Postponing the inevitable The Green Farming trials come at a time when growers are said to have lacked enthusiasm for the use of hydroponics in raising various horticultural products. According to Chris Mukindia of African Hydroponics Ltd, growers have been complaining that the sheer costs involved in setting up the system are too high. "At the same time, farmers kept saying hydroponics systems were not doing as well as soils." But Mr Mukindia says that non-performance can be attributed to a host of other factors and not necessarily on the switch to hydroponics. On their part, the Dutch specialists urge the industry not to give up yet. "Getting out of the soil and switching to hydroponical systems brings money instead of costing money." They urge farmers to capitalise on the technology if they are to avoid soil borne diseases, save on water, fertilizers and chemicals and ensure higher yields and better quality products.

They also believe that the switch from soil to other substrates needs to be done now rather than later in order to save the environment upon which the sector is based. "By postponing, we will be postponing the inevitable."  
By *Gatu Mbaria*

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