ZERAIM GEDERA
The Seed Company

SEASONS & TASTES

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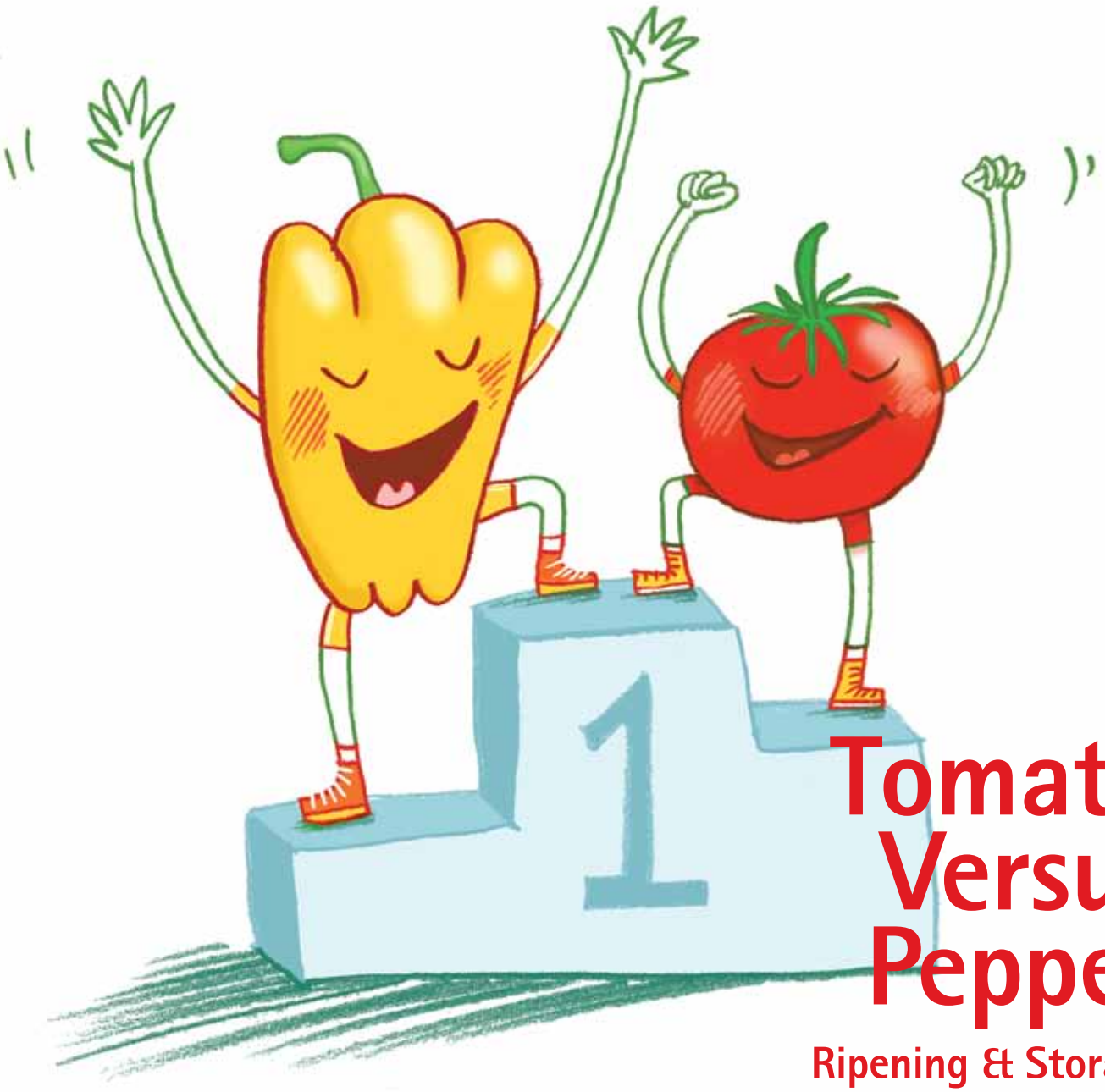

Tomato Versus Pepper

Ripening & Storage

The Popularity of Cluster Tomatoes Continues to Grow

The Advantage at Advanced Processing

19
Seasons & Taste

Content /

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From the editor's desk /

Dear Readers,

Seasons and Tastes was created to provide you with information and tools to help you in your daily work. That's why we're constantly thinking about how to make it interesting and useful to you.

In my brief experience in the world of agriculture, I have noticed its dynamic nature, which requires constantly keeping a finger on the pulse: being alert to changes in weather and their impact on crops, learning how to deal with various viruses and diseases before it's too late, and staying up to date on innovations and news. After all, natural and environmental hazards will always be with us; the trick is to learn the best way to contend with them. In this issue, we focus on solutions to challenges that you encounter on a routine basis. For example, you'll find an article on the Clavibacter Michiganensis Bacterium and ways of reducing or prevent the damage, along with a story about TYLCV and the resistant **Parvati** variety of tomatoes. In addition, you will find an article on advanced seed potential processes and a comparison of tomatoes and peppers with respect to storage and maturation.

I hope you enjoy this issue. As usual, I'd be happy to hear your opinions and comments so that we can continue providing material that is interesting, important, and useful to you.

Yours,
Orit Naim Pery
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... the world of agriculture... requires constantly keeping a finger on the pulse: being alert to changes in weather and their impact on crops, learning how to deal with various viruses and diseases before it's too late, and staying up to date on innovations and news. After all, natural and environmental hazards will always be with us; the trick is to learn the best way to contend with them.


The Popularity of Cluster Tomatoes Continues to Grow

Lior Kushnir (left), Product Manager, Tomatoes, lior.kushnir@zeraim.com
Joel Siegal, Marketing and Sales, Arava, Ramat HaNegev and Sodom Plain, joel.siegal@zeraim.com

In most European countries, cluster tomatoes are considered to be classier and of higher quality than single tomatoes. A fresh green vine that holds a number of ripe red tomatoes definitely catches the eye. Many growers have grasped the potential of these attractive fruits. For example, there is great demand for excellent cluster tomatoes in the colder European countries, and countries like Morocco and Spain export huge quantities of them during the winter months.

In recent years, as new markets have opened up in Eastern Europe, the demand for cluster tomatoes has increased, leading to an expansion of the cultivated area devoted to this type of tomato. Recently, cluster tomatoes have become popular in North America as well. It is not yet clear what market share they will win at the expense of the beefsteak tomato, but there has definitely been a slow but steady increase in their consumption. Cluster tomatoes are sold both as single tomatoes and on the vine in America, but for the most part they are sold with vine still attached. Although They have smaller fruits than beefsteak tomatoes, the fruits are of uniform size, and the green calix remains attached to the fruit after the harvest.

In the Mediterranean region, the leading variety of cluster tomatoes in recent years is *Syngenta*'s **Ikram**. It can be found primarily in Italy, Turkey, and Israel. Most growers like this variety for its firmness and long shelf life, which makes it suitable both for export and for local markets.

CLUSTER TOMATO VARIETIES IN ISRAEL

Until a few years ago, cluster tomatoes were grown in Israel exclusively for export during the winter months (December, to February). About six years ago, , some growers began to sell export surplus on the local market and stimulated a great demand for this type of fruit. Today cluster tomatoes make up approximately 15 percent of the Israeli tomato market.

Ikram

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- Resistance: V ,Fol 1, Fol2, ToMV

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- Very Good firmness
- Long shelf life
- Strong red color
- Very nice cluster arrangement with uniform fruits
- High setting under low temperatures
- suitable for autumn plantings

Sophie

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- Resistance: V ,Fol 1, Fol2, ToMV, M(IR)

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- Very good continuousness – suitable for long cycle
- Very nice cluster arrangement with 6-8 uniform fruits
- 120-140 gr per fruit, from the first cluster
- Very firm fruit with strong red color and long shelf life
- strong green vine with long shelf life

In Israel, too, cluster tomatoes are now considered to be classier and of higher quality than regular tomatoes and usually fetch a higher price than single tomatoes. The labor savings during the harvest adds to their value and adds to growers' incentive to plant cluster tomatoes.

Today, In Israel, cluster tomatoes are grown both for export and for the local market; in recent years the focus has been primarily on organic tomatoes for export. Around 750 Hectare of organic cluster tomatoes are currently being planted for export in the winter months, about two-thirds of them in the Arava. The fruits are exported both in bulk and in flow packs. Most of the exports are destined for the Netherlands, England, and Germany, though recently Russia, too, has joined the export market.

Roma Cluster – The Next Generation Tomato Is Already Here

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WHAT ARE THE PARAMETERS OF A TOP-QUALITY CLUSTER TOMATO?

A superior cluster tomato must have a uniform appearance, both in terms of the size and shape of the fruit and of ripeness. Given that most of the crop is now intended for export, the shelf life of the fruits is of critical importance. The arrangement of the fruit on the clusters must be uniform and the vine itself needs to be strong and green and have a long shelf life. This is so that even after the produce is shipped the cluster will retain an appetizing appearance.

In the Mediterranean region, the leading variety of cluster tomatoes in recent years is *Syngenta*'s **Ikram**. It can be found primarily in Italy, Turkey, and Israel. Most growers like this variety for its firmness and long shelf life, which makes it suitable both for export and for local markets.

In addition, they have to display the basic parameters of excellent tomato varieties, such as vigorous growth, suitability to environmental conditions, high yield, and resistance to disease.

Zeraim Gedera offers two leading varieties of cluster tomatoes, the **Sophie** and the **Ikram**. Both have a strong, neat vines and uniform fruit, and are firm with a long shelf life. In addition, these varieties are suitable both for local marketing and for export, thanks to their large fruits and the long shelf life of the vines.

LOOKING TO THE FUTURE

In view of the great demand in European countries for organic cluster tomatoes, *Zeraim Gedera* is currently developing cluster varieties with expanded resistance, including against the TYLCV and other leaf diseases. The new varieties will also feature higher yields and longer duration, while maintaining the quality of the fruit and the vine.

At *Zeraim Gedera* we don't rest on our laurels. Just when the Kilates is beginning to make its mark as one of the more successful tomatoes in the produce section, our breeders are already hard at work developing the next generation of elongated tomato - the Roma Cluster.

Following the consumer success of the *Kilates* variety, and in light of the tremendous demand for it from both the supermarket chains and the growers, at *Zeraim Gedera* we realized that this is an excellent time to think about the next step forward. We have begun working on an elongated tomato variety suitable for harvest in clusters.

One thing that inspired us to breed an elongated tomato that can be picked in clusters is the need to expand our basket of products and increase the variety of choices available to consumers. Here as well, the principle that guided us was that everyone throughout the fresh produce chain, growers and marketers alike, is our customer. So we have to supply a variety that will yield maximum profit to growers (including in the summertime), high-quality fruit with a long shelf life and low wastage for the supermarket chains, and of course one that is an excellent summer tomato suitable for a variety of uses in the kitchen and in salads.

This is why we are developing the Roma Cluster with careful attention to the following parameters:

- **Separating the fruit from the branch /** For tomatoes that are picked in clusters, the attachment between the fruit and the cluster fishbone is very important. In the Roma Clusters:
  There is a strong attachment between the fruit and the kalics

- There is a strong attachment between the kalics and the cluster fishbone which allows the cluster to maintain its shape over time.
  The cluster retains its freshness / The plant has a strong green fishbone that remains green and fresh for a long time after the harvest, thereby saving the supermarket chains on wastage.

- **The structure of the cluster /** Each cluster has a neat arrangement of 6–8 fruits. The clusters do not usually need to be reshaped. The shape of the fruit. The shape of the Roma Clusters tomato is very important, for two main reasons:
  The cluster has a uniquely attractive appearance. Because of the shape and genetic elongated tomatoes contain less liquid and are particularly suited for use in sandwiches as well as in cooking.

The Roma Clusters variety is currently being tested by several growers both for export and for the local market, with the idea that already in the coming season it will be grown in large quantities. From our discussions with Israeli supermarket chains we know that there is local demand for elongated tomatoes in clusters. In addition, this is a popular market segment in the export sector as well.

Additional Facts about the Roma Clusters Tomato:

- The clusters have fruits of a uniform size
- The variety has a strong fishbone that remains green and fresh over time
- There is a gradual and attractive change in color along the length of the cluster
- The fruit does not have green shoulders
- The fruits of this variety are slightly smaller than those of the single *Kilates*
- The average weight of a cluster ranges from 500 to 700 grams
- The variety sets well in both hot and cold weather

It is important to note that just as the *Zeraim Gedera* team provides agro-technical support to Kilates growers, we will also support growers of the Roma Clusters segment with regular agro-technical support and detailed growing guidelines. We ascribe great importance to providing growers with support so they can achieve optimal results and realize the great genetic potential of this tomato variety.

Flavoursome Watermelons and the Fresh-Cut Market

Jorge A. Benitez, Product Development & Sales Manager, Central Mexico, alberto.benitez@zeraim.com

The start of the Mexican watermelon-growing season is here once again, and the crop is being planted in the country's most important farming regions: the Jalisco coast, Colima and Nayarit, and the State of Sonora. Like every other year, a good season is expected, both in terms of prices for the export market and growing conditions, which are forecast to be excellent. Although growing conditions are different every year, farmers in all regions are hoping for good general conditions.

As always, the variety is selected, and each year farmers are deciding to graft more and more plants both in the first and second growing cycle. Some farmers use more grafts than others depending on how confident they are feeling in their land. The export market is very demanding, and both personal and normal watermelons need to be of excellent quality both inside and out. There is a great deal of competition with the US market, especially Texas and Florida, as these states are using more and more sophisticated farming techniques with more chemical pest control methods than biological ones, like all first world farming systems. However, despite all this, Mexico strives to have the best production system, taking advantage of its excellent climate, soil, top-quality water and locations, perfect for growing personal watermelons as well as triploids like Crimson and Diploids. And although we have adopted a lot of our US neighbours' habits, we still haven't managed to change Mexico's taste when it comes to watermelons – Mexican families still prefer seeded watermelons to seedless ones or triploids. Over the last few decades, some supermarkets, like Wal-Mart and Costco, have started selling pre-processed fruit, focusing on the fresh-cut market.

Furthermore, over the last 10 years, some American companies have been selling their fresh and/or fresh-cut products on eye-catching, luxury shelves in supermarkets and private stores. This means that their products, which are also often sold with recipes, are more appealing in terms of both quality and price, competing with fast food, cold meats, fried food and junk food. Some shops in Mexico are already selling products from the US, not just watermelons, but also pineapples, melons, papayas, mangos and citrus fruits. Some products have been combined with our own chilli powder in an attempt to make our day-to-day eating habits a little healthier, trying to change the Mexican diet which is very often high in fat and unhealthy for children and adults alike. According to the latest data, Mexico is one of the countries in the world with the highest levels of obesity.

As always, the variety is selected, and each year farmers are deciding to graft more and more plants both in the first and second growing cycle. Some farmers use more grafts than others depending on how confident they are feeling in their land. The export market is very demanding, and both personal and normal watermelons need to be of excellent quality both inside and out.

So, it is important for our company, for our improvers and developers who see new products on the market each year, to try to find solutions for farmers. By this I mean finding a variety with the highest possible potential. In other words, a variety which is adaptable, gives high yields and produces excellent fruit in terms of flavour, texture and firmness for a long shelf life and to remain fresh while it is transported to the US border, and which is resistant to disease in the area where it is produced. At the end of the day, American consumers or buyers are looking for very flavoursome fruit, so we need to provide fantastic-tasting, crisp, whole or sliced watermelons so that they can enjoy the very best of these delicious cucurbits.

Zeraim Watermelons at Syngenta's Woodland (California) Station

Meir Peretz, Cucurbits Product Business Manager, meir.peretz@zeraim.com

During the month of August, *Syngenta* Seeds in the United States opens its Woodland station in California to customer visits. This is a great opportunity to showcase all of *Syngenta*'s breeding programs to customers, co-workers, and management.

Woodland station has the following breeding programs: watermelons, melons, squash, open field peppers, and tomatoes.
The *Zeraim Gedera* North American watermelon team met at Woodland station during the week of August 9–13 to review the watermelon breeding program. We had the opportunity

Left to right: Woody, Robert, and Jose Luis

to review the following:

- Breeding plots
- New advanced hybrids
- ZG Commercial varieties

We spent the last few days visiting the *Zeraim Gedera* watermelon trials at the *Syngenta* station. There were three marketing trials planted at 10-day intervals. The trials included all the commercial varieties as well as some of our advanced experimental ones. By having three planting dates, we were able to view and evaluate the products continuously.
We also spent a day evaluating a breeder trial with North American watermelon breeder James Brusca. This trial included breeder-level material, and there were some promising products that will be developed further for the 2011 season.

VARIETY HIGHLIGHTS

Sugar Red / A large watermelon (7–9 kg) with deep red, firm, crispy flesh and a high brix of 13.

ZERAIM GEDERA INTRODUCES NEW HYBRIDS TO THE MARKET

Zeraim Gedera is introducing some new varieties to the market. One key feature of these new hybrids is their size: size 4 in most cases because of their measurements or arrangement in the bins.

At the end of the day, American consumers or buyers are looking for very flavoursome fruit, so we need to provide fantastic-tasting, crisp, whole or sliced watermelons so that they can enjoy the very best of these delicious cucurbits.

Sugared have good firmness, flesh colour, and resistance to hollow heart.

Sugar Coat is an excellent variety. Its flesh is a different colour from **Sugared** and the plant grows more vigorously. It has firm flesh and high Brix, as well as a high resistance to hollow heart. Fruit size is generally 4, and the outer skin is a great colour.

All the above watermelons can use pumpkin plants as rootstocks, a very common practice in the region.
Super Shintoza is a hybrid pumpkin rootstock which is highly compatible with any watermelon and/or melon hybrid. It therefore helps to reduce losses after grafting. It also improves plant vigour, leading to excellent crop growth, and offers added resistance to fusarium.

Our newest commercial variety, it has a wonderful flavor compared to other large watermelons and has had great success in Mexico.

Sugar Coat / A larger watermelon than Sugar Heart, averaging 8–10 kg, with red flesh, good taste, and a brix of 12. The variety matures later, allowing growers to manage the harvest more efficiently.
In addition, were selected two more semi commercials varieties – the first , a new personal-size (3 kg) watermelon with yellow flesh. It has excellent flavor and the texture of a pineapple—crunchy and juicy at the same time. The second , another new personal watermelon with red flesh - This variety complements our Sugar Bite and Summer Bite watermelons. It averages 3–3.5 kg, has firm flesh and high brix, matures early, and is well adapted to early spring plantings.

Our customers visited our plots and got excited about our new varieties. In addition, many *Syngenta* people came from different regions around the world. The customers who visited the station included the following:

- **Del Monte Fresh:** David Levy, Ismar Cabrera, and Mynor Moran of the Guatemala operations
- **KW Seeds:** Paul Chambers
- **TS&L Seeds:** Ken Calhoun
- **Champion Seeds:** their entire team from the US and Mexico
- **Ahern Seeds:** Kevin Ahern, CEO
- **Gowan Seeds:** Terence Wojewoda and Tom Boschee

I also had the opportunity to host a group of watermelon growers from Brazil. We traveled three hours south of the station to visit some watermelon operations.

Our first stop was *Dulcinea Farms*, a *Syngenta* produce marketing company. DF markets the Pure Heart watermelon and the Tuscan melon. We were given a tour of the field harvest operations as well as a tour of the packing facility by operations manager John Meiser and harvest manager Arturo Sanchez.

We also visited *Papa's & Sons*, a commercial seedless watermelon grower, and we saw a modern watermelon-packing shed. The fruits had been sized and sorted with their new automatic watermelon sizer. The melons were packed in large bins and cartons (4 to 6 fruits per carton), depending on the buyer.

This tour was great Public Relations for *Syngenta* and *Zeraim Gedera*, demonstrating how we join forces in the marketplace. The Brazilian visitors were very impressed with all the aspects of watermelon production, research, and marketing that we showed them.

Left to right: Woody Speir (yellow shirt), Robert Arriaga (white shirt), James Brusca (holding books), Xinping Zhang (blue shirt), Jose Luis Gonzales (red shirt)

Left to right: Xinping Zhang, James Brusca, and Woody

We would like to thank all our customers who took the time to visit us at the Woodland *Syngenta* station. It was a great opportunity to interact on a more personal and professional level.

Zeraim Gedera Peppers – Measuring Light Gives Higher Yields

Zvi Howard Wener, Chief Agronomist, zvi_howard.wener@zeraim.com

Measuring Light:
Light is one of the most important factors to consider when growing *Zeraim Gedera* peppers. In agriculture it has already been accepted that light measurements are taken with quantum sensors that measure Photosynthetic Photon Flux (PPF) in micro-Einsteins/m^2/sec. This means that quantum meters are measuring photons and not wavelengths of light. *Zeraim Gedera* Peppers need between 800-1200 micro-einsteins for optimal growth and yield.

Photons & Photosynthesis:
A photon is a "packet" of light. The chlorophyll in the plant absorbs light mainly from the blue and red areas of visible light. However, the chlorophyll itself cannot distinguish between blue and red light. All this light needed for photosynthesis is absorbed by the chlorophyll as "packets" or photons of light. The photon flux meters or quantum meters simulate the chlorophyll and measure the same packets/photons of light needed for photosynthesis. Therefore, photons of light that come from the blue-violet and red ends of the spectrum have the same effect on photosynthesis. What matters is how many photons are available to the plant.

Light Saturation Point:
The Light Saturation Point is the point at which a further increase in light intensity does not increase the rate of photosynthesis. Generally speaking, *Zeraim Gedera*'s pepper varieties that are bred under conditions of high light will have high light saturations points and are better able to utilize high available sunlight than varieties bred in more northern climates. Having a high light saturation point is a big advantage because the pepper plants can take advantage of the high available sunlight in areas such as Israel, Mexico and Spain.

Summer Measurements for Photosynthesis:
Zeraim peppers need between 800-1200me (micro-Einsteins) for optimum photosynthesis. Light above 1200 me will not result in additional photosynthesis. In the summer months air temperatures and available light levels are very high. The extra light may not mean extra photosynthesis but it does mean that there is extra heat. Therefore, extra shading is used in the summer when planting to keep the levels just below the optimal levels and this encourages vegetative growth and flower drop.

Daily Measurements in Early Fall:
As the fall season begins the days become shorter and the amount of light available for photosynthesis decreases. It is important to measure the light levels with a photon flux meter in order to know the quantity of light available in the peak hours of the day. For example, if there are only 800me at noon the how much will there be in the morning and then in the late afternoon? If there is 1200me at noon then the situation in the morning and late afternoon will be much better. In the fall the plants need more light and this need for more light increases as the season progresses into winter.

Growers Responsibilities:
The grower must learn how to adjust light levels for *Zeraim Gedera* pepper varieties in the greenhouses and nethouses so that each stage of the crop receives optimal radiation levels. This means extra shading in the summer to help the plant grow more vegetative and then cleaning the roofs in the fall to get that extra available light radiation. By January the plants are heavy with fruit and once again extra shading is often necessary to protect the fruit from sun scorch.

When the lite meters show that there are 1200me at noon (picture no. 1) then we know that in the morning and late afternoon there will also be light levels above 800me for a few hours.
However, if there are only 800me (picture no. 2) at noon then in the morning and late afternoon there will be less than 800me and therefore, less photosynthesis.

Zeraim peppers need between 800-1200me (micro-Einsteins) for optimum photosynthesis. Light above 1200 me will not result in additional photosynthesis.

Yield Fluctuations in Sweet Pepper

Interview with **Dr. Ep Heuvelink**

Dr. Heuvelink, a keynote speaker and teacher on greenhouse production, has been involved in the last decade in several projects about yield fluctuations in sweet peppers. As an expert on peppers he seeks to provide a concise review of the knowledge of the scientific principles underlying the biology and production of the pepper crop.

Q. Which are the main factors needed by peppers at the moment of cultivation and how these differ from the needs of other vegetables?

A. From a scientific point of view, the needs of a pepper plant are not very different from e.g. a cucumber or a tomato plant. However, cultivation techniques are quite different. Light is the primary factor for crop growth, also for pepper. Temperatures are ideally between 20 and 25oC and CO2 at 800 to 1000 ppm (in greenhouses). The water demand of a pepper crop depends a lot on its way of cultivation. In Israel or Spain under field conditions it may be as high as 300 litres of water per kg of fresh sweet peppers, in an improved unheated Spanish greenhouse this would be about 74 litres. In a Dutch heated glasshouse, with recirculation of drainwater typically about 23 litres of water is needed per kg of fresh sweet peppers.

"The irregular pattern in weekly fruit yield is much stronger in sweet pepper than in tomato or cucumber".

Q. When we talk about production, what is the "Flushing"?

A. Flushing is the irregular pattern in weekly fruit yield: weeks with a high yield alternate with weeks with low yield. This flushing is much stronger in sweet pepper than in tomato or cucumber. This flushing in yield is caused by flushing in fruit set. In principle, a few fruit set and start to grow: they become so dominant on the plant that most assimilates go to these growing fruits and new flowers and young fruit will abort. Only when these first fruits are almost full grown, new fruit can set. Looking at the plant, the flushing behaviour in fruit set is clear: nodes with almost ripe fruits are followed by empty nodes where the flowers have aborted and higher in the plant we see nodes with small fruits just started. Flushing is a serious problem for growers as it affects labor requirement, certainty of delivery and blossom-end-rot (fruit physiological disorder).

Q. How can the growers reduce yield fluctuations in sweet pepper?

A. There are several possibilities to reduce yield fluctuations. On the long run, I consider the use of seedless cultivars as the best solution (see project mentioned before). However, that is not yet reality. Fruit thinning can reduce flushing. For example, one could limit the number of new fruits to one per stem per week (about 7 or 8 fruits per m2 per week). When more fruits set these are removed. Of course this increases labor demand and hence costs. Alternatively, a shift in planting date may result in an alternating cycle compared to the standard planting date. One can also remove all flowers for some weeks from half of the plants to create alternating flushes at greenhouse level. All these solutions are possible, sometimes practised to some extend but not always very practical. Cultivars can differ in flushing behaviour. In general it seems that cultivars with large fruits show stronger flushing than cultivars with a smaller fruit size. In fact, often growers are partly responsible themselves for strong yield fluctuations. If they want fruit set, they reduce the temperature which stimulates fruit set. A few weeks later, they will increase the temperature to stimulate fruit growth. However, this rise in temperature also results in abortion of flowers and new young fruits.

"The irregular pattern in weekly fruit yield is much stronger in sweet pepper than in tomato or cucumber".

Q. Is there a method to predict weekly production of greenhouse bell pepper?

A. It depends on how far ahead you want your prediction. There are simple or more advanced models available for weekly yield prediction, based on fruit set information and climate data provided by the growers. This means a quite accurate yield prediction 4 to 5 weeks ahead. If you want a weekly yield prediction at planting for the whole production season, this can only be quite inaccurate. Main reason is the dependence on weather conditions of the flushing pattern (both fruit set and hence fruit number, but also fruit size).

Source: *Syngenta Peppers Today Newsletter 17 - October 2009*

Tomato Versus Pepper:

Zvi Howard Wener, Chief Agronomist, zvi_howard.wener@zeraim.com

Growers picking tomatoes for the market usually have to pick at the breaker or pink stage because the fruit continues to ripen after picking and this is what the buyers want. Red peppers on the other hand are harvested only when they are at least 70% red and then shipped off to the market. Why is this so?

Climacteric and Non-Climacteric Fruit:
Climacteric fruits refer to fruits that are able to produce the hormone ethylene, which is necessary for ripening even after the fruit has been picked. Tomatoes are a good example of climacteric fruit ripening. Other climacteric fruits include apples, apricots, avocados bananas, kiwis, mangoes, plums and many more. All these fruits continue to ripen and change color after they have been harvested. Climacteric fruits are therefore harvested as early as possible but only after reaching their physiological maturity.

Climacteric fruits refer to fruits that are able to produce the hormone ethylene, which is necessary for ripening even after the fruit has been picked. Tomatoes are a good example of climacteric fruit... therefore harvested as early as possible but only after reaching their physiological maturity.

In non-climacteric fruits only small changes in color take place after harvest. Usually full red color is only obtained while the fruit is attached to the plant. However, if peppers are picked a full red then they will have a shorter shelf life. Therefore, they are usually harvested after they are at least 70% red. The pepper fruit produces very little ethylene and responds poorly to ethylene in storage. To accelerate ripening or color change, expose the peppers to warm temperatures of 20-25°C with high humidity of 95% and then store at recommended temperatures for transport. Other examples of non-climacteric fruits are olives, orange, grapefruit, pineapple, pomegranate, strawberry, cherry and cucumber.

if peppers are picked a full red then they will have a shorter shelf life. Therefore, they are usually harvested after they are at least 70% red... To accelerate ripening or color change, expose the peppers to warm temperatures of 20-25°C with high humidity of 95% and then store at recommended temperatures for transport.

Other Post Harvest Facts & Comparisons:

Storage:

- Optimum storage temperatures for tomatoes picked at the mature green stage are 12.5-15°C. At the pink or light red stage it is 10-12.5°C and at the full red stage, 7-10°C. However, when fruit is shipped it is usually stored at 12-14°C with 90-95% R.H.
- The optimal shipping & storage temperature for peppers is 10° C with 90-95% R.H. When fruit is shipped long distances the temperature is between 8-10°C. Storing at 7.5°C and below further reduces water loss and shriveling and extends the shelf life to 3-5 weeks. However, chilling injury becomes a factor.

Chilling Injury:

- Chilling injury is cumulative and can prevent the fruit from reaching full ripening, color and flavor. There can be blotchy coloring, premature softening and surface pitting, browning of seeds and increased decay by molds.
- Tomatoes are chilling sensitive when stored

The Advantage at Advanced Processing

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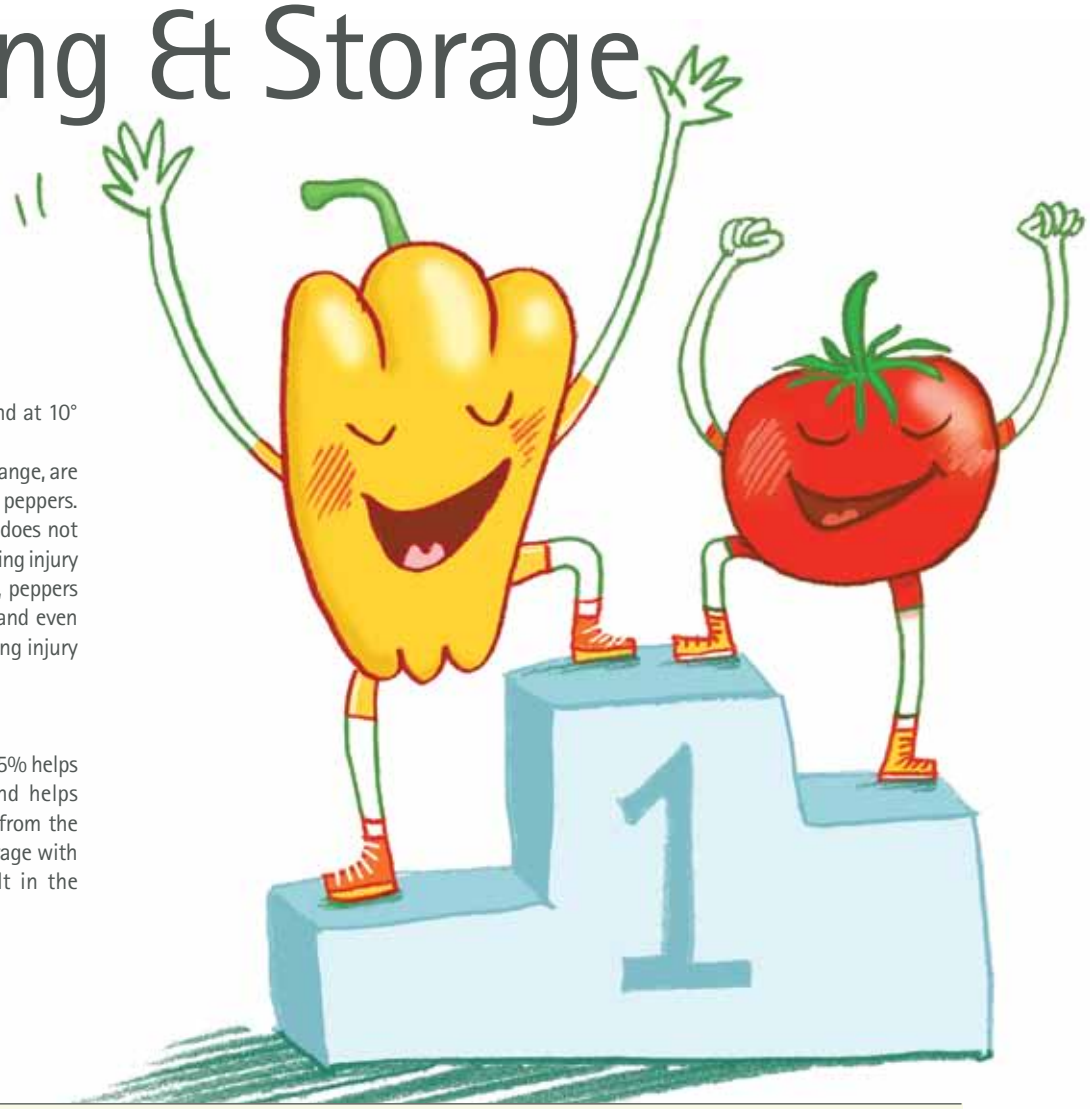
Uncertainty is a major characteristic of our age. All over the world, the news broadcasts keep surprising us, for better but also, alas, for worse. In a period like this, companies do their utmost to reduce risks. This is why seed priming, which guarantees a strong and uniform plant, has become the standard for quality seeds. Sagi Biton, film-coating manager; Lilach Kahan, priming; Dudu Suissa, upgrading; and Yonadav Breitman, the APU team manager, explain what is advanced processing and its advantages in a nutshell.

A lack of uniformity in germination is a no-no in the agricultural world, which demands full, rapid, and uniform germination. The development of seed technology in the last two decades had led, among other things, to improved performance of seed lots. One of the technologies at the forefront of development is "Priming."

What is "priming"?
Priming is a technique that stimulates germination artificially, with the goal of improving the uniformity and rate of germination in the nursery and creating the basis for a stronger plant. In this process, moisture is added in a controlled manner, in stringent laboratory conditions,

Ripening & Storage



at 5°C for longer than 6-8 days and at 10° C for 2 weeks.

- Colored peppers, red, yellow and orange, are less chilling sensitive than green peppers. When stored at 10°C pepper fruit does not have chilling injury but at 7.5°C chilling injury begins after 14 days. In the home, peppers can be stored at 5°C for 2 weeks and even though water loss is reduced, chilling injury can begin after this period.

Optimum Relative Humidity:

- An optimum relative humidity of 95% helps maximize postharvest quality and helps prevent desiccation or water loss from the fruit. However, long periods of storage with high relative humidity can result in the growth of molds.

stimulating the seed to pre-germinate. Then the process is interrupted at the critical stage, before the emergence of the radicle, after which the seeds are dried for replanting.

This process aims to improve the quality of the germinating seed in wider environmental conditions and improve the vitality of the germination and growth of the developing plant.

This process aims to improve the quality of the germinating seed in wider environmental conditions and improve the vitality of the germination and growth of the developing plant.

What are the advantages of "priming"?

1. Reduced sensitivity to stress conditions (light, humidity, temperature, etc.)
2. Rapid and uniform germination
3. Breaking seed dormancy
4. Improving germination in a broad temperature range

As a consequence of these advantages, germination time is reduced, so the seeds leave the nursery sooner.

Seed Upgrading

Upgrading is meant to guarantee maximum utilization of the seeds' potential, with regard to uniformity and quality of germination. There are only 6 upgrading systems in the world, The upgrading system significantly enhances the seeds' germination rate and makes it possible to upgrade good seeds into excellent ones. After the process, the seeds are ready for the next stage: Film Coating.

Film Coating

Film coating is a process in which a colored polymer is mixed with protective compounds to produce a uniform, smooth, and colored covering for the seeds, based on the customer's needs. Film-coating seeds have number of goals:

1. Commercial branding of the company's seeds with the known special shining green color for *Zeraim Gedera*
2. Easier identification of the seeds in the field (they are more visible)
3. Worker safety: the combination of the polymer with pesticides produces a stable compound on the seed and protects the respiratory tracts of nursery workers

Note that each of the processes described here requires great professionalism and skill. We are talking about intervening in biological processes, so any small mistake could damage the seeds. Therefore, the staff certification process is complicated and takes a long time, enabling us to provide our customers with the highest quality seeds possible.

Bacterial Canker of Tomato Symptoms and Control

Yoel Messika, Growing Optimization Technology Unit, yoel.messika@zeraim.com

BACKGROUND

Bacterial canker, caused by Clavibacter Michiganensis subsp. Michiganensis (CMM) is a serious disease on tomatoes around the world. Within the past years, the incidence of CMM has increased throughout North America, the Middle East, Europe and the Far East. The current management practices for other bacterial diseases of tomato have not been effective against CMM. For many growers, CMM is the most serious disease in tomato. Growers experience some loss due to plant infection, while a many growers lose entire plantings due to systemic infections. Infection on early tomato plantings cause significant loss of the crop and spread to subsequent plantings. CMM has become one of the most important diseases of tomatoes. Losses to CMM can vary from none (minimal foliar injury) to total (systemic infection), and are dependent on source of the infection, weather conditions, and cultural and disease management practices

For many growers, CMM is the most serious disease in tomato. Growers experience some loss due to plant infection, while a many growers lose entire plantings due to systemic infections. Infection on early tomato plantings cause significant loss of the crop and spread to subsequent plantings. CMM has become one of the most important diseases of tomatoes.

Necrotic patches on leaves

SYMPTOMS

Seedlings

CMM can infect plants in the nursery stage. Yong plant seedlings look symptomless despite they might be infected, symptoms only appearing as plants approach maturity, there can be tan to necrotic patches on the leaves and stems together with marginal necrosis. This can be followed by stunting, wilting and maybe even stem splitting, especially in grafted plants. However, since it can take some time for symptoms to appear they may not be visible in the seedling and transplanting stage and growers can receive infected seedlings unsuspectingly.

Wilting of the plant

Leaf and Plant

Under greenhouse conditions, in the very first symptom beginning white or yellow very small spots on the leaf, later this spots will be reversible wilting of leaves during hot weather Leaves may show white then brown necrotic interveinal areas. Wilting quickly becomes irreversible and the whole plant desiccates. In the field, the first symptom is desiccation of the edge of the leaflets mainly on lower leaves. The plant slowly desiccates, usually without showing wilting. At an advanced stage, small whitish pustules appear on leaf veins and petioles. Brown stripes may appear on stems and petioles. They may split to expose yellowish to reddish-brown cavities, giving a canker symptom. The stems show a light yellow or brown vascular discoloration later turning reddish brown, which is very prominent at the nodes. There can be light streaks on the external part of the stem which can later break open to form cankers. The disease can develop anywhere on the plant because it enters through wounds such as those created when removing leaves and shoots. Wilting quickly becomes irreversible and the whole plant dries up or desiccates.

Interveinal areas become white-beige to brown and necrotic

Secondary infection through the hydathodes

Complete wilting and desiccation in the field

> The first line of defense is to avoid or at least minimize the source of the bacteria in the field. This can be done by having high standards of sanitation in the nursery and verifying that the seedlings are not infected by testing them for CMM before transplanting.

Necrotic patches on leaves

Fruit
Fruit infection may appear as small, white spots with raised brown centers surrounded by an opaque white halo giving the fruit a birds-eye appearance. The spots are 3-6mm in diameter. Fruits may ripen unevenly and show external marbling and internal bleaching of tissue.

Spreading the Disease
The disease is spread in two stages: primary and secondary.

Primary Infection / The primary infection initially infects very few plants in the field. The source of the bacteria can be: (a) bacteria that has survived in the soil, on greenhouse surfaces, cutting instruments, picking equipment and more. (b) Bacteria in the nursery can be spread by the overhead irrigation during seedling production and during grafting operations when it can enter directly into the vascular tissue of young seedlings.

Secondary Infection / (a) Once the disease appears in a field or greenhouse, the pathogen may spread to adjacent plants and infect them through injury to plant parts, pruning wounds and even through natural occurring pores on the leaf surfaces and through hydathodes, the pores along the leaf margin. (b) Secondary infection usually begins when the primary infection in the plants is still symptomless and the grower is unaware that he is spreading the infection. (c) Secondary infection is very fast when growers work with wet plants and the bacteria is then able to enter the plant through the hydathodes. (see photo).

Bird's eye spot on leaves

Wilting of the leaves

CONCLUSIONS AND RECOMMENDATIONS

The strategy of controlling CMM is based on having two defense lines.

(a) The first line of defense is to avoid or at least minimize the source of the bacteria in the field. This can be done by (i) having high standards of sanitation in the nursery and verifying that the seedlings are not infected by testing them for CMM before transplanting. (ii) If the greenhouse was infected by the previous crop it is important to remove as much plant matter – roots, leaves and plant parts – as is possible and to disinfect the soil (solarization and/or formalin). These steps help reduce the amount of bacteria in the soil.

(b) The second line of defense is and the most effective way to avoid heavy damage with CMM is to prevent the spread of secondary infection by: (i) not entering the greenhouse when the plants are wet. (ii) Disinfecting agricultural equipment especially pruning shears. (iii) Spraying copper mixes before cloudy or rainy days. (iv) Avoid planting new tomato plants close to infected plants.

Tomato Yellow Leaf Curl Virus and Parvati

A solution to the TYLCV Problem

Zvi Howard Wener, Chief Agronomist, zvi_howard.wener@zeraim.com

TYLCV Background / TYLCV is a virus disease transmitted by the whitefly Bemisia tabaci. The adult whitefly emerges from its pupa case virus free and begins to acquire the virus from diseased plants. The virus then accumulates in the lymphatic system of the fly. The more the fly ingest then the more the virus accumulates inside the fly.

Cumulative Infection / When a fly full of virus comes to a tomato plant they transfer the accumulated virus from their body to the plant. The initial severity of the disease in the plant depends on the quantity of virus that is injected. The more virus injected into the plant then the more serious the disease. In addition, more than one whitefly can visit a plant and each can inject a different amount of virus.

There are 3-5 genes involved in the resistance and because of this there are 5 levels of resistance. Virus infection is cumulative... therefore, the level of infection depends on the quantity of virus in the plant.

Parvati is a great solution for growing tomatoes in areas where TYLCV is a big problem.

Thus, the virus accumulates in the tomato plant and begins to replicate. This can result in high virus levels in the plant and any whitefly that comes to feed off the plant will now acquire large quantities of the virus. And so the cycle is repeated continuously. Susceptible plants exhibit the disease symptoms even when there is a low quantity of virus in the plant.

Genetic Approach to TYLCV / *Zeraim Gedera* began breeding TYLCV tolerant varieties in 1989. The goal is always to breed highly tolerant varieties which produce high yields and top quality fruit that are adaptable to variable conditions.

Resistant varieties have multi-gene tolerance. There are 3-5 genes involved in the resistance and because of this there are 5 levels of resistance. Virus infection is cumulative as described above and therefore, the level of infection depends on the quantity of virus in the plant.

All tomato plants can have the virus within the plant. Susceptible plants will show symptoms even when there is only a little virus quantity within. Resistant varieties may or may not show the disease symptoms. This depends on the level of resistance of the plant and on the level of virus in the plant. It is important to remember that it is possible for all tomato plants to possess the virus, but plants with good resistance will be able to continue growing and producing.

Parvati / Parvati is first and foremost a variety with good large sized fruit, 200-220g., and high yields. A great additional feature is that Parvati has good intermediate resistance to the virus TYLCV. Nevertheless, as described above, when growing Parvati and any TY resistant plant it is important to monitor and control the white fly. Parvati is a great solution for growing tomatoes in areas where TYLCV is a big problem. It can be grown under black shade cloth, 50 mesh net and in greenhouses. With minimal treatments against the whitefly the grower can produce an excellent crop of high quality tomatoes. with average fruit weight of 200-220g.

Parvati

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- Resistance: V ,Fol 1, Fol2, ToMV, M(IR), For, TYLCV(IR)

--

- Very good resistance to TYLCV
- Strong plant with good continuousness - suitable for long cycle
- very high yield, around 5-6 fruit in cluster
- Size: 220-240 gr
- Very good firm fruit with long shelf life
- Suitable for autumn plantings

Two Growing Systems for Red Peppers

Pablo Mendoza, Assitant Breeder & PD, Sinaloa, pablo.mendoza@zeraim.com

Zeraim Gedera's varieties have all the characteristics required to meet the needs of the different markets. Zeraim has pepper varieties that can also be picked when they are green if the farmer so chooses, and they come in all sorts of different sizes – medium-sized peppers for the European market and large ones for the American market. Their shelf life is also long enough for them to be exported without losing their flavour or firmness. This is because the fruit has thick flesh. Peppers can be grown using the Spanish or Dutch trellising system, and still be profitable for farmers.

Last season, Zeraim Mexico's R&D department decided to assess the yields of some of the company's pepper varieties in order to compare the two trellising systems used. The table below shows the sizes of the peppers grown for each variety, expressed as a percentage, the number of fruits grown and yield in kilograms per plant, as well as the final yield in kg/m² and boxes/ha (25 lbs).

Figure 1 shows the yield obtained for each variety using the two systems. This graph shows that good yields can be obtained with both systems.

Figures 2 and 3 show the distribution of sizes of good quality fruit for each variety and each system.

Conclusions

First of all, it is absolutely feasible to produce two-, three- or multi-stemmed plants using both systems without decreasing the yield. Although the Spanish system may be slower, this is compensated for by the high number of fruits, as the Spanish system produces more fruit than the Dutch system. In multi-stemmed plants the fruit size can also be considerably reduced.

Fig 1 / **Yield Boxes 25 Lbs/Ha**

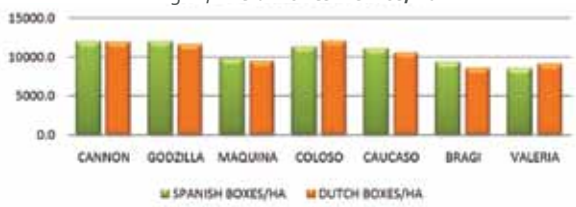


Fig 2 / **Precentage data distribution per fruit size**

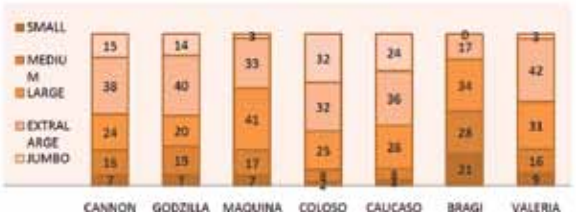
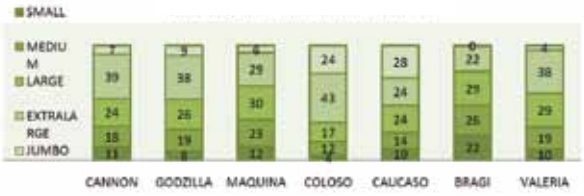


Fig 3 / **Precentage data distribution per fruit size**



Spanish Trellising	Percent Data Distribution per Fruit Size of Exportation Market					Fruit/Plant	Kg/Plant	Kg/M²	25 LBS
Variety	Small	Medium	Large	Extra Large	Jumbo				Boxes/Ha
Cannon	11	18	24	39	7	15.3	3.8	13.4	11903.6
Godzilla	8	19	26	38	9	14.6	3.8	13.4	11877.1
Maquina	12	23	30	29	6	13.5	3.1	10.9	9686.8
Coloso	4	12	17	43	24	11.9	3.6	12.6	11237.8
Caucaso	10	14	24	24	28	10.8	3.5	12.3	10951.1
Bragi	22	26	29	22	0	15.6	3.0	10.4	9220.6
Valeria	10	19	29	38	4	12.2	2.7	9.5	8429.6

Dutch Trellising	Percent Data Distribution per Fruit Size of Exportation Market					Fruit/Plant	Kg/Plant	Kg/M2	25 Lbs
Variety	Small	Medium	Large	Extra Large	Jumbo				Boxes/Ha
Cannon	7	16	24	38	15	12.9	3.8	13.2	11767.8
Godzilla	7	19	20	40	14	12.4	3.7	12.9	11461.0
Maquina	7	17	41	33	3	11.3	3.0	10.6	9437.9
Coloso	2	8	25	32	32	11.8	3.8	13.4	11931.4
Caucaso	4	8	28	36	24	10.7	3.4	11.8	10457.4
Bragi	21	28	34	17	0	12.5	2.7	9.6	8531.9
Valeria	9	16	31	42	3	11.6	2.9	10.2	9030.0

What Next for Fruit and Veg?

Prof. David Hughes, Imperial College, London

The global financial crisis has had a profound effect on businesses across the planet, but how will it influence future trends in the fresh produce sector?

As economies around the developed world edge their way back into growth, it is still surprising that less than two years ago the biggest issue in the global food industry was food price inflation and not a world financial crisis. It was only in the last quarter of 2008 that consumers woke up to find banks tottering, businesses shaky, house prices crashing and job losses mounting. This abrupt economic shock had a profound impact on shoppers who sought refuge in ‹greater value'.

Across Europe, consumers shopped around for lower prices, cutting back on premium product purchases and reducing discretionary spending, spending more time planning shopping trips and reducing visits to restaurants, electing to save money by eating at home.
Retailers responded to shopper pressure by slashing prices with promotional mechanisms such as 'Buy one get one free›, 'Half Price' and ‹Feed your family for-€5'. The fresh produce sector was not immune from this price pressure, with sales of premium produce suffering across Europe.

By early 2010, the first 'green shoots› of economic recovery were being identified as GDP growth rates edged back into positive territory.
However; the short- to medium-term outlook for the food industry is still tough. The single most important indicator is unemployment rates. While these continue to be at high levels (particularly in Spain), retailers will continue to place pressure on suppliers to keep food prices low. Encouragingly, however, markets for premium produce are recovering as consumers work out how to manage budgets so they can afford special meal treats.

Irrespective of the tough financial times for consumers, the European fresh produce sector has faced sustained downward pressure on prices and margins for several years. This has been particularly the case in sectors where input costs - not least labour - have been rising faster than real prices.

This malaise has reflected a history of gradual commoditisation where supplies have exceeded demand, market environments have been unstable and the lowest cost producer has prevailed. Our industry continues to have only a very rudimentary understanding of consumer wants and we are beaten in the marketplace by smarter, more sophisticated marketing firms offering processed products with good taste and convenience.

> Looking to the future direction of consumer trends, the outlook for fruit and vegetable growers looks strong. One mega-trend is the burgeoning consumer interest in health, a trend that plays directly to the strengths of the fresh produce sector.

> This inexorable downward spiral in produce prices is not inevitable and we can take steps to improve our competitive position through supplier consolidation with fewer, larger, smarter selling organizations comprising larger growing and marketing firms and stronger cooperatives.

This inexorable downward spiral in produce prices is not inevitable and we can take steps to improve our competitive position through supplier consolidation with fewer, larger, smarter selling organizations comprising larger growing and marketing firms and stronger cooperatives.
We need better control over-supply, with grower ownership of proprietary varieties, supply chain ‹clubs› (as is the case for Pink Lady and Jazz apples) and, for the well-resourced few, development of strong consumer brands. Note the success of Florette branded salad and fruit products.

Government regulation to ensure major retailers do not abuse their substantial-market powers is also needed. More controversially, perhaps a shift towards industry models used by the processed potato sector, with contract growers producing set quantities for pre-established prices, is required.
Other possible alternatives are cooperative supply chains, where growers, distributors and retailers co-invest, sharing risks and rewards, or 'value-adding› initiatives to produce fresh, lightly processed food products. Producers could also link with maior food companies to produce meal 'solutions› or launch promotional programmes that focus on provenance, seasons and the heritage and history of the growers and their regions.

Looking to the future direction of consumer trends, the outlook for fruit and vegetable growers looks strong. One mega-trend is the burgeoning consumer interest in health, a trend that plays directly to the strengths of the fresh produce sector. The world oven governments are exhorting people to increase consumption of fruits and vegetables; meanwhile, health benefits of these foods are increasingly evident through scientific research. What of the future for Europe's fruit and vegetable sector? The good news is that we shall continue to eat food every day and fresh produce increasingly is seen as integral to a healthy diet.

However, just like every other sector, it will be a tough road ahead with major customers pressing suppliers for lower prices and food manufacturers launching convenient, tasty food products that eat away at our core market. By 2020, there will be a smaller number of larger and better-resourced European fruit and vegetable growers and distributors than there are in 2010. They will be more sustainable – environmentally, socially and commercially. The big winners will be those businesses that have a profound knowledge of their customers and consumers, and can convert this knowledge into products that consumers value and for which they are willing to pay a premium.

Source: *Eurofruit Magazine*, August 2010

Open Day for the Yellow Canary Melon in Kenitra, Morocco, Emphasizes the Strain's Vast Potential

Chusam Awwad, Cucurbits Product Director, chusam.awwad@zeraim.com

Only two years have passed since the program to promote the Yellow Canary melon got underway in Morocco, and it is already evident that it is a smashing success. The strains are being marketed through the French Graines Voltz company, which identified their potential and sponsored an open day near Kenitra.

Morocco is a strategic market for *Zeraim Gedera*. Our seeds are marketed there through our exclusive distributor for the country, the French Graines Voltz company.

Because Yellow Canary melons are in great demand in Morocco we have been focusing our efforts on penetrating the market with our varieties.

In 2008, *Zeraim Gedera* launched a focused promotion for the Moroccan market. The concentration on and understanding of what the market requires, along with full cooperation with Graines Voltz, produced relatively swift success. By this spring the distributor had identified the potential of the new varieties as compared to those already on the market and decided to plan the start of sales of the new strains this coming December.

In light of the above, Graines Voltz organized an open day in the Kenitra region, at which it displayed the potential strains. The open day, held on June 15, 2010, attracted 140 visitors, who included leading farmers, agricultural supply merchants, and extension agents. The entire Graines Voltz Morocco staff took part, along with *Zeraim Gedera*'s cucurbits product director and YC melon promoter.

Graines Voltz greeted the visitors in a large tent, set up especially for the event, and offered them a traditional lunch. The visitors inspected the sample plot and were favorably impressed by the new commercial strains and by the next generation. They were particularly impressed by these varieties' stable appearance, which includes healthy growth as a result of their strong resistance to mildew and fusarium, excellent fruit quality, and a fruit size of 3.5–4.5 kg.

I would like to thank the Graines Voltz staff in Morocco, and especially the main planner of the day, Mr. Omar Nouib, head of the Moroccan Semapro company (a subsidiary of Graines Voltz and responsible for developing the market in Morocco). I look forward to fruitful collaboration with them in the future.

7 Key Techniques to Reduce Fresh Produce Losses and Improve Quality at Arrival

Dr. Manuel Madrid, manuel.madrid@fruitprofits.com

Many fruit and vegetable producers are being confronted today with a low price and high production cost scenario. Margins are getting thinner to the point that some producers are questioning the economic viability of their businesses.

Against this situation there are two basic alternatives:

1. Increasing sales
2. Make my operation more efficient, that is, how to produce more with the same or less resources

Fresh produce leaders can take advantage faster of the second aspect, increased productivity, under the current market circumstances. By reducing losses and increasing quality at arrival, producers obtain more kg per hectare of Class I fruit, less claims, downgraded or rejected fruit. Therefore a systematic analysis of each element of the production chain will reveal opportunities for improvement, that compounded together, will result in exponential increments of productivity and quality.

1/

Reduce Disease in the Field

Disease control in the field starts a with a good water management: growers need to avoid excess irrigation or watering the fruit itself. At the same time good drainage is key for good sanitation. These two measures will result in a proper humidity in the soil and will avoid puddles, which provide the ideal medium for spores to grow.

> Each of these seven measures individually, when applied correctly, can result in productivity increases of 5-10% each. When several of these measures are combined, the benefits compound, resulting in increase in financial results of 20-30%. This occurs through a combination of savings and better sales.

Equally important is to reduce disease inoculum in the field, eliminating decayed fruit and reducing the chances for infection. Often this inoculums reaches the fruit through water splashes , either from rain or sprinklers. Drip irrigation provides the best disease control results. Often postharvest diseases are developed in the field and remain latent, only to be seen after harvest during transport.

2/

Cool Down Fruit as Quickly as Possible

The sooner the fruit is cooled down, the less

humidity and freshness it will lose and the less decay it will develop. This speed to cooling has two aspects:

1. Avoid cooling delays from field to cooler: small delays of 3 hours or more hours can result in days of lost shelf life, especially in highly perishable commodities such as berries.

2. Use precooling to pull down field heat as quickly as possible: pre-cooling alternatives are forced-air cooling or hydro cooling depending on the commodity, or vacuum cooling in the case of leafy commodities.

3/

Reduce Mechanical Damage to Fresh Produce

Small mechanical damage is often not seen in the field. It is, however, the entry point for infections during and after harvest. A proper protection of fruit against sharp container edges and the training of hervesting crews are key elements to reduce bruising , fruit damage and therefore disease.

4/

Field Pack when Possible

Field packing avoids double handling of the fruit (once in the field and again in the packing station) and therefore, reduces fruit damage, fruit losses and costs.

These systems exist already for many crops or can be developed for most crops. The investments are not high, but they require well thought process changes.

5/

Maintain the Cold Chain Without Interruptions

Interruptions in the cold chain are very detrimental for shelf life of fresh produce. Why? For two reasons: they increase respiration rate and shorten the shelf life of the product and they cause moisture condensation on the cold product, stimulating spore germination and disease growth. Exposing cold fresh product to warm moist atmospheres should be avoided by all means.

6/

Avoid Delays in the Packing Station

A good production forecasting system in the field and an accurate inventory management in the packingstation will avoid peaks of production or accumulation of fruit in the packingstation. When fruit accumulates in the packingstation, it is not cooled fast enough, losing shelf life. Also it takes longer to dispatch and sell, so the fruit is losing shelf life already before shipping. A good forecasting system allows the sales team to prepare sales plans and promotions , therefore facilitating sales and good financial results.

7/

Ensure Good Air Circulation Through the Boxes qnd the Fruit, Not Around the Boxes

Correct stowage is essential to proper cooling and shelf life preservation. Fruit activity increases exponentially with temperature. Cooling quickly and making sure field heat is removed from the fruit as quickly as possible is essential for good quality fruit at arrival. Therefore, a proper stowage is key, by making sure the cold air circulates around the fruit, removing field heat, and not as round the boxes. Each of these seven measures individually, when applied correctly, can result in productivity increases of 5-10% each. When several of these measures are combined, the benefits compound, resulting in increase in financial results of 20-30%. This occurs through a combination of savings and better sales.

Source: www.fruitprofits.com

If you would like to know more about this and similar topics that could benefit your fresh produce operation, check **www.fruitprofits.com**.

The Beefsteak Tomato:

A Developing Niche Among Tomatoes

Lior Kushnir, Product Manager, Tomatoes, lior.kushnir@zeraim.com

For years the traditional beefsteak tomato has been common in markets where the local cuisine is based on traditional products, such as Spain and Italy. These tomatoes are noted for their large (220–250 grams), fleshy, and multilocular fruit.

In recent years Israel has begun exporting traditional beefsteak tomatoes to various markets, such as Eastern Europe, as a quality product. At the same time, a trend has emerged among growers to raise tomatoes of beefsteak size but uniform shape for local consumption. This trend is fed by clear profit motives—the larger the fruit, the heavier it is and the greater the farmer's profit. For example, if five years ago the average fruit measured 67–77 mm, today it is 77–82 mm, and the demand for fruit larger than 82 mm is on the horizon.

Thus the production of beefsteak tomatoes in Israel falls into two types, depending on the intended market:

Local Market / The beefsteak tomato for the local market has big size and round smooth shape fruit. In other words, it is a standard tomato of the sort that Israelis know and love, only bigger. It is important to note that the basic qualities of the standard tomatoes—firmness and long shelf-life should be kept in these varieties. Many growers consider this type to be the solution for rapid growth with a higher-quality harvest.

Export / Beefsteak tomatoes for export are usually multilocular, this mostly because it is the market demand, but still they have to be firm with long shelf life in order to last the export journey. Israeli exporters are focusing on the Eastern European market.

It is important to note that the basic qualities of the standard tomatoes—firmness and long shelf-life should be kept in these varieties. Many growers consider this type to be the solution for rapid growth with a higher-quality harvest.

Zeraim Gedera has several varieties of beefsteak tomatoes, for both the local and export markets, in advanced stages of development and plans to bring them to market in the coming year.

Foto View

Zvi Howard Wener, Chief Agronomist, zvi_howard.wener@zeraim.com

1 /

These pheromone traps were place in the tomato field to trap Tuta absoluta. After 3-4 hours they quickly filled up. This was an excellent indicator as to how big a problem the farmer had in his field.

2 /

It is recommended to remove the first pepper flowers at levels 0,1 and 2 and build a strong plant. In this photo the farmer wanted to pick early and did not remove any flowers but did remove a stem so that the plants grew on two stems. He ended up with a heavy load of fruit with good size and shape. However, the heavy load prevented plant development and helped create a severe iron deficiency.

3 /

It is always recommended to remove misshapen fruit that is unmarketable. This allows the plant to grow better and develop new fruit higher up on the plant. This photo shows that it is better late than never to remove unmarketable fruit from the plants.Better late than never - Late Removal of poorly shaped fruit in pepper crop.

4 /

These photos of a tomato crop in Chile show a unique method of observing root growth through a glass plate in the ground. In addition the grower collects the soil solution, which is then checked for EC, chlorides, nitrates and potassium using small ion meters and test kits.