

GREENHOUSE INSIDER

Vegetables: photos courtesy of Syngenta Seeds Inc.; Rogers Brund Vegetable Seeds, Nishole Shaw, and Nunhems.

Making The Right Variety Choices

Disease resistance and adaptability are two important qualities to look for when choosing greenhouse varieties.

By **Rosemary O. Gordon**
Managing Editor

WHEN choosing vegetable varieties for the greenhouse it is important to take disease resistance, performance, and adaptability into consideration. According to Glen Kaufman, president of Paramount Seeds, Inc., an independent seed distributor in Palm City, FL, there are several varieties of tomatoes, peppers, lettuce, and cucumbers that, in his experience, are widely used and work well for many greenhouse growers.



Top Tomatoes

In the area of beefsteak tomatoes, Kaufman says Trust, a variety from

De Ruiter Seeds, Inc., has proven to be a widely adaptable and consistent performer.

Offering a good yield in the Northern U.S., he says, is Rapsodie from Syngenta Seeds Inc., Rogers Brund Vegetable Seeds. All of the

above mentioned varieties also are resistant to tobacco mosaic virus, five races of *coletisporium/cladosporium*, fusarium race 1 and 2, and fusarium crown and root rot. If powdery mildew is a concern, he says Grace and Style, both from De Ruiter, are potential choices.

According to Kaufman, cluster harvest growers often use Clarence from De Ruiter because it holds better on the vine than other varieties and is large enough to be sold as a beefsteak tomato when fruit is lost from a cluster.



Cool Cucumbers

If you are looking for a strong cucumber variety, Kaufman

suggests Bologna from Rijk Zwaan. "It has good length and good color and a high level of powdery mildew tolerance without being bad for leaf necrosis in short days," says Kaufman.


Kasje from Nunhems, a Dutch supplier, has had good trial results

in Canada and is starting to be used commercially. This promising variety also has a good level of powdery mildew tolerance, with good yields and fruit quality, adds Kaufman.

A new trend in cucumbers is the Beit Alpha, which is seedless and thin skinned, like the long Dutch or English types. These fruit, also known as mini cukes, are about 6 inches long.

This is a small segment of the cucumber category, but Kaufman says it has tremendous growth potential. There are many varieties available for growers to try including Sarig (Hazera Seeds), Delta Star (Rijk Zwaan), Manar (De Ruiter), Alamir, and Kian (both from Nunhems).

According to Nicole L. Shaw, senior biological scientist at the Protected Ag Project at the University of Florida, the mini cucumbers are

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best suited for greenhouse production. "They are better suited to the high heat and intense sunlight of Florida than European-type cucumbers."

Shaw agrees with Kaufman, citing some of his picks as good performers. She says the best cultivars recently tested are Figaro (De Ruiters), Manar, Sarawat (De Ruiters), Meitav (Hazera), and Sarig.

"Figaro is the shortest (4.4 inches long), but produced the highest number of fruit per plant," she says. "Manar, Sarawat, Meitav, and Sarig produced high yield with similar fruit size characteristics (about 5.5 inches long). Manar and Sarawat were more powdery mildew resistant than Meitav or Sarig, but yields were not different. Fruit quality was excellent with all of the varieties."

A third category is the snack cucumber which is about 4 inches long. "There are some people taking the 6-inch cucumbers and harvesting them immaturely at that length, but the shelflife isn't all it could be," says

Kaufman. "This is experimental, but a promising new market segment."



Perfect Peppers

A small segment of greenhouse growers raises green peppers. If they

do produce green peppers, they simply harvest red ones at an immature stage, explains Kaufman.

"There is very little use of green because of the price differential on greenhouse grown peppers," he says. "It is hard to justify that price unless you are doing a stop light pack with a red, yellow, and green pepper together on a shrink-wrapped tray."

Of the red pepper varieties, the most widely grown is Enza Zaden's Triple Four, says Kaufman. A yellow variety, Bossanova is a strong performer as are Taranto and Sardana. All three varieties are from Rijk Zwaan.

For the orange types, Sympathy from Rijk Zwaan is a solid choice, and if you are going for bigger but fewer fruit, then Enza Zaden's Grizzly is an option.

"The plant itself elongates more quickly so it is a more labor-intensive crop," explains Kaufman. "Because it is such a large fruit, you don't get as good a level of uniform size and shape."

From her experience, Shaw says the best red cultivars include Lorca (De Ruiters), Torkal (De Ruiters), Triple Four, and Zambra (Rijk Zwaan). Of the yellow cultivars Kelvin (De Ruiters), Neibla (De Ruiters), Bossanova, and Taranto were solid performers. The top orange cultivars were Paramo (De Ruiters), Lion (Enza Zaden), and Boogie (Rijk Zwaan).

"There are many other specialty cultivars including chocolate, purple, white, ivory, and lilac, but I have not had the experience with all of them," says Shaw.



Loads Of Lettuce

According to Kaufman, the Bibb lettuce varieties that make up the great majority of this market

can be divided up into long and short day or summer or/and winter varieties. Rex and Flandria are good long day varieties from Rijk Zwaan.

Three solid long-day varieties from Nunhems include Cortina, Elron, and Salina. On the short-day end, Kaufman says solid performers are Manita (Rijk Zwaan), the just-introduced variety Rosetta, and another new variety called Patrick, both from Nunhems.

The bottom line with greenhouse varieties is their ability to adapt and produce a high yield under a broad range of conditions. "Growers don't want unmarketable produce or a type that won't do the job in terms of quality or yield. They need something that is flexible and will be a consistent performer, says Kaufman."

For information on Paramount Seeds, go to www.paramount-seeds.com. To visit the University of Florida Protected Agriculture Project Web site, go to www.hos.ufl.edu/protectedag.

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Color Your World

Red, yellow, and orange peppers not only add color in the greenhouse, they can increase a grower's bottom line.

By Nicole Shaw and Daniel J. Cantliffe

GROWERS in the U.S. produced 850,000 tons of bell peppers for the fresh and processed market during the 1999-2000 season, with 34% of the U.S. production coming from Florida. Florida peppers are shipped from October through the following July with supplemental imports coming from Mexico from December through April. However, increasing volumes of imported greenhouse peppers from Canada, Israel, Spain, and Holland are available during the winter months at substantially higher retail prices. In 1982, the Dutch introduced colored greenhouse peppers to North America and due to the overwhelming acceptance by consumers, high returns have been stable.

Adding Colors

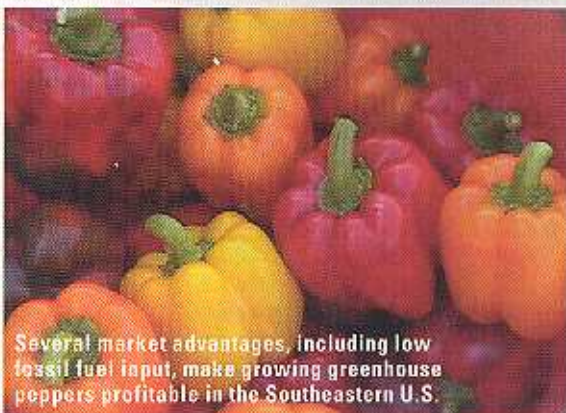
While U.S. and Florida peppers are traditionally field-grown and harvested at the mature-green stage, consumer demand for high-quality colored peppers, competition with other production areas, and the upcoming loss of methyl bromide has led the industry to seriously consider hydroponic production in greenhouses. The technology is already established elsewhere in the world. Holland reported

9560 acres of glasshouse peppers produced in 1999 with 355 acres under glass in Canada. There were 19,000 acres of protected peppers in Almeria, Spain in 1998 and 1067 acres in Israel in 2000.

Florida, with a warmer climate, like Spain and Israel, has a major environmental advantage over Holland. Inputs for fossil fuels used to cool and heat the greenhouse are a large portion of the cost of production in Holland, as well as the added price of labor, marketing, and shipping the commodity. Florida's mild winter climate and proximity to market gives the grower a desirable advantage over the competition.

The Protected Agriculture Project of the Horticultural Sciences Department at the University of Florida (www.hos.ufl.edu/protectedag) is working to promote and improve the greenhouse industry in the Southeastern U.S. Suitable colored pepper cultivars for greenhouse production in Florida were identified in order for Florida producers to be competitive with the import market.

Seeds of 36 pepper cultivars were tested August 2001 through November 2002. The majority of the cultivars grown were blocky-type fruit with three



Several market advantages, including low fossil fuel input, make growing greenhouse peppers profitable in the Southeastern U.S.

Photo courtesy of Nicole Shaw

to four lobes, however, the cv. Pekin had a more elongated shape, similar to the shape of lamuyo-type fruit.

Total marketable yield was acceptable for all cultivars when grown in a protected structure, using biological control of pests, and harvested during the winter months. When comparing cultivars for those with the highest yield and fruit quality characteristics with low amounts of culls or other disorders, the best red were: Lorca, Torkal, Triple 4, and Zambra; yellow cultivars were: Pekin, Kelvin, Neibla, Bossanova, and Taranto; and orange cultivars were: Paramo, Lion, and Boogie. Choco, a chocolate brown variety with exceptional crisp texture and sweetness, and Mavras, a purple variety with more eye appeal than flavor, both produced high yields and quality fruit that may be desirable for specialty market production.

Growing profitable greenhouse peppers in the Southeast U.S. is possible via market advantages over the imports including low fossil fuel input, proximity to market, market demand for high-quality winter fruit, and the ability to produce superior yields without pesticides, thus increasing the market value as "pesticide-free." Labor inputs can be reduced by using low-pruning methods, and double-cropping with other niche products can keep the greenhouse in production year-round.

For information related to greenhouse production and costs for production of peppers, go to www.hos.ufl.edu/protectedag/publications.

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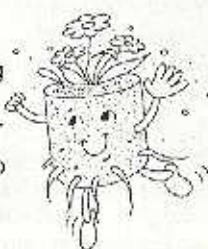
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