

## **PRODUCTION AND MARKETING OF EGGPLANT VARIETIES FOR NEW MARKETS**

Raquel Uchôa de Mendonça, Maria Moreira and Frank Mangan,  
Dept. Plant, Soil & Insect Sciences.  
-Thomas Brashear, Dept. of Marketing  
University of Massachusetts, Amherst

Eggplants are a member of the nightshade or solanaceous family along with tomatoes, peppers, and potatoes. They are more sensitive to low temperatures than either peppers or tomatoes. Eggplants originated in Asia and are now grown throughout the world where climatic conditions are suitable. Farmers in Massachusetts produce eggplants for both wholesale and retail markets.

In addition to traditional markets, markets for new eggplant varieties are increasing with the growth of immigrant communities in the state and region. From 2000 to 2005, almost 8 million immigrants entered the United States. This is more than any other 5-year period in the history of the United States (US Census). These immigrant communities want access to the fresh fruits and vegetables that are part of their cuisine. This matches the needs of local farmers who are searching for new market opportunities.

In order for farmers to take advantage of these opportunities, research needs to be implemented to quantify yields, develop production practices and marketing strategies for new varieties. This information is critical to farmers before they commit valuable land to these crops.

In 2005, seven eggplant varieties were evaluated at the UMass Research Farm in South Deerfield, MA. The trial included two varieties for traditional markets and five varieties popular in ethnic markets (Table 1).

### **Production**

Eggplants were grown on black plastic with drip irrigation. Transplants were put in double rows six feet on center with two feet between plants in the row for a plant population of 7,200 per acre. Fertilizer and pest management were followed according to the 2003-2005 New England Vegetable Management Guide for eggplant.



*Classic eggplant varieties "Nadia" and "Black bell".*

Harvest took place twice per week starting on July 12 and finishing on September 12. At each harvest date, fruit was harvested when it reached the appropriate size required by the target market (see Table 1). The number of fruit was counted, weighed, and the length and diameter were taken.

The traditional variety “Black bell” had the highest yield with almost 55,000 pounds/A; the variety “Kermit” had the lowest yield with 7,000 pounds/A (Figure 1). It is possible that the very low yield of “Kermit” was due to higher fertility requirements for this variety.

Table 1. Target market, fruit length, diameter and number of fruit per plant for seven varieties grown at the UMass Research Farm in 2005.

Variety name	Target markets	Length (inches)	Diameter (inches)	Fruit/plant
Black bell	Traditional	7.7 c	4.1 a	4.8 cd
Nadia	Traditional	8.5 b	3.6 b	3.1 e
Orient charm	Asian	10.6 a	1.8 e	4.3 d
Kermit	Southeast Asian	2.1 e	2.2 d	6.0 c
Zebra	Latino, Traditional	7.7 c	3.4 c	2.7 e
Comprido verde claro	Brazilian, West African	3.1 d	1.9 e	26.4 b
Morro Redondo	Brazilian, West African	1.9 e	1.9 e	40.0 a

#### Cost of production

The cost of producing these eggplant varieties at the UMass Research Farm was estimated to be \$6,000/acre (variable costs only). The one factor that will be different for each variety is the labor needed to harvest and pack due to the different sizes. For example, the variety “Nadia” and “Morro redondo” statistically had the same yields (Figure 1); however, “Nadia” had 3.1 fruit/plant compared to 40 fruit/plant for “Morro redondo” (Table 1). The labor costs to harvest and pack “Morro redondo” would be much higher due to the smaller size of the fruit.

#### The Importance of Market Research Prior to Production

It is critical to understand many factors about the target markets before producing vegetables, whether they are for ethnic or traditional markets. Perhaps most important is to understand the potential demand and the size of the market for a specific product.

##### •Size of market

A market analysis needs to include an examination of the demographics of the market where the produce will be sold, including the income levels, the buying behaviors and consumption of the target product. If one only focuses on the number of people in a particular market without considering the variables of income, age and food preference, it is easy to falsely over estimate consumption of a product. This in turn can have an effect on the price for the product. In the case of small or niche markets, it can be easy to flood the market causing a dramatic decrease in the product price.

Table 2. Sales of eggplant types at a produce store in metro Boston area. Varieties in parenthesis are the ones grown in this trial for each type.

Eggplant type	Amount boxes sold/week
Classic (Black bell, Nadia)	300
Chinese (Orient charm)	40
Dominican (Zebra)	40
Sicilian	20
White	5
Small Italian	5
Japanese	1
Thai (Kermit)	1/2

Figure 1. Yield of seven eggplant varieties grown at the UMass Research Farm in 2005.



*Eggplant varieties “Kermit”, Orient charm”, and “Zebra”.*

The size of the market in Massachusetts for the different types of eggplant grown in this trial varies tremendously. Table 2 lists the sales of different eggplant types at a produce market in the metro Boston area (name withheld at owners request). This market has a very diverse customer base representing many different ethnicities. It is easy to see that producing a large amount of “Kermit” could easily flood the market and bring down the price significantly. There are obviously other markets for “Kermit”, but surveys implemented by the UMass Vegetable Team of Asian stores in Massachusetts have documented that sales of this crop are moderate compared to other Asian vegetables. Thai eggplant (“Kermit”) is not used by Chinese or Asian Indians, the two largest Asian groups in Massachusetts and the region.

•Price sensitivity of products

At the end of the harvest of this eggplant trial the price for Thai eggplant (“Kermit”) at the New England Produce Center was \$40 per box (30 pound box) compared to \$9.00 per box for Classic eggplant (35 pounds/box). Based on this information, the total gross for “Kermit” grown at the UMass Research Farm would have been over \$9,000/acre. This good return, despite the low yield and the high labor costs to harvest, would be attractive to local growers. However, it is easy to see that given the

relatively small size of the market for this eggplant, the wholesale price would fall dramatically as supply surpasses demand.

- Access to Markets

How accessible these markets are is an important consideration. For example many Asian markets buy a large percentage of their produce from Asian-owned wholesale operations based in New York City. In surveys implemented with Asian markets in Massachusetts in 2004, many store owners are receptive to buying locally-produced vegetables, but are concerned about alienating the wholesalers that provide them with produce year-round. These store owners feel pressure to buy from these wholesalers even when locally-grown produce is available.

#### Assimilation of ethnic markets

The United States is a country of immigrants and our history is one of assimilation. The size of the immigrant populations, and their level of assimilation, have a tremendous impact on the demand for specific agricultural products.

With the arrival of these immigrant groups, they are looking for products to make their traditional dishes – this creates demand. With time these immigrant groups will become more accustomed to “American” culture, including “American” food. This process is called “assimilation”.

An example of this level of assimilation is found among the Portuguese-speaking population in Massachusetts. We have the largest Portuguese-speaking population in the United States and a larger number of Portuguese-speakers than Spanish-speakers. There are three main Portuguese-speaking groups in Massachusetts: Portuguese, Brazilian and Cape Verdean. The Portuguese started to immigrate to Massachusetts in the early 1800’s with the advent of the whaling industry. There are now generations of Portuguese descendants who no longer speak Portuguese and have lost many of the cultural aspects of their country of origin, including an affinity for certain foods.



*Brazilian eggplant variety “Comprido verde claro”.*

This contrasts greatly with the Brazilian population in Massachusetts; the majority arrived in the last 15 years. Portuguese is the first language of almost all Brazilians in Massachusetts and they have a much stronger affinity for the cuisine of Brazil. In Massachusetts, the Portuguese population is more assimilated than the Brazilian population.



*Brazilian eggplant variety "Morro Redondo".*

It is important for a producer who wants to target a specific immigrant group that they understand not only the different types of produce used by that group, but also their level of assimilation.