

## **Growing Sweet Corn Seed in Hawaii**

by Glenn I. Teves, County Extension Agent, UH CTAHR Cooperative Extension Service

1. Hawaii's climate can be harsh on sweet corn varieties:
  - Diseases – dwarf maize mosaic, rust, leaf blight,
  - Insects – corn earworms, aphids, leaf hoppers, mites, corn stalk borer
  - Environment – wet conditions, short days
2. What is your market? Home use/food security,
3. Sweet corn types: - su, se, sh2, bt1, sy, waxy1. Each has advantages and disadvantages.
4. Class of corn – extra early, early, medium, and late? Harvest time differs from variety. Sweet corn MUST be harvested at maturity, not earlier or later. Average: Field corn=90-100 days, Sweet corn=80-90 days, Early (Canadians)=55-65 days. Timing harvest comes from experience. Taste them raw in the field.
5. Isolation – Some varieties require isolation, especially sh2, sy, and augmented. When breeding, isolation of at least 66-1000, high end for windy areas OR two weeks difference in planting time.
6. For seed production, plants must be planted in blocks to ensure good pollination. Single rows will have many kernels missing and are unmarketable.
7. Know your variety and its characteristics. What is the norm?
8. Selection priorities - Based on purpose of seed; home use, local sales, production. Uniformity may not be important for first two uses. Non-uniformity allows harvesting over longer period, but more labor intensive.
  - **Off-types** should be rogued, especially different tassel types, which indicate a different type. Sweet corn has many branches on tassel. Need to rogue early in the morning and thrown on the ground, otherwise off-type will show up in the next generation. Rogue 'outside sisters' (same mother, different father). View field from a distance, then get close. Look down each row for different types. Walk down the two end rows. i.e. short, tall, color, different characters from the norm. Another way of roguing or culling is removing off-type seed from the cob, but more labor intensive.
  - **Husk cover** - Complete and Tight husk cover - Rogue those with poor husk cover. Corn earworms will destroy these. Good ones have more layers of cover.
  - **Disease resistance** – Sight specific but viruses, especially MMV most important. Fungal diseases can be problems in certain areas.
9. Mainland sweet corn varieties more uniform than tropical strains due to seed type (sh2 types have poor germination, especially in cold soil). Will affect labor cost of harvesting. Easier to walk through and harvest one time.

10. If planting more than one variety, don't plant in the same field from the previous crop since some volunteers will emerge.
11. Uniform germination – related to seed type and also seeding depth; should be uniform. Uniform germination will result in uniform harvest.
12. When to plant? Mainland sweet corn varieties do best when planted Oct-Dec, while tropical strains such as Hawaiian Supersweet #9 can be grown year-round, but are better than all varieties when planted in summer months.
13. Keep good records, lot numbers of seed, and know your seedsman. You cannot put a price on good quality seed.
14. Hawaii Foundation Seed (Dr. Brewbaker) has tropical parental lines that can be accessed and crossed to develop localized hybrids.

#### Corn Varieties Recommended for Hawaii

- Alameda Sweet – white, tight husk (1931) su
- Early Monmouth – tight husk (1931) su
- Early Evergreen (Stowells or Ferrys) – late maturing (1931) white su
- Country Gentlemen – usually fine flavor (1931) su
- Alpha – early with small ears (1931) su
- Golden Bantam Evergreen (1931) su
- Charlevoix – new (1931) su
- USDA 34 (recommended in 1943) su
- Golden Cross Bantam (2008) yellow su
- Hawaiian Superweet #9 – yellow bt2,
- Hawaii Supersweet Silver – white bt2
- Kalakoa Supersweet – yellow with purple cast, bt2
- 

#### Hybrid Corn

- Sure Gold (2008)
- NK199 – hybrid yellow su
- Jubilee – hybrid yellow su
- Silver Queen – white su
- Illini Xtra-sweet (grown on Molokai) sh2
- Florida Staysweet (grown on Molokai) sh2
- Ambrosia – hybrid bicolor se
- Peaches and Cream – hybrid bicolor se
- Hawaiian Supersweet #10 – hybrid bt2/sh2

## **Corn Types based on Genes**

### **Standard (*su*)**

The oldest type of sweet corn, which contains more sugar and less starch than [field corn](#) intended for livestock. Tends to be heartier in respect to planting depth, germination and growth than other types. Begins conversion of sugar to starch after peak maturity or harvest, and as such is best when harvested and eaten immediately.

### **Sugary Extender (*se*)**

Contains even more sugars in relation to starch than *su* types, and as such is able to retain sweetness for 2 to 4 days with proper refrigerated handling. Somewhat less hardy than *su* types. Is known as a "tender" kernel and as such does not lend itself to mechanical handling. Does not require isolation from *su* pollen, but is preferred. Some seed catalogs don't distinguish the heterozygous *se* (one *se* parent) and homozygous *se* (two *se* parent) varieties, but if they do, the homozygous *se* varieties will be labeled either *se+*, (*se se*) or *SE*.

### **Supersweet (*sh2*)**

Supersweet or shrunken-2 types have four to ten times the sugar content of normal sugar (*su*) types and with proper handling are able to be stored for up to 10 days.<sup>[13]</sup> Less hardy than *su* and *se* types, requiring higher germination temperatures, precise planting depth and isolation from all other corn pollen for optimum results. The name derives from the shrunken, shriveled appearance of the dried kernel which is low in starch.

### **Synergistic (*sy*)**

Synergistic varieties combine differing genetics on the same ear, and may have 25% *sh2*, 25% *se* and 50% *su* kernels on the cob but each type varies. However, a common trait of all *sy* types is that isolation from other *su* and *se* varieties pollinating at the same time is not required to prevent starchy kernels, though isolation may still be recommended for maximum sweetness.

### **Augmented Supersweet (*sh2,su,se*)**

Augmented supersweet types combine multiple gene types on top of *sh2*, and have 100% of the kernels containing the *sh2* gene, but also have *se* and *su* genes in some portion of the kernels. The *Mirai* varieties have *sh2*, *se* and *su* genes in all kernels. The augmented supersweet varieties have tender kernels like the *se* varieties, so mechanical picking is not recommended. Varieties must be isolated from *su*, *se* and *sy* types pollinating at the same time to prevent starchy kernels. Some varieties have a series number that indicates the approximate days to harvest.

### **Glutinous**

Corn with *waxy-1* gene have a glutinous chewy texture similar to mochi rice, and very popular in Southeast Asia. Must be cooked longer.

*Many thanks to Bob Granger, Thomas DeCourcy, and Bob Muirhead, retired corn breeders for sharing their decades of experience growing corn on Molokai.*