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OREGON
COLLECTION

YELLOW SWEET CORN HYBRIDS FOR CANNING,
FREEZING AND FRESH MARKET

by

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(Vegetable Crops)

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~~DISCARD~~

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Oregon State College
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Increase in the acreage and production of sweet corn in Oregon during the past 12 years or so has been occasioned by increased interest in canning and freezing this vegetable as well as in the development of a carlot shipping business from Oregon to markets outside of the state.

According to United States Department of Agriculture statistics, the average annual acreage of sweet corn for processing in Oregon during the ten-year period of 1931-40 was 1,760 acres. Corn canning did not reach any appreciable volume in Oregon until 1933, which was the year of the introduction of Golden Cross Bantam, the most widely grown hybrid sweet corn. In 1943 the acreage of sweet corn for processing in Oregon was approximately 4,500 acres, which was estimated to be 57 percent of the total sweet corn acreage of the State. In 1944 the canned sweet corn pack in Oregon was 576,782 cases. The sweet corn frozen pack in Oregon-Washington began about 1934 with a pack of 500,000 pounds. In 1943 this amount had increased to 7,806,924 pounds. Of this total, seven and a quarter million pounds were of cut corn and one-half million pounds of corn-on-the-cob.

Shipping sweet corn from Oregon was proceeding on a small scale in 1937 with 19 cars, but had increased to 150 cars in 1943.

The Place of Hybrid Varieties in Sweet Corn Production. It is coincidental that the increase in sweet corn acreage and production in Oregon for processing and shipping occurred soon after the introduction of the hybrid variety, Golden Cross Bantam (P. 39 x P. 51), which was released to seedsmen and canners in 1933. It was in December of that year, also, that the first publication of this Station regarding hybrid sweet corn was issued and the good characters of Golden Cross Bantam were discussed.

The introduction of Golden Cross Bantam and other hybrids has made possible: (1) larger yield per acre than obtained by open-pollinated varieties, (2) superior ear characters of form, color and quality, (3) greater uniformity of ear characters throughout the field, and (4) greater uniformity in the time of maturity of ears, thus reducing the necessary number of harvestings.

As a result, hybrid varieties have been exclusively grown for processing since the introduction of Golden Cross Bantam, which has outranked all others in acreage planted, 80 percent or more of the corn grown for manufacture being of this variety.

Open-pollinated varieties still remain valuable for the home garden and some market garden plantings because of the greater spread of time during which the plants in the garden as a whole are maturing. Hybrid varieties, however, constitute the bulk of the acreage grown for shipping, the season of shipping being lengthened by staggered dates of planting.

Large Number of Hybrid Varieties Originated and Listed. Since the introduction of Golden Cross Bantam, many hundreds of hybrid varieties have been originated by seedsmen and experiment station workers. Many of these have partially but not fully met the requirements of a variety of corn particularly suitable for processing, and many have therefore never attained prominence in production. The requirements of a variety of sweet corn for processing are: (1) it should yield well, (2) the kernels should be reasonably tender, have good color and quality, and (3) the season of maturity shall be reasonably within the range of the length of the growing season. Thus the variety must satisfy (1) the grower, particularly in yield and season, and (2) the processor and consumer, particularly in ear characters.

As previously stated, a variety may not be able to fulfill all requirements in one character or another. It may have good-yielding capacity but inferior kernel color or lack tenderness. On the other hand, another variety may have satisfactory kernel characters but be too low in yield for profit or it may be too late in season of maturity. It is significant that despite the introduction of many hybrid varieties since 1933 Golden Cross Bantam still remains predominant in acreage and production and the standard with which varieties are compared. Few if any of the hybrids bred for earliness have attained the yield of Golden Cross Bantam. The hybrids of earlier season are more useful for selling on the open market than for processing. They usually lack sufficient yielding capacity for factory planting.

Due to the large number of varieties originated, it has been impossible to have included but a relatively small percentage of these in the Oregon station trials. However, a number of prominent varieties have been grown together with several which have been recently introduced. These are reviewed in this publication.

Culture Methods. Varietal plots consisted of five rows twenty feet long, each plot being replicated at least once. Seed was treated with Semesan Jr. and drilled in May. Plants were later thinned to twelve to fifteen inches in the row. Plants were unsuckered. Silks were dusted with a fluosilicate dust for earworm control.

Observations of Varieties. Characters of varieties have been observed both in the field and later when removed from freezing storage. Plant characters were observed as regards general vigor, height, time of silking and development for harvesting, ear dimensions, kernel characters, quality and yield of variety in each plot. Extent of worm injury was also noted although this was not done in certain years when worms were comparatively few.

Yield records were based only on husked ears and not on cut corn as no corn was canned. Varieties were quick-frozen and their characters observed as removed from storage.

Names and Numbers of Hybrids. The nomenclature (naming) and numbering of certain sweet corn hybrid varieties have become intricate and somewhat confusing to the average grower who may not appreciate the significance and importance of the name or number attached to the hybrid.

Wherever the letter and number "P 39" is attached to a hybrid variety it may be realized that in the breeding of that variety the Golden Bantam inbred P 39 - the seed parent of Golden Cross Bantam - entered into the cross of that particular hybrid. Likewise if a hybrid such as Bancross had the letter and number "P 51" after it, it would be indicated to the grower that the pollen-bearing parent of Golden Cross Bantam (inbred Golden Bantam P 51) was a parent of Bancross P 51.

The grower may desire to differentiate, for example, between Marcross C. 13 and another Marcross hybrid such as Marcross P 39 x C 13 (Carmelcross) or Marcross P 39. These different varieties of Marcross have different parentages, hence the variation in lettering and numbering.

Inbreds of an Oregon variety of sweet corn, Golden Early Market, bred by Gill Brothers, Portland, have entered into a number of hybrid varieties, such as Marcross and Bancross hybrids. Wherever "C 13" is attached to a hybrid it may be known that one of the parents was an inbred of Golden Early Market such as Sweetcross C 13, Spancross C 13.4 or Early Bancross C 13. Marcross P 39 is a combination of a Golden Early Market inbred and the seed-bearing parent (P 39) of Golden Cross Bantam. All "Marcross" hybrids have as one of the parents an inbred of Golden Early Market.

Some hybrid varieties now on the market as yet have no names but bear numbers.

In so far as possible origins of various-named hybrids may be made known to a grower on reference to this Station.

Do Not Save Seed from Hybrids. Growers of sweet corn hybrid varieties may be inclined to save some of the attractive, uniform ears for seed. They should consider the fact that the seed from the hybrids is not pure for the different characters except those that are common to both parents, and therefore the plants grown from the second generation seed are more variable, usually less vigorous and less productive than those of the first generation hybrid. A grower cannot select seed from a crop of an inbred cross and expect to reproduce the same results as in planting newly crossed seed. It is necessary, therefore, for the sweet corn grower to go back to his seedsman each year for a necessary supply of hybrid seed.

Hybrid Varieties of Sweet Corn

Spancross, 87*, early season, too light yield for processing, adapted to local market, strains vary according to parentage.

Earligold, 87, early but generally undesirable for processing; has possible value as market variety.

Seneca Golden, 88, early season, produces well, has good quality, promising for market and manufacture.

Early Tendercross, 88, early season, fair yield, rather light color.

Tendercross, 88, early season, good quality but comparatively light yield.

Marcross, 89. No Marcross hybrids have satisfied processing demands except Marcross P39 x C13 (Carmelcross). Other Marcross hybrids such as M. C3, 6.13 and others are useful only for market production.

Carmelcross, 90, second early, fair yield and quality, good color; promising as a variety but strains vary in desirable characters.

Sweetcross P39, 96, midseason, mostly 12-rowed, fair quality, good yield.

Kingscrost B2, 96, midseason, eight row, good color, suitable for whole ear pack.

Bancross, 96. Various strains of Bancross including B. P39, B. P51 and early Bancross have been grown; appearance in general not attractive; fair color, kernels rather broad and coarse; useful as a market variety only.

Tendergold, 97, midseason, good color and quality, fair yield; has usefulness in processing ahead of Golden Cross Bantam.

Sencross, 97, excellent appearance, good yield and color, small to medium kernels, promising for market and processing preceding Golden Cross Bantam.

Seneca Hybrid 92 x 28, 98, midseason, fair to good yield, good color and quality, very much like Golden Cross.

Whipcross 39.2, 98, color fair, ears too short and stubby, not suitable for processing.

Lincoln, 100, midseason, good yield and color, quality fair.

Lee, 100, midseason, good appearance, color medium yellow, fair flavor.

* Comparative number of days - seed to harvest at Corvallis - variable according to season.

Hybrid L, 100, midseason, ears small and cylindrical, uniform, appears useful for whole ear pack, 12-rowed.

C31 x C13, 100, good market appearance and quality, fair yield.

Golden Cross Bantam, 102, the standard hybrid most widely grown; strains vary in uniformity of plant and ear characters and yield.

Golden Grain, 102, short, stubby ears, 18-20-rowed, small kernels, good yield, quality fair.

Tenderdeep, 102, excellent appearance, good yield, ears well filled with small to medium kernels, promising.

6841, 102, midseason to late, good appearance, good yield and color, fair flavor.

Tendergood, 104, excellent appearance, well filled ears, fair yield, quality fair to good.

Indigold, 104, uniformly good in yield and quality but rather light in color.

Ioana, 104, excellent appearance, ears well filled, uniformly good in yield, quality and flavor fair, useful for manufacture.

Purdue 1406, 106, fair yield, good color, but did not outrank Golden Cross.

Tendermost, 106, attractive, well filled ears, small kernels, uniformly good color and quality, comparatively small cob waste, promising for manufacture.

Aristogold, 110, good yield, excellent appearance, fair color and flavor.

Tendermost S, 112, excellent appearance but variable in row number, ears hard to pull.

Hybrid K, 112, late season, good yield of well-filled ears, quality fair, good color.

Evergreen 3 x 33, 120, a superior whitekerneled corn of excellent flavor and yield, late season.

Several other hybrids in the "late season" class were judged to be too late in season to be generally adaptable for processing or the open market.

Summary

1. Previous to 1933 comparatively little sweet corn was grown in Oregon for processing. In ten years, however, the canned pack has increased from 33,406 cases in 1934 to 212,035 cases in 1943 - a gain of over 500 percent.

Likewise the sweet corn frozen pack for the two Northwest states of Oregon-Washington* increased from 500,000 pounds in 1934 to 7,806,924 pounds in 1943.

2. Carload shipments of sweet corn have originated from Oregon in the past few years with annual loadings of 125 to 150 carloads.
3. These increases have been coincidental with the introduction of sweet corn hybrid varieties which have yielded a greater tonnage per acre than open-pollinated varieties previously grown, thus benefiting the grower with a higher yield and providing the factory with a raw product of greater uniformity of corn ear characters.
4. Many hybrid varieties have been originated during the past decade or so. The earliest introduced hybrid variety, Golden Cross Bantam, is still predominant in popularity and acreage, both for the open market and for processing.
5. Based on field trials of several years the characters and value of a number of hybrid varieties of sweet corn are reviewed in this publication.
6. Yearly testing of newly introduced varieties becomes necessary because of the constant origination of new hybrids.

* Data not segregated for the individual states.