

## Isolation Required To Ensure Top Eating Quality Of Corns

KALAMAZOO, Mich.—Standard sweet corns are no longer the common choice of consumers buying sweet corn at fresh markets and roadside stands. With improved sweetness, flavor and the ability to retain their sweetness longer, shrunken-2 (sh-2) sweet corns are pushing their way into markets.

Sh-2s fit well in the sweet corn mix of taste-conscious consumers and profit-oriented retailers, but to feed those markets, growers need to take steps to ensure high quality of sh-2s.

"Sh-2 sweet corns don't mix well in the field when other types of corn are planted nearby," said Steve Marshall, sweet corn breeder.

"When sh-2s are pollinated by other types of sweet corn or field corn, the end result is field, or dent, corn types."

Xenia, the influence of pollen on the kernel expression, causes this condition. In sweet corn, xenia affects endosperm, the part of the kernel that consumers like to eat.

"With the first bite of dented corn, you know that something is wrong," said Marshall. "The corn will taste starchy, almost bitter. Xenia increases starch and reduces sweetness in sh-2 sweet corns."

Standard sweet corns express a recessive "sugary" su-1 gene, accumulating about twice as much sugar as most field corns, mostly in the form of sucrose. If standard sweet corn, with its recessive su-1 "sugary" gene, is pollinated by field corn with the dominant Su gene, ears will be starchy rather than sweet.

"The problem with sh-2s is that they are more closely related to

field corn than to other sweet corns," said Marshall. He explains that sh-2s contain both a sh-2 gene and the dominant Su gene, also found in field corn. When sh-2 corn cross-pollinates, the dominant Su gene masks the sh-2 genes for sweetness, and the result is starchiness.

"When this happens, kernels have all of the characteristics of field corn. They'll have a white, floury appearance, dryness, and starchy texture," he said, "and will taste awful when eaten."

Xenia also affects kernel color. Within sweet corn color, the gene for yellow dominates, while the white gene is recessive; xenia affects color when the dominant yellow hybrid pollinates the recessive white hybrid. Pollination from a yellow corn causes yellow kernels to show up in a white sweet corn variety. You can see

the results shortly after pollination, as kernels start to develop, said Marshall.

Because of greater demand during the main season, roadside stand operators and retailers often receive higher prices for sh-2 corns, according to Marshall. Isolating sh-2s will ensure growers that the corn they're selling is worth higher prices.

"Sh-2 sweet corns will live up to their genetic potential if growers isolate to reduce the risk of xenia and follow other proper cultural practices," said Marshall. "Growers can isolate by space, time, and/or wind direction."

In Florida, growers had serious problems with isolation when sh-2s were introduced several years ago, because they planted experimental strips in the middle of standard sweet corn fields. "They expected sweeter corn but

got dent instead. Now, most growers plant sh-2s exclusively," said Marshall.

To isolate by space, Marshall recommends that growers plant sh-2 corns at least 350 feet away from any other type of corn.

"Isolation by distance is difficult in the Midwest, Northeast, and mid-Atlantic areas, because so many types of corn are planted," said Marshall. "One grower may plant two or three hybrids on just a couple of acres. In such situations, a growers must isolate by time."

There are two ways to isolate by time -- maturity of the hybrid and date of planting.

"The greatest risk of xenia is between sh-2s and other types of sweet corn," said Marshall. "The risk of cross-pollination between sweet corn and field corn planted at the same time is minimal under normal growing conditions, because sweet corns usually mature in 60 to 80 days and field corns mature in 90 days or more."

To isolate by maturity, growers should plant varieties that are at least 10 days apart in maturity, said Marshall. "An early standard sweet corn can be planted at the same time as a midseason or late sh-2 sweet corn with little risk of xenia under normal growing conditions," he said.

"Growers planting sh-2 and other types of sweet corn with the same maturity should isolate by planting time. A standard sweet corn and a sh-2 with identical maturity should be planted at least 10 days apart," said Marshall.

The same rules for isolating by space or time apply for planting white sweet corn near yellow or bicolor varieties.

"Wind direction also can be used to help isolate sweet corns," said Marshall. Sh-2 corn should be planted upwind if it must be planted near field corn.

"Consumers have high expectations for sh-2 corns because of their improved flavor and strong abilities," said Marshall. "Growers should do everything possible to ensure that their sh-2s meet buyers' expectations."

### PARC Completes Research Facility

EASTON, Md.—The PARC Institute of Easton, MD has announced the completion of a new turkey research facility.

According to Dr. James McNaughton, director of research, "The facility has been designed with maximum flexibility to meet the research needs of the turkey industry."

A large number of floor pens are available for work which requires well-replicated research conducted under growing conditions that approximates commercial turkey housing.

A specific area has also been included in the facility for research that requires replicated floor pen work under sanitized conditions.

In addition to the two floor pen areas, battery cage capability is also available.

McNaughton said, "Although most of the research conducted for clients will be nutrition and health related, the facilities are fully capable of performing breed evaluation, management practice, and other types of research."

A brochure is available that fully describes the research capabilities of the PARC Institute. For copies, write to the PARC Institute, Inc., P.O. Box 1161, Easton, MD 21601.

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