

Seed goes south for fast breeding

By DAVE NANDA

DEVELOPING a homozygous, true breeding inbred line takes six to eight years in the Corn Belt. Sending seed south cuts time in half.

When we took our best seed to



Breeder's Journal

Hawaii, we used city water. Well water was salty. The soil is lava ash, very low in organic matter and nutrients, with poor water-retaining capacity.

After 1988, I planted winter nurseries in Puerto Rico, where soils are simi-

lar to Hawaii. Drip irrigation fed each row. We sprayed pesticides weekly.

Down to business

Ears that "won" the trip from S1 populations are now at the S2 inbreeding stage. Corn is planted in late November, and matures in 90 to 100 days. We plant one row from each S1 ear. There's only 50% genetic uniformity, but progenies

take shape. It's a numbers game. A breeder may plant 600 S2 rows.

We're simply advancing inbreeding. Rows with genetic defects, such as poor roots, are discarded.

We cover ear shoots of some plants. I make selections among rows from S2 onward. When silks are at least ½-inch long, we cover tassels with tassel bags. Next day we shake pollen into bags and pour it on respective plants.

About 70% to 80% of S2 rows will be selected. Two to three ears per row go home in March.

Go inside a corn breeder's head

ISORT the best germplasm available into different groups. When I develop an elite inbred line, I eventually cross it with another elite inbred line from a different group. In segregating populations during inbreeding, I look at the whole plant: vigor, disease and insect tolerance, and much more.

I plant at high populations, then infect with diseases. I knock out plants at ends of rows or with a space advantage. I am merciless and take no prisoners. One thing a breeder must have is the guts to reject. We work with large numbers. To select the best, we must reject the good.

Ouch! That hurts!

GO ahead, Tom, pluck it out," Dave Nanda told Farm Progress editor Tom Bechman while thinning plots.

"Dave, it's against my nature to destroy healthy plants," he countered.

"Tear them out," Nanda insisted. "For tests to be meaningful, we need the same population per row."

Nanda won. But Bechman didn't like it. Corn breeders can be ruthless!

Actually, Nanda claims they're focused. Sometimes that means discarding good plants.

PAINFUL PROCESS:

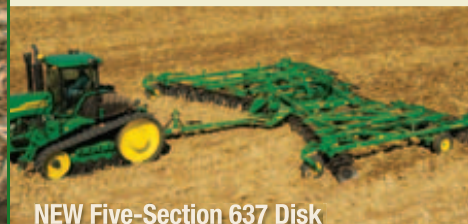
"Don't make me tear out plants," Tom Bechman told

Dave Nanda. Plot populations were thinned back to a standard count. That was painful for a plant lover!



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A corn breeder's vision for 2017

TODAY Nanda tells farmers 30,000 plants per acre may be enough. "But we must have a concept of the plant type in 10 years," he says.

Nanda expects farmers in 2017 will plant shorter hybrids at 60,000 to 70,000 seeds per acre in 9- to 10-inch rows. Planters will space seed precisely 9 to 10 inches apart. Genetic traits will enhance disease, insect, herbicide, heat and drought tolerance. "If each plant yields one-third pound of grain, we should routinely harvest 400 to 500 bushels per acre," he concludes.