Corn Breeding Lab - A Monument to Patience

Patience may be a virtue in everyday life, but it's an absolute necessity to the corn breeder. "We don't see returns on our work in one or two years," Dr. Rodney Edmondson told Lancaster Farming. "It takes five to ten years to develop a hybrid corn variety with commercial value."

Edmondson expressed that thought in the middle of his 20-acre Lancaster County corn breeding nursery. The nursery, a living storehouse of genetic material, has been located on the Clarence Keener farm near Manheim for the past four years. Edmondson works for Funk Seeds, and is in charge of the eastern section of their research division.

The company put a research operation here to take advantage of the stress conditions provided by the climate. "If we can develop hybrids that do well here," Edmondson said, "we know they'll do well just about anyplace we put them. You have a warm, humid climate and loads of diseases and plant and insect pests. If we can lick the problems here, we figure we've got them licked anywhere."

Edmondson is responsible for work not just in the Manheim laboratory as he calls his breeding nursery, but in two others as well. One is located in Lewisburg, Md., and the other is in Akron, N.Y.

At the local lab, Edmondson said one of their most exciting projects is an attempt to develop a commercial brown midrib silage corn. "Researchers have shown that brown midrib corn is much more digestible than normal corn, because the stalk and eaves have a lower lignin content. But, lignin is the material that gives strength to the stalk, which means that brown midrib corn doesn't stand up as well in the field," Edmondson said.

"We could never use brown midrib for grain corn, because of standability problems. But it might work for a silage crop because standability isn't quite as important."

High lysine and waxy corn breeding projects are also in the works at Funk and other corn breeders. "The problem with these corns is yield," Edmondson said. "High lysine corn, for example, yields about 10 percent below normal corn. Both high lysine and waxy corn, though, superior nutritionally to normal corn, so we're seeing if we can't increase the yields."

How exactly is a hybrid developed? Edmondson said there are five basic steps. The first is to develop inbred varieties with specific genetic characteristics. These inbreds are then used to develop hybrid strains. In the third step, the hybrids are tested in research trials to see if they have any commerical possibilities. At this point most of the unlikely candidates are weeded out. If the research trials are promising, the hybrid goes into a larger-scale commerical test, and if that works out, it is put on the market. The entire process takes from five to ten years.

Corn hybrid growers have done their work well, Edmondson said. "In the 40's, corn yields were about 45 bushels to the acre. Today, they're twice as high. We have to say that some of the increase came from improved cultural practices, but I know that if you planted a 1940 corn variety with modern cultural practices, you'd have a lower yield."

Open pollinated corn was the only kind of corn available before hybrids came along, and they are still grown extensively in some areas. These are varieties which are allowed to pollinate naturally with pollen from the tassles falling onto the silk of any plant in the vicinity.

Commerical hybrids are produced by planting alternating strips of eight rows each of two inbred strains. The tassles are broken off the plants in the strips which are to produce the seeds, but the silks are left undisturbed. Pollen floats from the strips with tassles, and the seed which is harvested is a true hybrid.

This process illustrates one reason seed corn is more expensive than the product which is fed to livestock. The tassles must be removed by hand, because there's no way to do the job with a machine. Male sterile varieties offer another alternative to detassling by hand, but this route almost led to a corn catastrophe a few years ago.

A male sterile variety was widely used for producing seed corn in the late Sixties, Edmondson said, which meant that nearby all the corn in the country had some genes in common. Unfortunately, the male sterile parent was extremely susceptible to Race T blight, a disease which caused economic havoc with corn growers in this country in 1970 and 1971. "We just didn't have enough genetic diversity," Edmondson said. "We all learned a lot from the Race T blight incident, and I don't think anything like that will ever happen again."

Genetic diversity in the nation's corn crop is good insurance against massive crop failures, Edmondson pointed out. "If one hybrid is

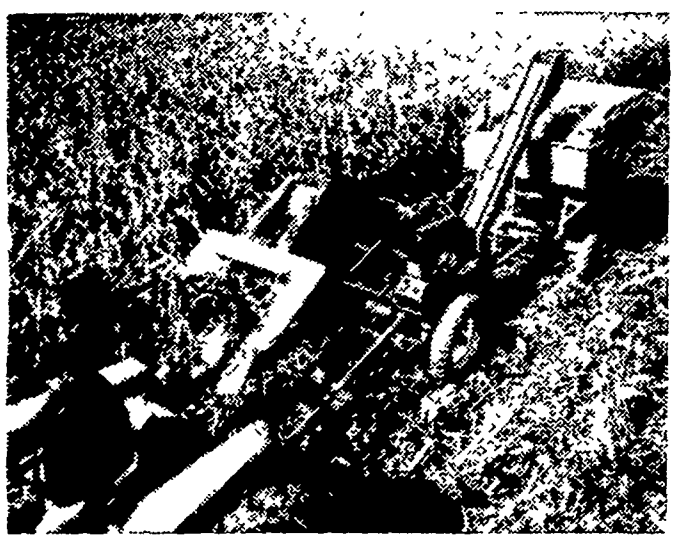
(Continued on Page 17)

Dr. E. Rodney Edmondson, a corn breeder for Funk Seeds, is very proud of this section of his corn breeding laboratory at Manheim. It's a demonstration wheel, with different hybrid corn varieties fanning out from an open space in the center. Each of the commercial hybrids in the wheel took anywhere from five to ten years to develop.

Brad Smith, left, and Leo Hutton, two of the local high school students working at the Funk Seeds research laboratory, prepare to pollinate the emerging silks of an inbred corn variety in order to produce a new hybrid for research.

Lancaster Farming Photos

New Idea's Superpickers



Want
- Ear corn?
- Shelled corn?

You can have your choice with a 2-row Superpicker. For ear corn, choose the 8- or 12-roll husking bed You'll get cleanly husked ears For shelled corn you can specify the popular cage-type sheller, or the huge capacity Supersheller Both are gentle and easy to adjust.

Interchanging any of these four processing units is done on the farm, without special tools. So you can harvest part of your corn one way and part another. And, there are two gathering units, one for wide rows, one for narrow Come in and let's talk Superpickers!

AVCO NEW IDEA FARM EQUIPMENT

We make your job a little easier

UMBERGERS MILL
RD4 Lebanon
(Fontana)
717—867 8221

A L HERR & BRO
Quarryville
717 - 786 3521

CHAS J McCOMSEY & SONS
Hickory Hill Pa
215—932 2615

STOLTZFUS FARM SERVICE
Cochranville Pa
215 - 593 5280

A B C GROFF, INC
New Holland
717—354 4191

LANC EQUIP CENTER, INC.
Kinzer Pa
717—442 4186 or
717—768-8916

ROY H BUCH, INC.
Ephrata R D 2
717—859 2441

N G HERSHEY & SON
Manheim
717—665 2271

LONGENECKER FARM SUPPLY
Rheems
717—367 3590

LANDIS BROS , INC
Lancaster
717—393 3906

KEY TO PROFIT
AGRI KING, Inc.
PERSONALIZED FEEDING PROGRAMS
FULTON, ILL.

From Field . . .
To Storage . . .
To Livestock . . .

Preserve Maximum Nutrient Content and Palatability
by using

"Silo-King" Silage Preservative:

DON'T WASTE A THING, YOUR CROPS ARE TOO VALUABLE

— Hay or haylage value ranges from $20.00 to $80.00 per ton in feeding value: on a 10 percent dry matter basis.
— Due to the ever increasing cost of feeding and maintaining livestock, your future may depend on your handling of roughage in the most profitable manner.
— To prevent weather loss in making haylage, mow in the morning after the dew is off and chop that afternoon on a good drying day:
— And to help prevent heating, vitamin loss, energy loss, protein loss, and silo-stink, apply "SILO-KING" silage preservative.
— Another bonus from using "SILO-KING" is greater silo capacity. This is due to the higher moisture content that's possible to maintain by using "SILO-KING"

For oustanding results, proven again and again in 23 states and Canada.
For higher feeding value and greater silo capacity.

ASK YOUR LOCAL DEALER TO SEE YOU
Write or Phone

GEORGE F. DELONG
STATE MANAGER P.O. BOX 683, LITITZ, PA. 17543
Call Collect: 717-626-0115
"SILO-KING" - Manufactured by Agri-King, Inc.
Fulton, Ill.