

# Biotechnology speeds up plant breeding

DES MOINES, Ia. — Biotechnology, often described as futuristic research that can achieve everything from new vaccines for viruses to square tomatoes, is currently being used by major agricultural companies to speed up traditional plant breeding methods. Scientists at Pioneer Hi-Bred

International, Inc., a leading developer and marketer of crop seeds for agriculture, for example, are incorporating biotechnology tissue culture techniques into the company's ongoing plant breeding program. Dwight Tomes, of Pioneer's Department of Biotechnology Research, says this technique

could prove very useful to plant breeders. "Potentially, we can select plants for specific traits by growing their cells in the laboratory," explains Tomes. "We can screen for traits such as disease resistance, the ability to grow in salty soils, herbicide tolerance or nutritional quality



Dwight Tomes, microbiologist for Pioneer Hi-Bred International, Inc., uses tissue culture techniques to identify traits useful to plant breeders. According to Tomes, this process could save years of field breeding work necessary to incorporate certain traits, such as disease resistance, into a hybrid.

while the plant is still at the cellular level."

According to Tomes, selection for certain traits in the laboratory is much more efficient than "whole plant selection" in the field.

"Exposing plants to various disease toxins in a petri dish is a lot easier and more precise than spraying an entire field," Tomes says. "In the laboratory, we can test as much breeding material in 10 petri dishes as would require one acre of plants in the field. Thus, tissue culture techniques allow us to measure the resistance of millions of plants where before, we could only test thousands."

Once plants with resistance to a specific herbicide or disease have been identified, they are grown out in the field. Seed from these plants is then tested to see if the trait has been passed on to the following generations.

"We've concluded," says

Tomes, "that growing corn at the cellular level does not change the agronomic qualities of the corn plant. We could expect to add a desirable trait, such as disease resistance, to a hybrid without altering its agronomic characteristics — for example. This process could save years of field breeding work necessary to incorporate disease resistance into a hybrid."

Agricultural companies, such as Pioneer, are speeding up the plant breeding process through these and other biotechnology techniques.

Company officials point out, though, that this new science is not a replacement for plant breeding in the field. Rather, it is a new tool that will help improve traditional methods — a means of more quickly developing new hybrids and varieties with improved traits for farmers.

## The Ultimate Forage Blowers Are Here! 1540 . . . . . 1580



- \* 54" Fan Diameter
- \* Up to 735 rpm nominal fan speed
- \* 540 or 1000 rpm drive
- \* 16 Paddles, (8 on each side of the fan disc)
- \* Twin spinner delivery system
- \* Swing-Away outlet for easier pipe cleanout
- \* Adjustable left axle for easier placement at the pipe
- \* Water injection system into fan area AND at spinners
- \* Easily removable tunnel covers
- \* Non-Clog air vents
- \* PTO storage bracket
- \* Plus capacity that everyone has been looking for

HI PERFORMANCE

**GEHL**



**Skid Steer Loaders Have Interest Free Waiver Until February 1, 1985**

**Hay and Forage Equipment Have Interest Free Waiver Until May 1, 1985**

**Ask Your Dealer About Rebates Instead Of Delayed Payment**

### OPEN HOUSE & FIELD DAY

**Tuesday, September 4th  
10 AM Till ?**

LOCATION: Boydell Farms, 302 Iona Rd., Lebanon, PA

- Test Plots • Corn Varieties
- Chemical Demonstrations
- Representatives From Various Companies Available For Questions

LUNCH SERVED AT 12 NOON

### WHOLESALE & RETAIL

Certified <b>WHEAT</b>	Certified <b>BARLEY</b>	<b>ALFALFA TOP DRESSING</b> 0-14-42
Tyler Titan Ruler Logan	Roland Hart Potomac Red Coat	<b>RYE</b>

<b>ALFALFA</b>	
Boyd's 84 VWAP Boyd's 78 AT	Boyd's Wet Foot Saranac AR and others

**Baler Twine - Fertilizer**

**Note:** The Sale of Boyd's Seed Center, Fri., Sept. 7th, will not effect Boydell Farms operation.

## BOYDELL FARMS

302 Iona Rd. Lebanon, PA 17042  
Phone (717) 272-8943

**PEOPLE'S SALES & SERVICE**  
Oakland Mills, PA  
717-463-2735

**A. L. HERR & BRO.**  
Quarryville, PA  
717-786-3521

**CLAIR J. MYERS**  
Lake Road R1  
Thomasville, PA  
717-259-0453

**ARNETT'S GARAGE**  
Rt. 9 Box 125  
Hagerstown, MD  
301-733-0515

**R.E. SMELTZER EQUIPMENT CO.**  
RD 2, Box 2  
Centre Hall, PA  
814-364-1419

**J & M MACHINERY**  
Greensburg, PA  
412-668-2276

**BENNETT MACHINE CO.**  
1601 S. Dupont Blvd.  
Milford, DE  
302-422-4837

**NICHOLS FARM EQUIPMENT**  
Bloomsburg, PA  
717-784-7731

**STOUFFER BROS. INC.**  
Chambersburg, PA  
717-263-8424

**GEO. W. KINSMAN, INC.**  
516 Main Street  
Honesdale, PA  
717-253-3440

**LEBANON VALLEY IMPLEMENT CO., INC.**  
Richland, PA  
717-866-7518

**DAYTON EQUIPMENT COMPANY**  
Dayton, PA  
412-783-6990

**UMBERGER'S OF FONTANA**  
Rt. 4 Lebanon, PA (Fontana)  
717-867-5161

**ECKROTH BROS. FARM EQUIPMENT**  
RT 2 Box 24A  
New Ringgold, PA  
717-943-2131

**MILLER EQUIPMENT CO.**  
RD 1  
Bechtelsville, PA  
215-845-2911

**ELDER SALES & SERVICE, INC.**

RT 1 Box 619  
Stoneboro, PA  
412-376-3390  
412-376-3740

**BINKLEY & HURST BROS.**

133 Rothsville  
Station Road  
Lititz, PA  
717-626-4705

**PETERMAN FARM EQUIPMENT, INC.**  
225 York Rd.  
Carlisle, PA  
717-249-5338

**HINES EQUIPMENT**  
Cresson, PA  
814-886-4183  
Bellwood  
814-742-8171