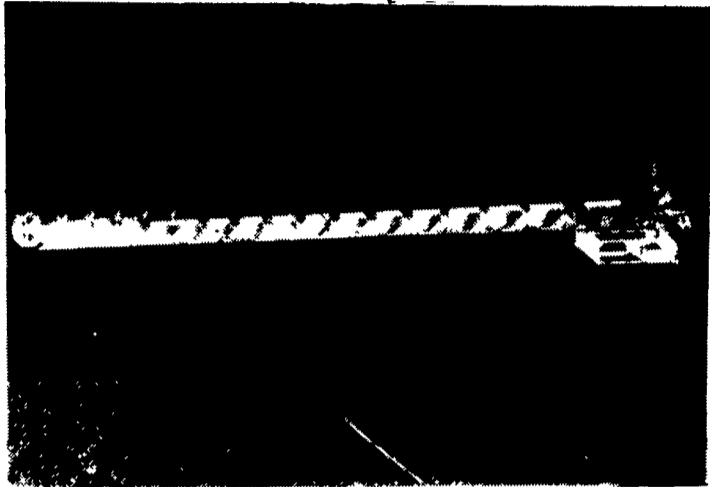




**BUSINESS NEWS...**

*Sweep augers developed*



Sweep Augers for large storage bins up through 100 ft. diameter are available from Sudenga Industries. The Sweeps are offered in five series with flight sizes from 5¼" to 11¼" diameter. Capacities range from 550 to 6500 BPH. The Sweeps are suitable for use in fertilizer. For more information contact Sudenga Industries, Inc., Box 8, George, IA 51237.

**Wisconsin father and son top World Forage Superbowl**

MADISON, Wisc. — Orland Reimer of Loganville, Wis., was named a top winner at the recent World Forage Superbowl, capturing three top placings in as many divisions. Reimer received first place in the hay, first cutting division; first in the haylage, first cutting category; and second place in the hay, second-fifth cutting division. The three winning entries were produced with DEKALB 120 alfalfa.

Also winning with 120 was Orland's son, Dan Reimer, who received second place in the haylage, first cutting category. Other DEKALB-PFIZER winning entries were grown by third place winners Paul Sprecher, Sauk City, Wis., in the hay, first cutting division with DK135; and Forrest Stricker, Wernersville, Pa., whose stand of Advantage earned honors in the haylage, first cutting competition.

"We consider these awards to be a real tribute to the farmers' management," says Mary Kay Courtney, Alfalfa Product Manager for DEKALB-PFIZER GENETICS. "We're pleased to have our products put to the test by these successful producers, and we congratulate them on their outstanding performance." One or more of the top four placements in

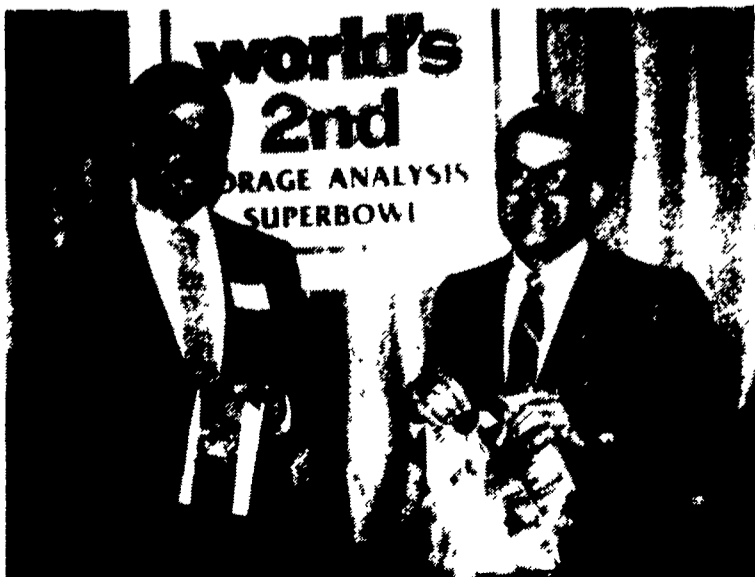
each of the four divisions was won with DEKALB-PFIZER alfalfa varieties. DeKalb 120 also won three of the top four placings in the 1984 Forage Superbowl.

Reimer, a dairy operator who farms 435 acres with his son, Dan, says he is well satisfied with 120 alfalfa. "The fourth and fifth cuttings were real good," he says. "120 comes back fast and has such fine, leafy stems."

His contest-winning stand is in its third year. It was seeded at 15 pounds per acre, and 550 pounds of potash was applied in split applications, along with 75 pounds of phosphate, 15 pounds of sulphur and one pound of boron. Alfalfa always has been the main hay crop on Reimer's farm, and he adds. "We used to have grass with it, but for the last three years we've had clear alfalfa." He says that's the secret to growing better forage.

Reimer received a fifth-place award with his hay increase in the 1984 Superbowl and previously was honored as 1979 Sauk County Soil Conservation Farmer of the Year.

The World Forage Superbowl is sponsored by Holstein World Inc., the University of Wisconsin Extension Service, Wisconsin Dairy Herd Improvement Association and the World Dairy Expo.



Orland Reimer, right, and his son Dan turned in top yields in the 1985 World Forage Superbowl.



Monsanto scientists today reported on a new method for making plant cells, and whole plants, resistant to the herbicide glyphosate—the active ingredient in Roundup.® All of these petunia plants have been sprayed with glyphosate. The non-engineered plants in the foreground are dead or dying, while the plants which contain an additional gene for the production of a special enzyme are alive and growing. The Monsanto technique was reported Nov. 2 at the First International Congress on Plant Molecular Biology held in Savannah, Georgia.

**Monsanto develops plants immune to herbicide**

SAVANNAH, Ga. — Monsanto scientists today reported on a new genetic engineering technique to make plant cells and whole plants resistant to the herbicide glyphosate.

Robert T. Fraley and Dilip Shah of the company's Biological Sciences Group coauthored a paper on the research which was presented today at the First International Congress on Plant Molecular Biology. The conference is sponsored by the University of Georgia.

Glyphosate, the active ingredient in Monsanto's Roundup herbicide, kills plants by suppressing the activity of a plant enzyme called EPSP synthase (5-enol pyruvyl shikimate-3-phosphate synthase) which catalyzes the production of three amino acids essential to plant growth. Because EPSP synthase is found only in plants and bacteria,

glyphosate is non-toxic to all mammals, animals and humans.

Dr. Fraley and Dr. Shah reported that they and their colleagues, Drs. Robert B. Horsch, Harry Klee and Stephen G. Rogers, have developed a method to insert a modified plant gene for EPSP synthase production into the plant cell chromosome where it directs the overproduction of the enzyme, providing the cell with resistance to glyphosate. Using tissue culture techniques, the modified cells were regenerated into whole plants which survived when sprayed with the herbicide.

"The development of glyphosate resistant crop plants could reduce the amount of herbicides farmers use to control weeds, making farming more efficient and economical," said Dr. Fraley, manager, Plant Molecular Biology. "Right now, farmers use several different herbicides on

their land to control a variety of weeds. If they could use glyphosate, which is effective against virtually all plants, they could reduce the number of chemicals they use and the number of trips they make across the field."

"The research on glyphosate resistance reported today represents a significant achievement in Monsanto's plant genetic engineering program," said Howard A. Schneiderman, senior vice president, research & development. "Further research is required, but the long range product potential is indeed exciting."

The Monsanto scientists identified a gene in the chromosomal DNA of a petunia plant which directs the production of EPSP synthase. The EPSP synthase enzyme contains a unique protein segment, called the chloroplast transit peptide (CTP), which enables the enzyme to be transported into the chloroplast of the plant cell where it catalyzes the production of essential amino acids. The EPSP synthase gene containing the CTP segment was then inserted into a plasmid from Agrobacterium tumefaciens—a bacterium which, in nature, can insert its DNA into the DNA of plant cells.

When the Agrobacterium cells containing the engineered plasmids were mixed with leaf cells from petunia or tobacco plants, the Agrobacterium inserted the plasmids into the plant cells where the EPSP synthase gene was incorporated into the cells' chromosomes.

The transformed plant cells were then grown on tissue culture media containing glyphosate. "At 0.5 millimolar glyphosate there was no growth on the controls, while the transformed cells containing the new gene, showed substantial growth, proving that the EPSP synthase gene conferred glyphosate resistance on the plant cells," Dr. Shah said. "These transformed cells were regenerated into whole plants which when sprayed with glyphosate were able to survive and grow."

"We believe that the EPSP synthase enzyme encoded by the newly inserted EPSP synthase gene is processed by the cell in the same manner as its native enzyme. The CTP sequence allows the enzyme to be transported into chloroplasts where it carries out its catalytic functions," said Dr. Shah.

**Firm tells of plan to buy Kleen Leen from Purina**

ST. LOUIS, MO — Pig Improvement Company, Inc., an international swine breeding company with U.S. headquarters in Franklin, Kentucky, has submitted a Letter of Intent to purchase Kleen Leen, Inc., a wholly-owned subsidiary of Purina Mills, Inc.

The transaction is subject to the execution of a definitive agreement, but is expected to be completed by December 31, 1985.

"The combination of our two companies will allow us to build an organization well able to afford the very best research and development so necessary in our business and to spread these benefits further through the U.S. swine industry," said Ken Woolley, PIC President. "The quality and quantity of our products and services will be second to none, and our competitive ability to distribute them will be unrivalled."

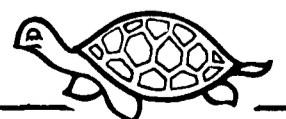
Mr. Woolley said the next two

months will be a period of transition, with all operations merged as of January 1, 1986.

Kleen Leen, Inc., one of the first swine breeding companies established in the U.S., was founded in Liberty, Indiana, in 1962, and became a wholly-owned subsidiary of the Ralston Purina Company, parent company of Purina Mills, Inc., in 1971. Its offices are located in St. Louis, Missouri, and Research and Development facilities are located in Clarence, Iowa, and Williamsburg, Indiana.

Pig Improvement Company, established in England in 1962 with the objective of developing and marketing genetically improved breeding stock, formed the U.S. company in 1975 and currently operates in 17 countries. Already the largest swine seedstock company in the world, this acquisition will allow PIC to significantly improve its ability to serve the needs of hog producers.

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