

Air pressure may help irrigation

FORT COLLINS, Colo. — Knowing exactly when and how much water is needed by plants has been a problem for farmers since irrigation began. Increasing costs for water and the energy to pump it, plus decreasing supplies, make accurate estimates even more important.

Plant physiologist Edwin L. Fiscus, with the U.S. Department of Agriculture, proposes that measurements of the pressure required to pump air through plant leaves may provide a better indication of plant stress — the period when plants stop growing — caused by inadequate water. If irrigators can detect when plant stress is just beginning, they can arrange for water delivery before the crop becomes too stressed.

When plants are stressed, their stomata close, requiring more pressure to force air through leaves. Stomata are small structures on plants that open and close to permit gas and water vapor movement between the atmosphere and plants.

Fiscus says the concept (mass flow porometry) is not new; it dates back more than 100 years but

only recently has equipment become available to make such sensitive measurements.

In his Agricultural Research Service laboratory, Fiscus clamped a small air supply hose to the lower side of a corn leaf and used sensitive electronic equipment to measure the amount of pressure required to move air through the leaf. When stomata are fully closed, 7 centimeters of water in excess of atmospheric pressure is required. A centimeter of water is one measure of air pressure, and air pressure of the atmosphere at sea level is 1000 centimeters. When stomata are fully open, less than one centimeter pressure in excess of atmospheric is needed to move air through the leaf.

"Preliminary data look promising for accurately predicting stress before too much potential crop yield is lost. If additional studies with wheat and beans are as encouraging, small equipment packages might be developed to place in several field locations. Eventually, the packages could be automated to transmit data directly to irrigation

headquarters," says Fiscus, "and perhaps even turn on automated irrigation systems."

Fiscus is planning to use the equipment this summer as feedback elements in a totally-automatic trickle irrigation system. In this way, the plants themselves will control how often

they receive water.

More information will be needed before he can correlate the porometer stress readings with the amount of water needed to eliminate stress for several days without actually applying too much water.

An offshoot of Fiscus' research might result in a basic tool for

studying stomatal responses to the environment. The technique is easy and rapid enough that it may be possible to identify any drought-resistant plants that may exist within a plant species. These plants would then be used to develop more drought-resistant crops.

Chester Conservation District to sell trees

WEST CHESTER — The ninth Annual Chester County Tree Seedling Sale, initiated by the Conservation District, will be held April 15 and 16.

The District will offer several species for sale including: white pine, Austrian pine; blue spruce; white spruce; Norway spruce; hemlock; and Douglas Fir. Seedlings will be sold in bundles of 10 for \$3.50, except for hemlock, which will be sold at a higher price.

The sale will start Friday, 6:30 p.m. and Saturday, 9:30 a.m., unless otherwise stated. Boy Scout Troop 70 will be at the Downingtown Superfresh, Thornedale Acme, Cropper's Market in Guthrieville and C & C Land-

scaping in Marshallton, Friday and Saturday.

The League of Women Voters of Central Chester County will be at the West Goshen Shopping Center and Fiore's Market in Marchwood, Friday and Saturday. Also Friday, from 6:30 to 9:00 p.m., the Professional Secretaries International will be at Farmer greenhouse behind the school, Friday, 3:00 until 6:00 p.m. and Saturday from 9:00 until noon.

The Red Clay Valley Watershed Association will be at Tunis Brothers in Kennett Square and Greenbank Station on Route 41 north of Price's Corner, Saturday only, 9:00 a.m. at the same time, the Brandywine Valley Association

will be at Plough Farm & Garden Center, at Route 322 and Sugar's Bridge Road.

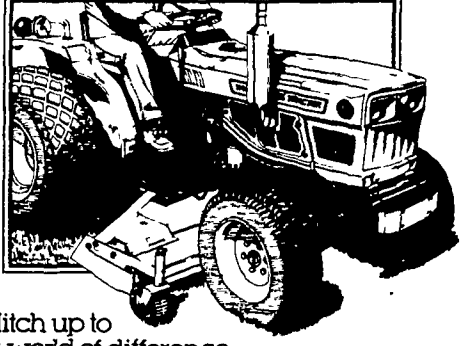
Planting instructions will be made available at each sales area. Brown's Market in Morgantown and Shady Maple Market, located on Route 23 east of Blue Ball.

The Northern Chester County Vo-Tech FFA will be at the

Flying Farmers meet

ELIZABETHTOWN — Pennsylvania Flying Farmers will meet at Sweigart's Ridgeview Farm, Elizabethtown, at 12:30 p.m. on Sunday, April 24. 12:15 p.m. at Elizabethtown-Marietta Airport. Techniques of flying safety will be discussed.

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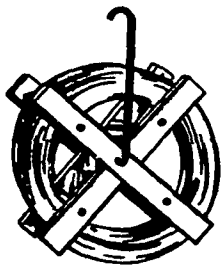
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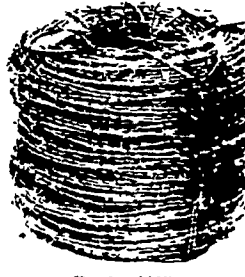
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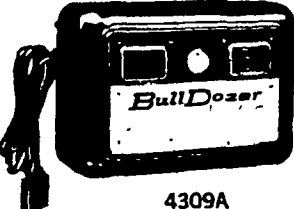
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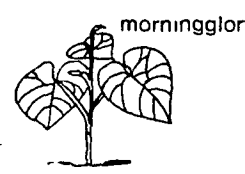
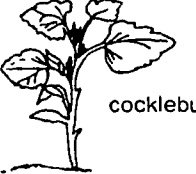
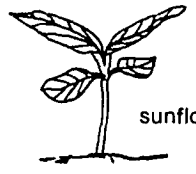
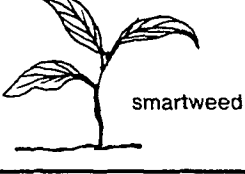
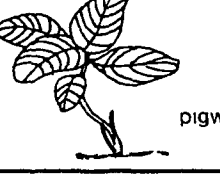
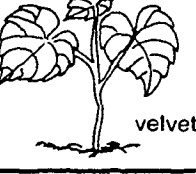
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