

Pollution measuring method devised for tobacco

COLLEGE PARK, Md. — Testing by scientists at the Maryland Agricultural Experiment Station indicates that ozone and other photochemical oxidants can reduce the growth and productivity of Maryland tobacco by perhaps as much as 20 per cent.

Dr. Charles L. Mulchi and Dr. M. Kenneth Aycock, associate professor and professor of agronomy, respectively, at the University of Maryland in College Park have observed pollution's effect on tobacco for nearly eight years.

Dr. Mulchi says that tobacco growth has been reduced, even though no weather fleck or visual symptoms appear. However, with weather fleck symptoms present, the relative growth rate of

tobacco declined by 30 to 40 per cent.

This shows that visual observation, once thought a good indication of pollution effects, is not conclusive. A look at genetic changes within plant tissue may give scientists more answers to the hidden damage.

Perhaps even more significant than these results is the field pollution exposure technique successfully developed during the project.

Reports Mulchi, "It may become a valuable technique for screening other field crops against pollutants while working in an environment more representative of natural conditions." Already, Maryland scientists are testing soybeans and small

grains with the technique used in the tobacco studies.

Mulchi and Aycock recently completed their latest tobacco-air pollution study. They attempted to measure the effects of ozone on the growth response of four cultivars of Maryland tobacco.

No significant differences due to ozone were recorded between cultivars. But Md. 872 and Md. 201 — both relatively new Maryland and U.S. Department of Agriculture breeding releases — showed less leaf damage than did Md. 609 and Md. 59. This indicates a possibility of developing plants tolerant to air pollutants.

Mulchi and Aycock grew the cultivars under natural

environmental conditions, filtered-air control, and filtered-air plus ozone. All studies were conducted at the University of Maryland tobacco research farm near Upper Marlboro.

The Maryland scientists housed cultivar groups in specially designed chambers equipped with air blowers for charcoal-filtered air or ozone, generated from oxygen cylinders.

Mulchi and Aycock planted the tobacco plots on June 2, 1977. Treatments began on June 21 and ended June 30, after nine days of ozone exposure.

They analyzed total dry weights, net increase in dry weights, relative growth rates, leaf damage ratings and number of leaves damaged per cultivar.

Tobacco grown in filtered air experienced the largest net increase in dry weight and the highest relative growth rate. Plants grown in natural environmental air averaged 73 to 83 per cent of the growth expressed by filtered-air controls. Mulchi said plants grown in filtered-air plus ozone averaged 55 to 73 per cent of the growth expressed by the filtered-air controls.


Mulchi wants to perform a total planting-to harvest study next. While he develops technique for that grand-scale experiment, Maryland scientists will examine the hidden damage that pollution may cause.

Scientists will study en-

zyme systems of plants exposed to air pollutants and the effect of air pollutants on photosynthesis — the net rate of carbon dioxide uptake.

Tobacco serves as a model crop for all of these experiments. Says Mulchi, "We will extend the learned techniques and philosophy to other crops."

And, Mulchi will do just that when he presents a report next month on his work — as it relates to tobacco, soybeans and wheat — to the American Society of Agronomy annual convention in Chicago, thus sharing his ideas with a pollution-ridden nation. The ASA meeting is scheduled Dec. 3 to 7 at Hyatt-Regency hotel.



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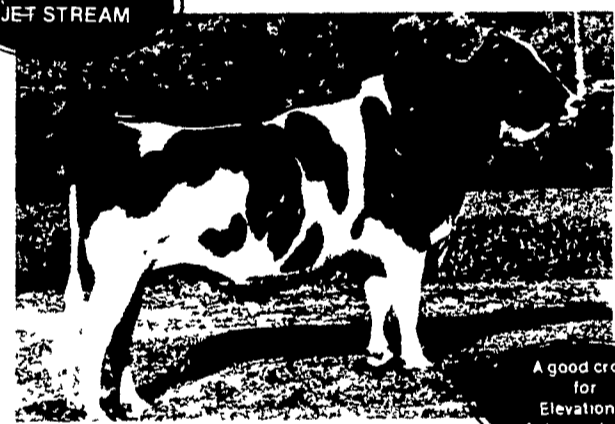
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10.0 327d 2X 20,710 4.1% 848
11.0 329d 2X 21,370 4.0% 857 (Inc)
Lifetime to date 209,670M 3.9% 8199F
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Barbara Herr, Narvon, won champion market lamb and reserve champion market lamb with her Hampshire entries at the Keystone International Livestock Exposition's junior market lamb class on November 5.

Herr fares well with market lambs

HARRISBURG - Barbara Herr, Narvon, fared well again this year in the 4-H and FFA junior market lamb competition held November

5 at the Keystone International Livestock Exposition, Harrisburg.

Barbara showed the champion lamb and reserve champion lamb, both Hampshires. She also showed the grand champion pen of three lambs, and was first in the 80-100 pound class and the 101-120 pound class.

Results for the junior market lambs follow:

Lambs 80-100 pounds; 1. Barbara Herr, Narvon; 2. Tim Grimes, Paris, Ohio; 3. Carol Grimes, Paris, Ohio; 4. Margaret Herr, Narvon; 5. and 6. Joyce Witt, Champion.

Lambs 101-120; 1. Barbara Herr; 2. Margaret Herr; 3. Mike Robinson, Rushsylvania, Ohio; 4. Ruth Grim, Breingsville; 5. Barbara Herr.

Pen of three lambs: 1. Barbara Herr; 2. Mike Robinson; 3. Ruth Grim; 4. Margaret Herr; 5. Tim Grims.

Champion market lamb, Barbara Herr.

Reserve Champion Market Lamb, Barbara Herr.

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