

From cooling towers

Farm crops studied for salt drift effects

COLLEGE PARK, Md. — Corn and soybean plants are highly sensitive to the airborne chloride salts expelled by power plant cooling towers using brackish water, according to a recent study by the Water Resources Research Center, headquartered at the University of Maryland in College Park.

But tobacco crops in the same study showed slight increases in yield from salt drift at very low levels.

Dr. Charles L. Mulchi and James A. Armbruster, agronomists for the Maryland Agricultural Experiment Station, made these observations after simulating salt drift from a cooling tower operating at maximum design capability. Dr. Mulchi, the project leader, is an associate professor of agronomy at the University of Maryland, and Armbruster is a research

assistant working on his Ph. D. degree.

Their simulation experiment was conducted at the University of Maryland tobacco research farm, located four miles north of Upper Marlboro.

The Maryland researchers confirmed their findings with similar data from on-site investigations near the Potomac Electric Power Company plant at Chalk Point, located 30 miles southeastward, on the western shore of the Patuxent river in the southeast corner of Prince Georges county.

Some varieties of corn and soybeans appear more sensitive to salt drift than others, says Dr. Mulchi. He and other crop researchers found that soybean plants have an ability to partially recover from salt damage as they mature. (Soybeans have a similar ability for

recovery from mild pesticide burn.)

The Maryland research indicated that both corn and soybeans could withstand maximum power plant operation if the salt drift rates remained below 7 pounds per acre per month.

Surprisingly, tobacco crops exhibited increased yield when exposed to 2.5 pounds of salt drift per month. In addition to the slight yield increase, small amounts of chloride generally do not affect tobacco quality adversely, Dr. Mulchi commented.

But exposure to total chloride from chloride salts in amounts greater than 2.5 pounds per acre per month was found to alter physical and chemical properties of Maryland tobacco adversely. These changes in quality index, burn, and filling capacity have been associated with chloride

additions and consequent lower average offering prices by buyers.

In fact, companies which regularly purchase Maryland tobacco strongly oppose even slight increases in chloride content. Dr. Mulchi noted.

For the cooling tower simulation study at the University of Maryland tobacco farm, the agricultural experiment station research workers applied 100-micron droplets of brackish water to the plants with a portable sprayer rig. This water had a salinity content of 15 to 25 parts per thousand.

Applications were made five days per week for eight weeks on corn, soybeans and tobacco. Water was obtained from PEPCO cooling tower No. 3, in operation 35 miles away by road at Chalk Point, and from solutions of pure sodium chloride formulated at the farm.

The electrical power generating plant at Chalk Point lies near a mile-wide section of the brackish Patuxent river, near the junction of Maryland's four leading tobacco-producing counties — St. Marys to the south, Charles on the west, Prince Georges to the north

and Calvert, across the river to the east.

In January 1971, the Potomac Electric Power Company petitioned the Maryland Public Service Commission for a license to

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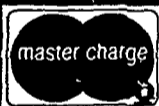
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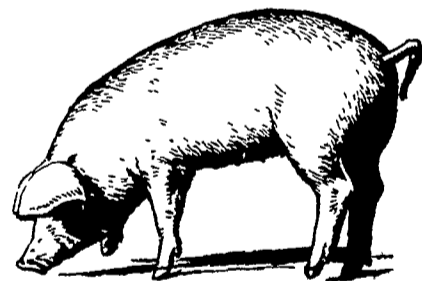
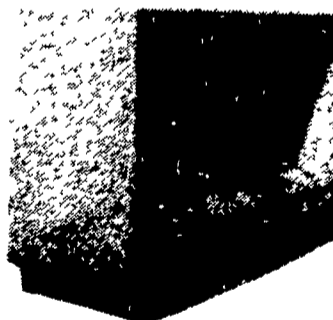
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