

## Acidic rainfall is harmless under natural conditions

UNIVERSITY PARK — Despite much controversy, not all acid rain is harmful, says James A. Lynch of the School of Forest Resources at Penn State.

Acidity from natural rainfall has caused no apparent environmental damage, Lynch stated in the summer issue of "Science in Agriculture," the quarterly magazine of the Agricultural Experiment Station at Penn State. The problem comes when man-made pollution is added to natural acid rain, he affirmed.

He said the natural acidity of rain, snow, sleet, and hail is beneficial in breaking down the earth's crust while releasing nutrients to plants and animals. Lynch is a forest hydrologist studying the effects of acid rain on small streams. He reported that naturally-occurring acidity rarely damages forests and farm crops.

"Precipitation is naturally acidic due to the reaction of atmospheric moisture with normal levels of carbon dioxide in the air, and the presence of other acid-forming substances from natural sources," he commented.

Acidity in rain and other precipitation is expressed by its pH value. On a scale of zero to 14, a pH of 7 is neutral. Solutions below 7 are acid. Values above 7 are alkaline. Where uncontaminated by man, precipitation has a pH of 5.6 to 5.7.

Adding manmade pollution to acid rain produces an average pH of about 4.1 in the Northeast, Dr. Lynch noted. This occurs when sulfur and nitrogen oxides from the burning of fossil fuels—by industries, autos, and power plants—react with natural precipitation to form sulfuric and nitric acid.

Fortunately, certain natural substances in the earth and atmosphere can neutralize or "buffer" acids. If a watershed is alkaline, for example—containing limestone or bicarbonate—the lakes and streams in the area will not be affected strongly by acids.

"Fertilized farm soils are less likely to become acidic from rains than nutrient-poor forest soils," he

said. "The fertilizer acts as a buffering agent and replaces nutrients leached by acidic rains."

He claimed the most dramatic effects of acid rain have been observed in lakes and streams. For several decades, declining pH of lake waters in the Northeastern states and Canada has been associated with acid rain.

More than half of the remote mountain lakes above 2000 foot elevation in the Adirondack Mountains of New York have pH values below 5.0. Ninety percent of these lakes now contain no fish. In contrast, only 4 percent of the lakes had a pH under 5.0 between

1929 and 1937 and fish were abundant.

Rapid changes in stream pH have been noticed during intense storm runoff or snowmelt. Changes in pH from 7.0 to 5.5 have been measured during storms in central Pennsylvania. This indicates a sharp increase in acidity.

"These rapid shifts in pH may be more harmful to streamlife than gradual, long-term increases in acidity," Lynch reported. "Various aquatic organisms may not be able to adjust themselves to a rapidly changing environment," he added.

The most serious plant injuries due to acidity create lesions or brown spots on foliage. In addition, protective waxes are eroded from leaf surfaces. Such injuries may also increase the chance that plants can be infected by diseases from bacteria and fungi.

The outcome of injuries is reduced plant photosynthesis, the process by which plants convert sunlight into carbohydrates. Lower photosynthesis reduces plant growth and decreases a plant's chance for survival.

Acid rain may also affect domestic water supplies, he

cautioned. Concentrations of toxic metals, such as aluminum and zinc — and nutrient ions — are highest in acidic water. If these particles are transferred to surface and groundwater, the quality may deteriorate.

Further details are given in the Summer issue of "Science in Agriculture." The magazine features articles on research, extension, and resident education in the College of Agriculture. For free copies, write to 229 Agricultural Administration Building, University Park, PA 16802.

## Pa. fieldwork gears up for harvest

HARRISBURG — Harvest of Pennsylvania fruit and vegetable crops was in full swing during the week ending September 7, although showers limited farm fieldwork to two days, according to the Pennsylvania Crop Reporting Service. Field activities during the week included harvesting ensilage corn, potatoes, tobacco and apples; planting wheat; baling straw; fixing fences; repairing machinery; spreading manure, lime and fertilizer; clipping pastures; and plowing.

In most areas of the state, the sweet corn crop was reported as excellent although corn borer did some damage to the late varieties. Green pea yield was reported good; cabbage and tomatoes are looking good although tomatoes are ripening slowly; cantaloupes and melons are having vine problems due to the dry weather; and apples and peaches have sizes up very well.

Topsoil moisture in the state was rated 43 percent adequate, 34 percent surplus and 23 percent short. In the north, soil moisture was 47 percent surplus, 41 percent adequate and 12 percent short. Central regions rated soil moisture 45 percent surplus, 33 percent short and 22 percent adequate, while southern regions soil moisture was

rated 67 percent adequate and 33 percent short.

The state's tobacco crop is 60 percent harvested compared with 51 percent harvester at this time last year. Statewide, the potato crop is 44 percent harvester compared with 40 percent last year. In the north 29 percent was harvester, while 50 percent was harvester in central regions and 52 percent in the south.

Corn for grain in Pennsylvania is 44 percent in dough, 45 percent dented and seven percent mature, compared with 43 percent in dough, 44 percent dented and less than five percent mature. In the north 49 percent was reported in dough, 36 percent dented and eight percent mature. The central region reported 46 percent in dough, 51 percent dented and less than five percent mature, while the southern region reported 32 percent in dough, 56 percent dented and 11 percent mature. Ensilage corn is nine percent complete compared with 16 percent last year.

Fall plowing in the commonwealth is 36 percent complete, on a par with last year. The north reported 29 percent complete, the

central region 52 percent complete and the south 32 percent complete.

Third cutting alfalfa was rated as 57 percent complete compared with 63 percent last year. The northern region reported 30 percent of the third cut harvested; the central region reported 61 percent harvested; and the southern region reported 78 percent harvested. Fourth cutting alfalfa was reported as nine percent complete statewide compared with 11 percent last

year. The northern and central regions reported five percent of the fourth cut harvested, while the southern region reported 14 percent harvested.

The second cutting of clover-timothy was rated as 85 percent complete compared with 93 percent last year. The northern region reported 83 percent complete, the central region 84 percent complete and the southern region 89 percent complete.

## USDA revokes N.Y. produce firm's license

NEW YORK, N.Y. — Eastco Potato Distributors, Inc., Riverhead, N.Y., has had its produce trading license revoked by the U.S. Department of Agriculture for failing to pay a reparation award of \$3,618 for potatoes shipped during July, 1979.

USDA's Agricultural Marketing Service, which licenses produce firms under the Perishable Agricultural Commodities Act, had charged the firm with failing to pay the agreed purchase price to

a Maine shipper.

Charles Brader, marketing official with AMS, said the firm answered the shipper's charges but that, based on the evidence, USDA ruled that the shipper was due the amount claimed.

The firm is ineligible to conduct business subject to the act until the award is paid. The firm's sole officer, director, and stockholder—Fred Juliano, Jr.—may not be employed by or affiliated with any PACA licensee without USDA approval.

### Gehl Company proudly announces LEBANON VALLEY IMPLEMENT CO. INC.

700 E. Linden Street, Richland, PA 17087 PH: 717-866-7518

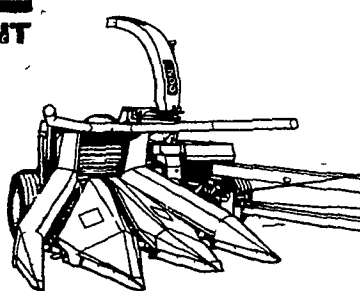
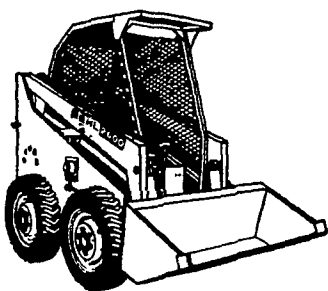
as the authorized dealer for  
complete sales and service of

**GEHL**  
FARM EQUIPMENT

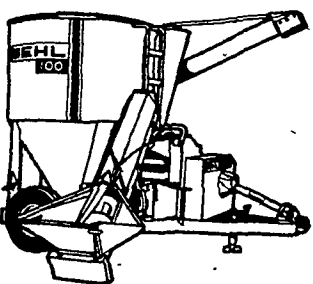
serving the

Eastern Lebanon Co.  
and  
Western Berks Co.

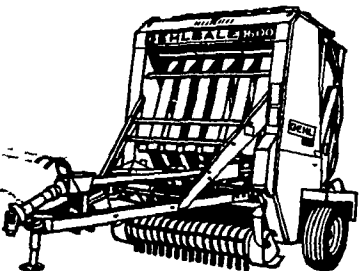
area.



See your new Gehl dealer today  
for information on:

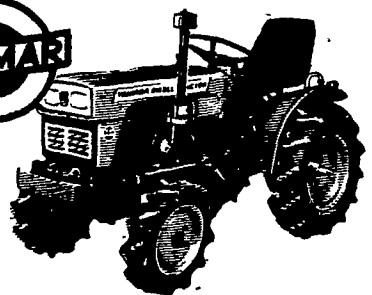


Mix-Alls  
Flail Choppers  
Forage Blowers  
Forage Harvesters  
Forage Boxes  
Running Gears  
Skid Steer Loaders  
Round Balers  
Mower Conditioners  
Bale Handlers  
Bale Carriers  
Hay Rakes  
Disc Mowers  
Disc Mower Conditioners



## WHY BUY YANMAR ?

HERE'S  
WHY  
YOU SHOULD  
CONSIDER  
BUYING A  
YANMAR



- 1 YANMAR - The only compact diesel with industrial wet sleeve engine.
- 2 YANMAR - The only compact diesel in which all models have front wheel gear drive instead of universal joint. Benefit: Shorter turning
- 3 YANMAR - The compact diesel with all models having cast iron rear end housing.
- 4 YANMAR - The only compact diesel that does not need GLO plug to start engine.
- 5 YANMAR - The only compact diesel with choice of automatic shift (no power loss on automatic) or manual shift.
- 6 YANMAR COMPANY is the world's largest small diesel engine manufacturer.

CALL NOW...

We Have Some Really, Really Good Prices

"SERVICE IS OUR MOTTO"

## LAWN CARE OF PA.

SALES & SERVICE

Martindale, PA 17549  
1 Mile North of Martindale  
on Grist Mill Road  
PH: 215-445-4541

Mon., Thurs., Fri. 8-8  
Tues., Wed. 8-5:30, Sat. 8-2  
"A little out of the way...  
but a lot less to pay"