

## '89 Water Shortage

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more stressed if a 1989 drought occurs," said ASCS State Executive Director Don Unangst opening Monday's meeting. "There are steps we can take to be better prepared for a drought and that's why we are here today."

The soil moisture level of early spring is misleading. It will be absorbed by spring and summer vegetation and the wet spring soil will turn quickly dry. Pennsylvania is between a drought watch and drought warning. There are drought restrictions on the Delaware River Basin. Reservoirs are extremely low and much depends on precipitation in the summer months.

Dry conditions began in the fall of 1987 and have persisted which has created a serious water problem. Rainfall is generally 8" to 10" below normal and in some areas 12" below normal in the Susquehanna and Lehigh River Basins. The Delaware River Basin is 15" below normal," said Chet Henriksen, meteorologist-in-charge in Philadelphia for the National Weather Service, "and it is not going to be made up with a few inches of rain."

The 3" to 6" of rainfall in March went mostly to the southwestern Pennsylvania with little falling in the upper Delaware and Susquehanna River Basins.

"I feel I can say with some accuracy that this summer is not going to be like last summer, but the long term forecast is calling for below normal rainfall. We will probably see a wet spring and a long dry spell, but not an extremely dry spell as we saw last summer," said Henriksen.

But while farmers' may cut their crop losses in the field this year, the drought problem goes beyond the surface. Soil and crops are the first beneficiaries of rain. They quickly absorb the moisture and prevent water from passing through the soil to replenish the water table. A green, flourishing crop in the field can be deceiving.

"I think we will see precipitation more spread out this year which will benefit farmers, but the table level is falling and could well work down and become a well-water problem for homeowners and farmers," said Henriksen.

### Water Shortage Imminent

There will be a water shortage in 1989, according to John McSparran, Director of Bureau Water Resources Management. In the western portion of the state precipitation is close to normal. But the serious drought which affected western Pennsylvania in the previous years has now shifted to the east.

"Wells are much lower than normal throughout Pennsylvania, if your well has a tendency to go dry, this will probably be the year for it," said McSparran.

"The drought was very intense in October of 1987. The first real relief came at the end of October and November of 1988," explained McSparran. "But December and January and February were low precipitation months. The areas which drain into the New York City reservoirs had the lowest amounts of precipitation ever recorded in these three months since the 1965 drought."

There are three stages to the drought plan: drought watch, drought warning and drought emergency and the Delaware River Basin Commission came within a whisker of declaring a drought emergency on March 24, 1989.

There are three reservoirs which

supply half of New York City's water needs. These reservoirs are extremely important to the Delaware River Basin.

As the flow drops in the Delaware River Basin, salt water advances farther inland into the fresh water supply. In 1965 the reservoirs went empty. Sixty percent of the flow of the DRB is made up from these three reservoirs. When the flow is not there the salt water fills in the gap. In 1965 there was no upstream storage to release and fight back the ocean. Since that time a plan has been established to prevent that from recurring.

"When the reservoirs get low we cut back and conserve. On March 24 the reservoir storage dropped to the level signaling a drought emergency for one day, but rains on that day brought the level up again. But the reservoir is only 10 million gallons above the emergency line. That is one-month away from a drought emergency," said McSparran.

Normal monthly rainfall for the DRB area is four inches. According to McSparran, 2" of rain will bring the DRB to 15 million gallons and another two inches will bring it up to normal stage, but it takes two inches just to supply the needs of New York City.

"Unless we have an above average rainfall, we won't get much above where we are now," said McSparran.

The Pennsylvania ground water situation could be in for some problems. According to McSparran, Pennsylvania has more wells than any other state: 1 million.

"You can see that with just 1/2 of one percent going dry that we would have a lot of dry wells and a serious problem," said McSparran.

At the present time there are no restrictions in the basin. If Pennsylvania declares a drought

emergency all non-essential water uses would be banned such as watering lawns and golf courses, washing cars and filling pools. In Pennsylvania alone a ban on watering lawns and golf courses would conserve 100 million gallons of water each day.

The most critical areas have received below normal rainfall for the past seven months:

Lackawanna County — a 10" rainfall deficit.

Tioga, Monroe, Carbon, Schuylkill, Susquehanna counties — an 8" rainfall deficit.

Lebanon, Northampton, Pike, Wayne, Bradford, Potter, Cameron, counties — a 6" rainfall deficit.

Lycoming, Bucks, Berks, are nearing the critical list, too.

These areas are likely to feel the most stress from drought. Groundwater is on the rise in the west and south of the turnpike, but east of Centre county and north of the turnpike groundwater levels are dropping.

In these areas in recent weeks stream flow is only 30 percent of normal and with the recent rains it is still only about average and the reservoirs are not filling up.

"We depend on our frozen assets to bring up the reservoirs and streams, but the snows weren't there this year," explained McSparran. "We will see unusually low streams and a lot of dry streams and springs this year. Melting snows feed springs and without those snows those springs may also go dry. It could very well affect the home water situation and livestock watering."

"All we can do is hope for April rain to turn that around," said McSparran.

New York City reservoirs are about half-full. The reservoir in Scranton is 60% of normal level; Hazelton is 70 percent of normal capacity and the reservoir at Bethlehem is at 70 percent capacity. The Harrisburg reservoir is not full either.

"We are now reaching the point where there is just a remote chance of refilling," said McSparran. "It might come up in April or May, but we are not in a good situation right now from a water supply situation."

### Plan Now To Cut Losses

Farmers can cut their losses in a drought by employing what they know about weather, soil, crops and management and understanding their options and limitations, according to Elwood Hatley, from Penn State Extension.

There's no certainty about the weather only probability. And it will probably be hot and dry in July and August. The water holding capabilities of soil depends on its texture, depth, structure. This knowledge comes from experience, Hatley stressed, and records.

Also, farmers need to consider the ability of some plants to withstand stress. Plants are most sensitive to drought conditions during their reproductive stages. Farmers need to understand when plants are most susceptible to drought and then make their plans for planting.

For example, corn leaf curling is a defense mechanism to retain moisture while on the other hand sorghum actually stops its growth as a defense mechanism.

"Corn has a two-week period where it is ultra-sensitive to any new environmental stress and this occurs at tassel emergence and silking," explained Hatley. "Corn can lose 50 to 60 percent of its potential yield depending upon conditions at tassel emergence time."

Soybean has the same sensitivity at flowering time, but is spread over a 6-week period. But it adjusts as climatic conditions change. The soybean crop was saved last year by the July 20 rain which came through. Spring oats and barley reproduce 60 days after emergence. Hatley advises farmers to plant early have the grain reproduce in mid-May or or early June before extreme heat and dry

conditions are likely to occur. Corn enters its reproductive stage 55 to 60 days after emergence.

"You may want to switch crops if your fields are drought prone. But you've got to put together the information you have collected on weather, soil, plants and combine that with good management to reduce risk by making the right choices at the right time," said Hatley.

### Feed Alternatives

Feeding livestock, especially dairy animals, demands some creativity from the dairyman. As a result of the '88 drought, feed reserves are down in the U.S.. The world grain situation looks good, but that may mean a higher feed bill. Richard Adams from Penn State Extension urges farmers to investigate alternatives now.

The outlook for the milk price is not good, according to Adams. At least a \$1.00 will disappear by June and more farmers will be feeling the pinch more critically than they did a year ago. How can farmers protect against losses?

Adams recommends a wise use of concentrates according to price shifts in concentrates, forage, grain and milk. Feed rates should be changed, too, to stay within reasonable costs. Farmers may want to go to an individual ingredient instead of a total mixed ration.

### Other recommendations:

--reduce protein intakes on many animals and save money without sacrificing production.

--Supply forage needs with alternative, affordable substitutes. Buying a lot of forage is costly. It is better for the farmer to meet forage needs with what he has at his disposal.

--Align feed supplies, don't stay heavy with one feedstuff.

--Pasture can also help stretch feed dollars.

--Use paper shredded for bedding animals and save your straw for forage. According to Adams, it is approved by the FDA and con-

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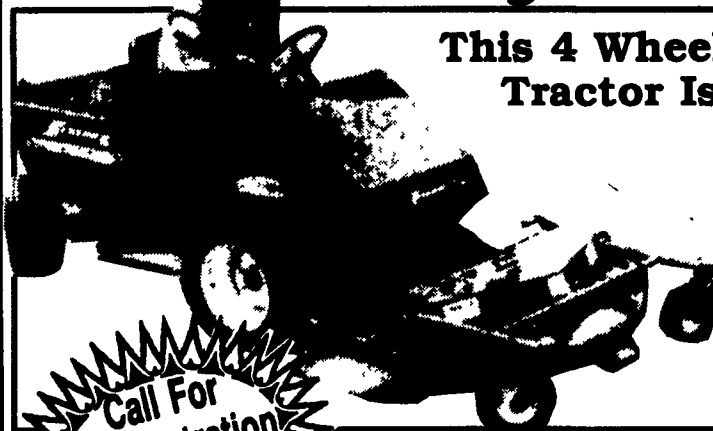
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