

Penn State engineer talks about herbicide spraying

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Lime can be applied almost anytime, however winter months are ideal, because the ground is firm and the freezing and thawing action helps to disseminate the lime in the soil.

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LANCASTER — Farmers from six Mid-Atlantic states gathered here recently for the 7th Annual No-Till Conference. Donald Daum, Penn State Extension Engineer, spoke to the group on herbicide spraying — how and when to spray for effective weed control.

"Failure to achieve desired weed control is blamed on many things," he said "We've heard them all — too much moisture, too little moisture, herbicides applied too early, herbicides applied too late, soil composition or texture not right, too much water used, too little water used, wrong material for the species in question, and on and on."

Daum pointed out in some

instances some of these reasons for poor weed control are valid. However, he emphasized, a closer look needs to be taken at the spraying system.

"Is the sprayer right for the particular job and is it properly maintained, calibrated, and adjusted? Often times, poor weed control can be traced to the sprayer or the manner in which it was used," he said.

Daum advised farmers to determine the amount of chemical to put in each tank. He noted many operators don't know the application rate, the exact capacity of the sprayer tank or the acreage they are covering.

"When checking application rates, I've

discovered differences of 30 to 40 percent range from what the operator thought he was applying. Often unsprayed areas such as headlands and drive strips are included, resulting in higher than desired rates on the treated areas," said Daum.

He pointed out data from operator's manuals or nozzle catalogs are not sufficiently accurate for field conditions, providing only a starting point. He suggested a calibration test be made to determine the application rate by spraying a measured amount of liquid on a known area and adjusting the sprayer for conditions.

Daum cautioned farmers against applying wettable herbicide powders without adequate agitation, and recommended jet or mechanical agitation be used, especially in tanks larger than 150 gallons.

He also told the group to keep an eye on the sprayer pumps on the applicator.

"The most common failure occurs with a roller pump, wettable powder, jet agitator combination. Roller pumps can be rebuilt by replacing the rollers, but wear on the pump housing cannot be corrected. It is usually feasible to rebuild the roller pump once," he said.

Daum commented the replacement of the roller pump with a centrifugal pump is an excellent choice. He said the centrifugal pump has a long life and produces a high volume flow to provide good jet agitation.

However, the plumbing is different, he added.

"A centrifugal pump's performance is severely affected by any restriction to the inlet. Therefore, an in-line strainer in the pressure line should be used rather than a suction screen. Also, a pressure relief valve is not necessary with a centrifugal pump so a bypass line is not needed."

Poor performance in the centrifugal pump is generally the result of not operating at the rated speed, Daum said.

"These pumps are sold with engineered drives to mount directly on either 540 or 1000-RPM PTO shafts. However, if the PTO shaft is operated at less than the rated speed, both volume and pressure will decrease.

"The impeller on most centrifugal sprayer pumps should rotate 2000-3600 revolutions per minute. In fact, if the pump is operated at 10 percent below rated speed, the volume will drop 10 percent and the maximum pressure will decrease 19 percent.

"A good solution is to use a remote hydraulic motor to power the pump. Operating speed is independent of tractor engine speed."

Herbicide flow control, droplet formation, and droplet distribution all rely on a properly functioning nozzle. When nozzles are worn, poor coverage and uniformity result, Daum noted.

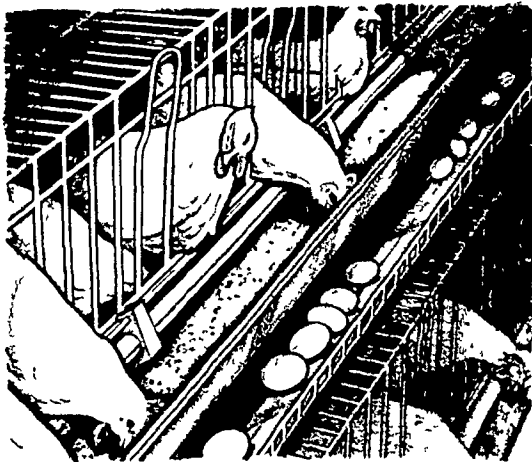
"Worn nozzles should be replaced with tips made of a

(Turn to Page D12)

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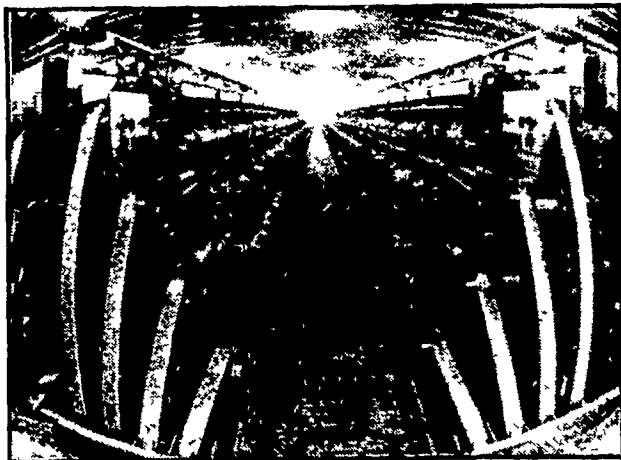
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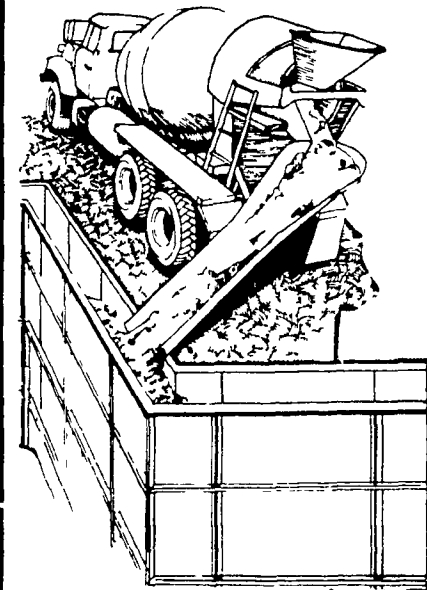
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