Integrated
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Management
for Wisconsin

Cranberry

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FERTILIZER PLACEMENT

Growers frequently come up with good questions that I have not considered before. This summer a grower asked me the question, "when a fertilizer prill lands on the bed surface, how far do the ions travel once the prill dissolves?" The answer to this question has ramifications in at least two areas: 1) in a blended fertilizer each granule may contain only N, P, or K so spatial distribution may not be equal among elements, in which case a manufactured fertilizer might be superior to a blended fertilizer; 2) how often should a fertilizer be applied as each time prills will land in a slightly different pattern.

Once a fertilizer prill dissolves, the ions can move via diffusion in the soil or more quickly via mass flow along with soil water. Positively charged ions such as ammonium and potassium will sorb to the surface of soil particles. Negatively charged ions such as phosphate may bind with free cations (positively charged ions) in the soil solution and become plant unavailable. Ions may move both laterally and downwards in the soil. Ions do not move far in the soil. Cations may be washed downwards through the soil (leached) below the root zone. Phosphate ions do not move far either laterally or downwards, certainly less than an inch in a reasonable amount of time.

So, should this be of concern to growers? So far this discussion has focused on physical movement of ions in soil. However, this is not the most important means of transporting ions in the soil. While the N, P, or K may not move far in the soil, there is an underlying mat of roots in the top few inches of soil that is quite efficient at capturing and moving ions within the plant. Thus, if one only considers the physical aspects of nutrient ion movement in the cranberry system, the most important aspect of nutrient movement is missed.

Once a fertilizer ion is intercepted by a root and is moved to the interior of a root cell it can be quickly and efficiently moved around inside the plant in the transpiration stream of the xylem. As water is transpired out of the leaves the water also carries nutrient ions that don't evaporate, but move along with the water. Nutrients can also move via the phloem under some circumstances.

When considering fertilizer placement with regards to type of fertilizer to buy and how uniformly it must be distributed on the bed surface, don't ignore the biological aspects of fertilizer movement. This may be far more important than the

physical aspects of ion movement. Frequent application of small amounts of fertilizer may be a good idea, but the justification would be to maximize the time free ions are available for plant uptake, and not to randomize prill landing so that at some point the entire bed surface is covered with prills. Nature is pretty efficient at finding and moving resources that are important to plant growth and particularly to reproduction (fruit production).

Teryl Roper, UW-Madison Extension Horticulturist

NACREW REVIEW

British Columbia hosted the 2005 North American Cranberry Research and Extension Workers Conference in Langley, BC, a suburb of Vancouver. A smaller group met this year than in recent years, a result of less research funding and higher travel costs. The NACREW conference is a time when researchers can meet and coordinate research projects for coming years and review research conducted over the past couple of years. This allows the most efficient utilization of grower research funds.

New to the conference this year was a symposium honoring Sridhar Polavarapu where progress in various areas of research endeavor were reviewed, such as breeding, weed management, disease management, insect scouting, and phosphorus nutrition.

Following are some of the high points of research reported at the conference.

Phosphorus. Research in Massachusetts has looked at export of P from cranberry farms. The found that the primary path of nutrient discharge from cranberries is in surface waters and primarily from flooding events. Holding floods allowed particulates to settle and reduced nutrients discharged from water. Bogs tend to retain nutrients in the spring and summer and discharge in the fall and winter. Where P fertilizer applications were reduced P discharge was also reduced, while yields remained unaffected.

Nitrogen. Kevin Kosola's lab at UW presented preliminary findings from their work on nutrient cycling, nitrification/denitrification, and nitrate uptake in cranberry beds. While much work remains to be done, nitrate is present in cranberry soils and cranberry vines will take up nitrate ions, albeit at very low rates.

Weeds. A survey of weed seeds retained in sand piles then spread during sanding operations showed that this is a source of weed infestations in cranberry beds. Dr. Kim Patten in Washington continues to do a lot of herbicide screening for cranberries. Some of the materials he has examined may hold promise for Wisconsin weeds. Phytotoxicity is an ongoing challenge in herbicide testing.

Disease management. Upright dieback is a widely occurring disease of cranberries. The causal agents of this disease have not been well understood. Phomopsis vaccinii appears to be the causal agent. Uprights are most susceptible with succulent new growth, although infection can occur at any time if there is a wound or other source of entry. P. vaccinii is a vascular pathogen, thus initial infection can occur in the leaves and then moves to the stems.

Insect management. Dr. Mahr in Wisconsin examined a wide range of insecticides (organophosphates, neonicitonoids, synthetic pyrethroids, insect growth regulators, botanicals) for control of Tipworm. The various classes of products worked better on particular stages of the

insect than others. Dr. Fitzpatrick in B.C. looked at the feeding behavior of cranberry gridler larvae and found that they prefer succulent tissue and that they move towards the earth and away from light. They preferred the roots of Reed Canary Grass to cranberry roots and survival was better on grass roots than cranberry roots. Control of weeds in cranberry beds likely has implications for managing cranberry girdler.

Much of the work reported at the NACREW conference is supported by growers. We appreciate the generosity of growers who support this research that has the aim of supporting the cranberry industry.

Teryl Roper, UW-Madison Extension Horticulturist

LATE SEASON WEED CONTROL

With the availability of Stinger herbicide growers have an additional tool in the effort to control some problem weeds. Some growers have been effective during the season in controlling weeds with broadcast or wiper applications of Stinger.

For some weeds, spot spraying after harvest may be another option. Weeds such as clover are still green and succulent after harvest. Spot applications of Stinger with a wiper or hand sprayer should be effective in controlling such weeds. When the vines are dormant a little bit of spray from treating clover should not pose problems to the vines or the buds. Use low rates and spray just to wet the weeds. Don't spray to runoff.

Wait until at least 2 weeks after harvest and until the vines have taken on their characteristic dormant color before treating. Use a low rate of about ½ pint per acre for broadcast application or about 1 oz. per gallon for hand sprayers.

Teryl Roper, UW-Madison, Extension Horticulturist

PESTICIDE STORAGE

With harvest finished now is a good time to think about properly storing remaining pesticides through the winter so they will be efficacious next year.

Most growers use existing buildings to store pesticides. However, if you mix and load large quantities of pesticides, consider building a dedicated facility. Plans for these buildings are available through your county Extension office.

A pesticide storage facility should have a cement floor that is impermeable and easy to sweep or wash. The area should be well lighted and ventilated. Smoke alarms or carbon monoxide detectors should also be installed.

Protect stored pesticides from freezing. Ideally, a storage facility should be well insulated and have sufficient heat provided to keep the temperature above freezing. Some pesticides (particularly liquid formulations) will break down or separate, making mixing difficult or impossible if allowed to freeze.

Store herbicides, insecticides and fungicides in separate areas, if possible. Volatile herbicides may contaminate other pesticides if the containers are not securely sealed.

Store dry chemicals such as powders and boxes on pallets or shelves to keep the packages dry and the labels legible. Don't store dry materials on shelves below liquids. Any liquid spills would contaminate lower dry chemicals. Metal containers should be placed on pallets over the winter to keep them dry and to prevent them from rusting.

Always store pesticides in their original containers; labels should be intact, legible and plainly visible. Check stored materials periodically to make sure the containers are secure and the labels are still legible. Don't transfer pesticides to another container that held a different product.

When pesticides arrive on the marsh, mark the date of purchase or delivery on the container. This will help you rotate your stock. Most manufacturers recommend a shelf life of no more than 2 years. Once a package is opened, the shelf life is substantially reduced.

Make sure your pesticide storage area is secure. This will reduce the risk to family members and unauthorized employees, but will also reduce the chance of injury or theft. Make sure animals can't get to stored pesticides. Don't store feeds, seed or baits in the same area with pesticides.

Mark the exterior of the storage facility clearly that pesticides are stored inside. This will deter people who shouldn't be in the facility and will help emergency response personnel in the case of a fire or flood. Placards are available commercially.

Storing pesticides properly through the winter will ensure they are effective next year. Storing the alone in a dedicated facility gives you greater management flexibility and will protect other farm assets if there were a fire. Storing pesticides alone just makes good sense.

Adapted from "Pest Management Principles for the Commercial applicator--Fruit Crops"

Wisconsin Cranberry School

The annual Wisconsin Cranberry School will be held January 24-25, 2006 at the Chula Vista Resort in Wisconsin Dells. Program details are still being finalized. Registration materials will be sent to growers in late November to early December. Please put these dates on your calendar and plan to attend cranberry school in 2006.