

Muck station updates research

Topics includes carrot breeding and cultivar trials, washwater treatment, and aerial scouting

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The first day of the annual Muck Vegetable Growers' Conference in Bradford was devoted to carrot research with additional presentations on washwater treatments, leaf curl in celery (see story on page 17B) and crop monitoring from the sky.

The conference and trade show attracted about 65 to 70 growers – representing almost all the muck vegetable farms in the province.

Research scientist Mary Ruth McDonald kicked things off with an overview of some of the activities coming out of the station.

“While carrot weevil has been a problem for a long time, in the last couple of years, we’ve been seeing it do enough damage to actually kill carrots,” she said.

McDonald highlighted a couple of the trials – one in which the Muck researchers are contributing to a USDA breeding program to improve genetic stocks for carrots in Ontario and California. In this trial, funding from the California Fresh Carrot Advisory Board was used to evaluate carrot breeding lines for sus-



The University of Guelph's Muck Crops Research Station staff include, left to right, Kevin Vander Kooi, Dennis Van Dyk, Mary Ruth McDonald and Laura Riches.

ceptibility to cavity spot.

Results showed that while purple carrots were the most resistant, and reds were the most susceptible to cavity spot, there were some orange lines that showed both high and low levels of resistance too, so colour wasn't the only factor.

In another study, food grade oil from Suncor was used in combination with different adjuvants to see if it would increase the resistance of carrots to insects and diseases.

Results were dramatically positive for resistance to aster yellows disease, which is spread by the aster leafhopper. The downside was that the spray solutions would separate easily, meaning they had to be frequently agitated.

McDonald cautioned that much more research would be required before a product could be commercially available.

She said work will continue

in 2015 into carrot insects, fusarium, fumigants for nematode control and the food grade oil.

STATION MANAGER Shawn Janse gave an update on the 2014 carrot cultivar trials, which involved 31 varieties from seven companies.

Overall, the yields were good, there was an increase in cavity spots, the carrots had even lengths and were smoother than in previous years.

The marketable carrots were up from last year in both cellos and jumbos, although there were some splitting and forking issues.

Weevil damage was way up, and rust fly infestations were pretty much the same as the last 10 years, with the exception of 2011, in which they were a lot higher.

Cello yields averaged 1,513 bushels per acre, and jumbos averaged 1,800 bushels per acre.

Janse also mentioned the International Carrot Conference being held in Alliston in September, and pointed out that the muck station now has a Twitter account (@MuckIPM). Through it, the station provides updates of its IPM program, pest alerts, reminders of coming events and other information to help producers. ERIC ROZEMA provided an update on a four-year project by the Holland Marsh Growers' Association, sponsored by Environment Canada through the Lake Simcoe and South-eastern Georgian Bay Clean-up Fund, aimed at finding effective and affordable technologies for treating vegetable washwater.

The need for the project arose when the Lake Simcoe Protection Act brought in stricter regulations on wastewater discharges. The Ministry of Environment and Climate Change works with farmers to establish discharge limits, and once they are settled, they are written down in a legally binding agreement.

"Once muck soil is in the water, it's very difficult to get out – we need novel solutions and that's why we're doing this work," Rozema said.

Right now, the project team is characterizing the washwaters – sampling multiple sites on different farms to find out what contaminants and nutrients are in the water. They're also encouraging technology companies and consultants to get involved in finding solutions.

"There are multiple solutions and options people can find that will work for them," Rozema said.

Among the choices are large solids removers like drum filters, parabolic screen filters, hydrocyclones that spin out the solids and settling tanks.

For fine solid removal, there are chemical treatments like coagulation and flocculation, filter bags and dissolved air flotation, which pushes solids to the surface where they are skimmed off.

There are also woodchip filters, vegetative filter strips and constructed wetlands.

And for the final stages of polishing and disinfecting, there is membrane filtration, reverse osmosis, Ultra Violet light, ozone and chlorination.

"There are lots of different technologies and it can be confusing," said Rozema. He added that the association is encouraging farmers to get involved. Farmers are encouraged to check out the website at www.HMGAWater.ca. A PRESENTATION by Dennis Van Dyk included an update on research being conducted to determine if aerial photography is a feasible option for scouting

"...it is important to catch diseases very early in order to effectively control them." — Dennis Van Dyk

in muck vegetable fields.

The project is being funded through Growing Forward 2 in concert with the Bradford Co-op.

Initially a small Piper Cub with a camera mounted on the bottom was flown over fields taking pictures every couple of seconds. While the pictures

were clear, the plane had to fly too high and the picture resolution wasn't fine enough to differentiate any kind of disease.

Next up was an octocopter drone, which could hover 80 to 100 metres in the air and capture multiple fields at once. The resolution of the pictures was

better, but it was still difficult to identify foliar disease early on.

"In vegetable scouting it is important to catch diseases very early in order to effectively control them," Van Dyk said.

Finally, eNDVI (Enhanced Normalized Difference Vegetation Index) images were taken

at the Muck Crops Research Station at a height of 20 metres directly above the field.

These images give an indication of plant stress. In 2015, Van Dyk is hoping to use eNDVI images in a number of growers' fields.

Van Dyk reminded growers that, under the research station's IPM program, growers can get one, 10-acre field scouted for free as part of their membership the Holland Marsh Growers' Association.