

ONTARIO PROCESSING VEGETABLE GROWERS

RESEARCH SUMMARY RESULTS - 2004

THE DEVELOPMENT OF PEST MANAGEMENT STRATEGIES FOR INSECTS AND PLANT DISEASES IN PROCESSING VEGETABLES.

Dr. Ron Pitblado

Ridgetown College University of Guelph

My complete research abstracts are available through your board office or accessible through the Ridgetown College Web site: www.ridgetownc.on.ca

CABBAGE

FIELD EVALUATION OF INSECTICIDES FOR THE CONTROL OF SWEDE MIDGE IN CABBAGE AND OTHER FOLIAR INSECTS - 2004.

CONCLUSIONS: MATADOR 120EC, WARRIOR 122EC and DECIS 5EC were the most effective pest control products significantly controlling foliar feeding cabbage insects. TRACER 480SC was next in effectiveness with high levels of control followed by the higher rate of ASSAIL 70WP. The lower rate of ASSAIL 70WP and ADMIRE 240F were not effective in controlling imported cabbageworm and diamondback moth in processing cabbage.

CONTROL OF CABBAGE FOLIAR INSECTS USING NEW Btk FORMULATED PRODUCTS I - 2004

CONCLUSIONS: The newly formulated Btk material from Dr. A. Margaritis, Professor of Biochemical Engineering, Department of Chemical and Biochemical Engineering, University of Western Ontario, London, Ontario, N6A 5B9, proved to provide equal control of cabbageworms and the diamondback moth attacking processing cabbage to that of the standard commercial biological material DIPEL DF. The addition of the surfactant Reddy-It in this year's trial did not improve the control of insects when combined with the newly formulated Btk material. The most effective product tested, and to a large degree, was the inorganic insecticide DECIS 5EC

EFFECTIVENESS OF AGRIPHAGE FOR THE CONTROL OF BLACK ROT IN CABBAGE

CONCLUSIONS: There was severe levels of black rot disease in the cabbage plants observed in the field. None of the treatments with AgriPhage applied in the greenhouse, in the field or a combination of both spray timings provided any level of bacterial black rot control

PEPPERS

BACTERIAL SPOT CONTROL IN PEPPERS-2004

CONCLUSIONS: The most effective treatment for the control of bacterial spot in peppers was the combination treatment KOCIDE 2000 + MANZATE 200DF followed in relative effectiveness by CUPROFIX 40% + PENNCOZEB 75DF. Fewer bacterial spot lesions were noted with treatments CUPROFIX 40% and 20% than the KOCIDE 2000 and the untreated control. The treatments using copper ionization water at different concentrations and the specific AGRIPHAGE tested were not effective in this trial.

ACIDIFYING COPPER SPRAY WATER TO IMPROVED THE CONTROL OF BACTERIAL SPOT IN PEPPERS-2004

CONCLUSIONS: Bacterial spot was significantly controlled with the use of the copper compound KOCIDE 101, irrespective of the pH. Altering the spray water pH did not have any beneficial or harmful effects on the pepper plants themselves nor alter the level of bacterial spot disease control in peppers.

RESISTANCE LEVELS IN PEPPER CULTIVARS TO BACTERIAL SPOT-2004

CONCLUSIONS: A range of genetic resistance was demonstrated in this trial with pepper cultivars having the highest levels of bacterial spot resistance to include Aristotle, HMX 2643, PRO 2R-2A, HA774 and Pageant. Pepper cultivars that showed significant susceptibility to the infections caused by the bacterial spot organism were Double Up, Cherry Bomb, Redstart, Inferno, Hot Hungarian and King Arthur. The pepper cultivars are listed in Table 1 in order of resistance with Aristotle having the highest levels of disease resistance and King Arthur the lowest levels of bacterial spot resistance.

GREENHOUSE APPLICATIONS OF COPPER FOR THE CONTROL OF BACTERIAL DISEASES IN TOMATOES AND PEPPERS-2004

COMMENTS: The pH of the water used by seedling greenhouse growers is relatively high. The addition of Kocide DF alone raises the pH even further however the addition of mancozeb helps to lower the pH. It is felt that a low pH of around 6.0 - 7.0 or lower is an ideal pH range for effective control using the tank mixture of copper and mancozeb. The addition of Bravo to copper did not lower the pH as when mancozeb was applied.

There is a huge range of copper concentrations being used in the greenhouse industry to control bacterial diseases in peppers and tomatoes. Some growers are using the higher rates to "stiffen up" and "green up" tomato plant foliage. It is the understanding that a spray concentration of only 0.3 ppm is necessary for bacterial control however this approach is only effective with multiple spray applications. Many growers apply much higher rates than 0.3 ppm but delay subsequent applications exposing new unprotected tissue to bacterial infection rendering their spray regime ineffective. Saying you have sprayed and achieving control are very different. The survey revealed some greenhouse growers had miscalculated the chemical rates with the result that the copper concentrations found on the tomato foliage were well below the effective control threshold.

Most growers but not all are applying their bacterial chemicals through a boom system. Many however have set up a separate boom system, fertilizing and watering using one system and disease control practices using a separate boom. Only a few growers are applying chemicals by hand watering.

Growers offered that improved bacterial control was being observed when they reduced watering during the day, suggesting that all watering be completed by 10:00 in the morning. This reduces the number of hours the foliage is wet minimizing the opportunities for bacterial infection to take place. Another cultural practice was an increase in nutrients to keep the transplants healthier also appeared to keep the plants freer from bacterial disease. A new approach being tested is the use of low water volumes under high pressures. This atomizes the droplets and reduces the potential damage to the foliage. Also a grower was using a new copper ionization process where the copper concentration was adjusted to the theoretically effective copper concentration of 0.3 ppm for bacterial disease control. This process showed well on the foliage analysis demonstrating the correct rate every time water was applied bathing the foliage in an effective rate of bacterial control solutions.

Due to the poor mixing characteristics of both the Kocide and mancozeb products a grower was applying these two products separately. It is felt that the tank mixture provides higher levels of control than when they are applied singly.

It was noted at several greenhouses that several pepper varieties showed significant bacterial spot symptoms this spring. On the other hand the number of bacterial disease symptoms on tomatoes were few.

SWEET CORN

EVALUATION OF SEED TREATMENTS FOR THE CONTROL OF FOLIAR INSECTS AND DISEASES IN SWEET CORN - 2004

CONCLUSIONS: Insect and plant disease populations were too low to provide comparative control data this past year. Neither PONCHO 600FS nor GAUCHO 600 seed treatments caused any problems in seed emergence in sweet corn.

EFFECTIVENESS OF AERIAL APPLICATIONS OF WARRIOR 122 SC AND MATADOR 120 EC FOR THE CONTROL OF EUROPEAN CORN BORER IN SWEET CORN - 2004

CONCLUSIONS: Populations of European corn borer were extremely low at both of the test locations. The lowest rate of WARRIOR 122 SC, applied at 83 ml product/ha, had the highest number of sweet corn cobs infested with European corn borers at both locations. The higher rates of both WARRIOR 122 SC and MATADOR 120EC provided a higher level of corn borer control than the standard FURADAN 480F insecticide.

COMBINATION EVALUATION OF MATADOR 120EC AND QUADRIS 250EC FOR THE CONTROL OF EUROPEAN CORN BORER AND RUST IN SEED CORN-2004

CONCLUSIONS: The fungicide QUADRIS 250EC effectively controlled the common leaf rust disease at location #2. There was no disease at location #1. The combination of QUADRIS 250EC with the insecticide MATADOR 120EC had no adverse effects on the disease controlling ability of the fungicide QUADRIS 250EC. There was not enough European corn borer present at either location to compare products.

SQUASH

POWDERY MILDEW CONTROL IN SQUASH - 2004

CONCLUSIONS: The standard commercial fungicide BRAVO 500 proved most effective in controlling powdery mildew in squash. Powdery mildew was also effectively controlled with BAS 51604F 38%WG as well as with MICROTHIOL DISPERS. CHITOSAN-PLUS did not effectively control powdery mildew on squash.