NE1640 Regional meeting, Hotel Viking, Newport R.I. October 19-20, 2017

Nathaniel Mitkowski Presiding as a substitute for Ernest Bernard.

Those in attendance: Robert Wick (UMASS), Nathaniel Mitkowski (URI), Billy Crow (UFL), Haddish Melakeberhan (MSU), Michael LeDuc (Vermont), Taylor Readyhough (Vermont), Koon-Hui Wang (Hawaii), Jim LaMondia (CTAES), Carmen Ugarte (Illinois), Marisol Quintanilla (MSU), George Bird (MSU), Donald Dickson (UFL), Deborah Neher (Vermont).

Dinner tonight at the White Horse Tavern, oldest tavern in North America

Jim LaMondia provided us with a history of where our regional meeting has met, its Chair and Secretary since 1985. George Bird added that he had the previous history.

Richard Rhodes, Executive Director of the Northeast Region of Experiment Station Directors. Gave us a “Welcome to Newport”.

Presentations

Nathaniel Mitkowski: Introduction to Rhode Island. Notification of the Michigan turfgrass conference, part of our commitment to 1640. Billy Crow will present at the New England Turfgrass Conference. Wick will do a workshop on nematode identification for diagnosticians in the Northeast. Talked about diagnosing turf grass diseases; herbicide barricade should not be used on creeping bentgrass as it prunes roots. Samples received in the R.I. diagnostic lab were not the result of infectious disease 45-50% of the time. Chlorpyrophos being used in New England legally l but probably at an off-label rate as well. Fluopyram, an SDI has low toxicity but $1600-3200/A. Mode of action against nematodes currently unknown. Works well for *Tylenchorhynchus* but not *Hoplolaimus*.

Koon-Hui Wang: A Cover Crop Calculator to estimate plant-available nitrogen (PAN) that can be made available from growing cover crops are generated for different climate zones with distinct soil types in Hawaii (<https://cms.ctahr.hawaii.edu/wangkh/ResearchandExtension/CoverCrops.aspx>). A Cover Crop Calculator Week (March 13-18, 2017) where four workshops / field days were conducted to demonstrate how to use Cover Crop Calculator to farmers and educators throughout Hawaii. A second outreach activity on “Benefits of conservation agriculture on soil water properties and entomopathogenic nematodes” was conducted on Feb 4, 2017 to show case the various benefits of soil health management.

Michael LaDuc: Mites as a biological control agent of flies in bedded-pack systems. Mastitis is a problem in the dairy industry, can’t market milk. Three species of *Diptera* vector the bacterium. Evaluated flies and mites that are predacious to fly larvae. Growing mites. Predaceous mites are abundant, feed on house fly larvae Mesostigmatidmites are abundant. Will be looking at associated fungi.

Taylor Readyhough: Impact of organic amendments of soil microbial community composition. Feedstock, composting practices affect microbes. Microbes can produce plant hormone analogs and affect plant growth. Disease suppression. Vermicompost suppresses R. solani. Aims to determine why vermicompost is better than poultry compost. Poultry compost is disease conducive. Both variable in their microbiology. Using tomato and lettuce as bioindicators. Will be examining “microbial-induced phenotype and universal primers to study a wide range of soil organisms. Also looking at a “pro biotic effect, inoculate with R. solani to see if there is suppression. o looking at the effect on E. coli.

Carmen Ugarte: Influence of soil management on nematode community Structure. Consider claims that urban gardens may be safe sustainable closed nutrient loops; excessive external inputs may lead to negative ecological effects. So the question, what are the nutrient and food web characteristics in urban gardens of Chicago. See high levels of bacterial feeders in urban gardens. Lead in home gardens was found to be higher. Soil health indicators reported from a recent workshop. Tier 1, 2 and 3. Tier 1 is ready to use reliably now, Tier 2 indicators are promising, Tier 3 indicators need research. Tier 1, Physical (texture water stable aggregates, bulk density, penetrometer and visual erosion rating), chemical biological (some such as C mineralization, respiration N mineralization, crop yield. Nematodes are in tier 2 as are beta-glucosidase activity and permanganate oxidizable carbon, microbial community Tier 3, microbial metagenomics. Need to study nematode population densities, community structure. Threshold numbers. Deb remarked that there hasn’t been much of a change over the years and that some rethinking needs to be done. George offered his opinion on what should be in Tier 1.

Jim LaMondia: Strawberry black root rot complex. Rotation crops. Lesion nematodes/Rhizoctonia. Rotations with Sudan grass or millet. Rotation of sudangrass, sorghosudangrass, pearl millet, black oats, *Rudbeckia*; bifumigation with ‘Pacific Gold’ *B. juncea*. Experimented with multiple crops in one year. Spring, summer and fall plantings. Black oats – millet/*Rudbeckia* dwarf essex rotation worked the best. Tobacco cyst nematode a big problem in CT. Trap crop studies in tobacco cyst nematode soil used to provide help for controlling *Globodera pallida* on potato. Using nightshade, litchi tomato and tobacco. Litchi tomato and resistant tobacco looks very good as a trap crop. Night shade results in a pretty good hatch.

Billy Crow: Nematodes in turf; root-knot *Meloidogyne graminis* occurs just below the thatch, sting nematodes move with season. Various nematicides work in different ways and against different nematodes. Abamectin needs several applications. Works well against *M. graminis*. Not so good against sting. Bayer’s Indemnify works well against sting not as well against *M. graminis*. Indemnify moves very slowly and will hang out high in the thatch area where root know nematodes reside. Nimitz worked in split root plot trial because it is systemic. Evaluating susceptibility of cultivars to nematodes to assist breeders. Nitrate leaching varies among Bermudagrass cultivars. Sting nematodes found in *Echinacea* flowers! Needs some research. *Aphelenchoides bessi* can feed ectoparasitically on leaves. A student working in soil ecology following various nematicide treatments. Sting nematodes and Pythium on Bermudagrass. Organic amendments reducing sting nematodes.

Haddish Melakeberhan: Sustainable Soil Health. Effect of vegetable cropping systems on plant parasitic nematodes. And, nematodes as an indicator of soil quality/nutrient cycling. Role of cover crops in soil health, *Brassica*, cereals and legumes. Variable responses lead to the questions, are we testing close to ideal conditions, how do we get to quadrant B (the sector representing stable and suitable agroecosystem), What is the relationship for carbon, nitrogen and yield. We need a multifactor analysis of nematode trophic groups, frequency of occurrence, etc.

Don Dickson: Low chill peach scion suitable for south Florida. Rootstock- ‘Flordaguard resistant to 4 nematode species. Is it really resistant? Turns out that the rootstock is not resistant. Nematode species can vary in their pathogenicity to the same rootstock. Carried out a survey of peaches, 402 soil samples from 25 orchards. *Meloidogyne javanica* most common on peach in Florida 68%; *M. floridensis* 36%. Nematode resistance in tomato. Looked at the Mi gene in tomato. Long history of methyl bromide use inhibited research to alternatives. Mi gene not effective against *M. hapla, M. enterolobii, M. haplanaria* or *M. floridensis*. Early report that high temperatures at 28 C can break resistance. *M. incognita* and *M. javanica* can also break resistance. Recent research did not corroborate 28 C breaking of resistance.

George Bird: Mi gene provides resistance to *M. incognita* but also provides cross resistance to potato aphid and sweet potato white fly. Grafting tomatoes onto Mi host. Mi gene did not work on heavily pruned plants but worked fine on non-pruned plants. There was some white fly resistance but not much in the absence of *M. incognita*. With 5000 nematodes added to the system, it greatly delayed the development of the whitefly. Nematodes reproduced more on white fly infested plants. Soybean cyst nematode, number 1 problem on soybean. No nematicides are used except for seed treatment. There is some horizontal resistance available; females do not produce many eggs on resistant cultivars. Three locations in Michigan for the trap crop trial as well as vertical, horizontal resistant cultivars. Resistant cultivars did not hold up very well. Trap crop dropped the number of cysts to some extent. Bio-fum is a cover crop with a misleading name because it is not a biofumigant. Trap crop blend is planned for 2018.

Marisol: New and Michigan state to tackle applied nematology and soil health. Soybean, potatoes, sugar beets corn vegetable fruit and ornamentals. Research and extension maintain or increase profitability and environmental quality. Soybeans resistant cultivars, manure, product trials, nation-wide collaborations. *P. penetrans* on potato as complex with *Verticillium dahliae* early dying. Looking at product trials, evaluating compost formulations, manure. Cover crop trials. Compost and Nimitz were effective in controlling nematodes. Sugar beet, tolerant cultivars and nematicides. Vegetables, survey for nematodes, soil solarization and also with chicken manure (increases temp), sunn hemp incorporated into soil (3 fold reduction in nematodes after incorporation). Fruit apple replant. Ornamentals, daylilies. Discussed research previous to Michigan State.

 Business Meeting: Need chair and secretary. Nathanial will be chair for the next two years. Marisol will be secretary for the next 3 years. We will be in Northampton 2018 hosted by Rob Wick. George says we need to review objective 3. Webinar series? Website? Various workshops; turf in Michigan already planned; more have been proposed. Thank you to Nathaniel Mitkowsky for organizing the meeting.

Respectfully Submitted

Rob Wick, UMass