Announcing the
21st Annual

Mid-Atlantic Crop Management School

November 17-19, 2015

Princess Royale Hotel and Conference Center, Ocean City, MD

About the School

The school offers a 2 ½-day format with a variety of breakout sessions. Individuals needing training in soil and water, nutrient management, crop management and pest management can create their own schedule by choosing from **5** program options offered each hour. Emphasis is placed on new and advanced information with group discussion and interaction encouraged.

Who Should Attend

This school is designed for anyone interested in crop management issues, including:

- agronomists
- crop consultants
- extension educators
- farmers and farm managers
- pesticide dealers, distributors, and applicators
- seed and agrichemical company representatives
- soil conservationists
- state department of agriculture personnel

Continuing Education Credits

The 2015 Mid-Atlantic Crop Management School will offer CCA continuing education units (CEUs) approved by the Certified Crop Adviser Program in the following categories:

- Crop Management
- Pest Management
- Soil & Water Management
- Nutrient Management
- Professional Development

Total CEUs earned will depend on course selection. This school also provides Pesticide Recertification Credits for DE, MD, NJ, PA, VA, and WV and continuing education for Nutrient Management Consultants in DE, MD, VA, and WV.

Hotel Reservation Information

The Princess Royale Oceanfront Hotel and Conference Center is located at 91st Street in Ocean City, MD.

Please contact the hotel directly to make your reservation. **Call 1-800-4-ROYALE or 410-524-7777 and identify yourself as a Crop Management School participant. Reserve your room no later than October 16 to guarantee the rates below.**

$69 per night (plus applicable taxes) – Oceanview/Poolview Suite
$90 per night (plus applicable taxes) – Oceanfront Suite

Registration Information

The early-bird registration fee (recommended to ensure a place in the sessions of your choice) is **$275** if received by **October 30.** After that date the fee will be **$325,** and must be received by **November 6**. Payment of registration fee entitles you to participation in 2 ½ days of sessions, materials, 3 continental breakfasts, 2 lunches, and refreshment breaks.

Enrollment is on a first-come, first-served basis. Breakout sessions will be limited to 90 participants in each session with the exception of the 5th session, which has stricter attendee limitations.

All registrations must be completed online and be paid by credit card at the time of registration.*

Visit the Mid-Atlantic Crop Management School website at https://www.SignUp4.net/public/ap.aspx?EID=20154802E to complete your registration online and make your session selections. Once you complete the online registration, you will receive a confirmation email providing verification of your session schedule and receipt of payment.

**If you are unable to provide credit card payment and wish to pay by check, complete the online registration and select the alternative payment option listed. Please note that your selected sessions can only be guaranteed once full payment has been processed.*

Questions about registration or payment should be addressed to Conference Services: Attn. Gail Knapp, 104 John M. Clayton Hall, Newark, DE 19716, email G_Knapp@facilities.udel.edu or call Gail at 302-831-8590.

Cancellation Policy –

- All cancellations must be submitted in writing via email to G_Knapp@facilities.udel.edu
- Cancellation requests received on or before 5:00 pm November 6 are fully refundable, less a processing fee of $25.00.
- No refunds after November 6.
- Substitutions are allowed at no additional cost provided notification is sent to Gail Knapp or Richard Taylor prior to the event start date.

I. Registration

General registration will begin 8:30 a.m. on November 17. Registration packets and information regarding CEUs and re-certification credits will be available at the registration desk. A continental breakfast will be available. There will be no general session and all breakout sessions begin at 10:00 a.m. on November 17.

II. Crop Management Sessions

Each Session is Worth 1 CEU in Crop Management unless noted.

A Path to Higher Yields: Part I. Understanding Corn Growth and Development - Are you missing the most important clues to how corn determines yield? Do you know the important stages and when your inputs are needed and how they affect yield? Does your corn stress during the season? These are a few of the questions you have to ask as you look to capture more yield from each hybrid you plant. In this presentation, we will look at what we can affect and what is left up to nature and how it affects the outcome of all our hard work. *Instructor: Dr. Dewey Lee, University of Georgia*

Effects of Stress on Corn Early in the Season – Grain yield of corn is the product of several yield components: Number of plants per acre, number of ears per plant, number of kernels per ear, and weight per kernel. These yield components of corn develop throughout the growing season and so stress at any time can influence ultimate grain yield. Stress can affect yield components directly (e.g., stand loss) or indirectly (e.g., stunted plants prior to pollination = smaller photosynthetic factory after pollination = less photosynthate available to sustain kernel development). This session will focus on the impact of stress during the stand establishment period (planting through V6) and, if time, during the rapid growth period prior to pollination. *Instructor: Dr. Bob Nielsen, Purdue University*

High Yield Soybeans: Is There a Recipe? A Roundtable Discussion – Is there a silver bullet for high yield soybeans? There has been a lot of chatter over the last few years on certain management practices that lead to high yields. Bring your experience and ideas to the table! This session will be a round table discussion focused on identifying yield limiting factors and key management practices that lead to high yield soybeans. *Instructors: Dr. Cory Whaley and Phillip Sylvester, University of Delaware*

A Path to Higher Yields: Part ll. Reducing Stress through Plant Health and Management - In this seminar, we will continue as part 2 of "A Path to Higher Yields", looking at how to capture the yield potential of our hybrids. A new world record of 503 bushels per acre in Georgia demonstrates the amount of yield potential lost each year on our farms. It can be difficult to move the "yield needle" if we don't take the time to become a student of the corn plant and really give focus to the finer details of our inputs and the timing. This presentation will focus on what type of inputs and efforts go into producing high yield corn. *Instructor: Dr. Dewey Lee, University of Georgia*

Low Grain Prices: Searching for Profits - While one can make the argument that cost-efficient crop production practices should always be important to growers, low grain prices certainly drive home the importance of sound agronomic decision-making. Everyone is aware that net income (profit or loss) is equal to [yield] times [market price] minus [costs]. Improving yield with decisions that cost less per bushel than the market price received for the grain will obviously improve net income. Alternatively, reducing production costs with minimal to no reduction in grain yield will also increase net income. I will share some thoughts and opinions on several key agronomic decisions that impact profitable corn production. ***Instructor: Dr. Bob Nielsen, Purdue University***

Row Crop Planters – Wider, Faster, or Both - The agricultural equipment industry is trending toward wider planters and higher field speeds. Precision planters at 60 feet wide are common and there are currently models available in widths up to 120 feet. There is also a desire to plant at field speeds near 10 mph. While section control systems will help optimize inputs by minimizing double planted areas with wider planters, the agricultural community lacks information to adequately select the appropriate planter size and operation conditions. This presentation will cover the benefits and challenges of wider planters and higher planting speeds including power requirements of increasing precision planter width and speed. Furthermore, some of the side effects of planter speed such as plant spacing and emergence uniformity are also discussed. *Instructor: Dr. Randy Taylor, Oklahoma State University*

Breaking Down Wheat Yield – Maximizing wheat yield requires attention to detail and good timing. In producing wheat, it is important to understand wheat yield components and how management practices and stress affect wheat yield at each stage of growth. This session will focus on identifying growth stages and on key management practices at critical stages to maximize wheat yield. *Instructor: Dr. Cory Whaley, University of Delaware*

Precision Seeding Systems –Evaluation and Performance - Row crop planter technology has taken some big steps in the last couple years. New technologies range from seed delivery systems that eliminate the seed tube and carry the seed all the way to the trench to multi hybrid planters. Coupling these developments with section control, electric drives, and automated downforce control generates a lot of interest in planter technology. Many of these technologies can be bought on new planters as an option or retrofitted to existing planters. Just how will these new technologies benefit the producer? *Instructor: Dr. Randy Taylor, Oklahoma State University*

Fine Tuning No-Till Planter Performance – A well maintained and properly adjusted planter is a key component to achieving high no-till yields. This session will explore common planter problems to avoid that hurt emergence, stand uniformity and yields. In addition, various planter set-ups no-tillers should consider in their system will be discussed. *Instructor: Mr. Dave Dum, Binkley & Hurst, LP*

III. Nutrient Management Sessions

Each Session is Worth 1 CEU in Nutrient Management

Lime Rate and Its Relationship to Fertility and Soil Type -- Ameliorating acid soils through liming is a proven practice, although precision in predicting and understanding effects on crop yields is difficult. The necessary amounts of lime to optimize crop yields should be correlated to soil and crop types, particularly in relation to the availability of micronutrients. Rather than simply accepting lime recommendations, field observations and analysis should be performed yearly to calibrate to local variability. *Instructor: Dr. Jarrod Miller, University of Maryland*

The Wide World of Controlled Release Fertilizers -- Controlled release fertilizers have been commonly used in horticultural applications for many years in nurseries, greenhouses, and turf. Recently, they have gained a foothold with field crops and vegetables as costs have been reduced. In this session information will be provided on the different technologies used to control the release of nutrients from fertilizers. Research on their use in the region will be presented. Potential applications in Mid-Atlantic production systems will be discussed with an emphasis on coated products. *Instructor: Dr. Gordon Johnson, University of Delaware*

Fertility Management in High Tunnel Production -- The benefits of high tunnel growing include greater heat gain, season extension, and better control of foliar diseases. However, high tunnels must be ventilated to prevent over-heating and all water must be supplied by irrigation. When you build a high tunnel you are creating an IRRIGATED DESERT, which requires specialized soil management. Yields in high tunnels can be 2 to 3 times those attainable in open-field production. High tunnel recommendations must compensate for the much greater nutrient demand on these soils. Heavily amended soils and no natural rainfall lead to nutrient salt buildup and stratification over a few years' time, which must be monitored in high tunnel soil testing. Current research is seeking to calibrate several soil testing systems currently used on high tunnel soils. *Instructor: Mr. Bruce Hoskins, University of Maine*

Nitrogen Release from Non-chemical Fertilizers -- Non-chemical sources of nitrogen include animal manure, cover crops, and a wide variety of plant and animal byproducts. Non-chemical sources are required in organic production, but are also used extensively in conventional crop production. Many laboratory incubations and field studies have been conducted in the past 5 - 10 years that document the N-release profiles of many of these materials and the critical characteristics and soil conditions that affect them. *Instructor: Mr. Bruce Hoskins, University of Maine*

Regulatory Review: PMT and CAFOs Session 1 – An Overview of the Current Phosphorus Management Tool (PMT) Regulations and Reporting Requirements -- In this half session, MDA will provide an overview of the current PMT regulations and reporting requirements that were passed as part of the 2015 Phosphorus Imitative. We will provide a preliminary overview of the Phosphorus data that was reported in September 2015. We will also provide a brief update on nutrient management requirements like nutrient application setbacks, incorporation, and timing of nutrient application. *Instructor: Mr. Bryan Harris, Maryland Department of Agriculture*

Regulatory Review: PMT and CAFOs Session 2 – Update on Delaware CAFO Program -- This half of the session will aim to provide an update on the Delaware Concentrated Animal Feeding Operation (CAFO) program. An overview of Delaware's permitting approach and process will be covered. There will be a discussion of the basic permitting program criteria as it relates to individual farms. The differences between the regulatory requirements of the Delaware Nutrient Management Law and the Delaware CAFO Regulations concerning farms engaged in animal production will be highlighted. The education and outreach process will be explained as it relates to the agricultural community concerning the CAFO permitting program. *Instructor: Mr. Ben Coverdale, Delaware Department of Agriculture*

Manure to Energy Byproducts as Agronomic Fertilizers -- Restrictions of manure as a fertilizer is bringing alternative technologies to the Mid-Atlantic, including anaerobic digestion and pyrolysis. Byproducts from these processes have potential as fertilizer sources, but will still be limited by P content and N mineralization rate. Understanding the difference between and among byproducts will be imperative for farmers and consultants. *Instructor: Dr. Jarrod Miller, University of Maryland*

Development of BMP Verification Guidance and Implementation Plans for the Chesapeake Bay Watershed -- The implementation of a federal Total Maximum Daily Load (TMDL) by the U.S. EPA for the Chesapeake Bay watershed not only transformed the Chesapeake Bay Program (CBP) restoration initiative from a voluntary to a federally mandated effort, but also required the development and implementation of new BMP implementation verification standards. After several years of development by the agricultural and other source sectors of the program, the partnership adopted a comprehensive set of verification guidance in 2014. Each of the Bay jurisdictions are presently finalizing their individual verification implementation plans, which will bring about changes to how agricultural programs are managed across the six Bay states. This session will provide an overview of the partnership's verification guidance for agriculture, the federal timeline for implementing state implementation plans, and how these plans may affect agricultural businesses, consultants, and producers in the future. *Instructor: Mr. Mark Dubin, University of Maryland Extension and U.S. EPA Chesapeake Bay Program Office*

Farm-Scale Manure-to-Energy Technologies: Environmental and Technical Performance -- Collaborators working on the Farm Manure-to-Energy Initiative have been demonstrating and evaluating the performance of farm-scale manure-to-energy technologies throughout the Chesapeake Bay region. These demonstrations have focused on the use of poultry litter as a fuel in technologies that have the potential to generate energy and facilitate export of nutrients out of high-density production areas. This session will present results from field trial evaluations including the opportunities and challenges associated with widespread adoption of these technologies, as well as environmental performance (nutrient cycling and air emissions). Results from vegetable and row crop field trials using ash and biochars as fertilizer will also be presented. *Instructor: Ms. Kristen Hughes Evans, Sustainable Chesapeake*

Soil Potassium Status across a Growing Season for Irrigated Corn -- This session will discuss the findings of a survey conducted in 2014 in 20 irrigated corn fields and 1 non-irrigated corn field located around the state of Delaware although concentrated in Sussex County. Shortly after sidedress time (about V-6 growth stage) and at black layer formation, a survey was conducted to measure potassium (K) soil test levels in accessible layers (0-6 inch, 6-12 inch, and 12-18 inch) depending on the ability to penetrate those depths with a hand-held soil probe. On a weekly (through July) and biweekly (August and September until the black layer formed) basis thereafter, soil test were obtained from the 0-6 inch layer and analyzed for major and micronutrients at the University of Delaware Soil Testing Laboratory. Results and potential implications of the survey will be discussed. *Instructor: Dr. Richard Taylor, University of Delaware*

IV. Pest Management Sessions

Each Session is Worth 1 CEU in Pest Management

Making Effective Pesticide Applications -- This session will discuss how to make pesticide applications that are both effective and safe. The importance of spray droplet size will be covered, as well as how applicators can determine the appropriate droplet and select and operate their spray equipment to generate that droplet size. The impact of adjuvants on droplet size will also be discussed. Research involving both ground and aerial applications will be reviewed to help highlight recommendations. *Instructor: Dr. Scott Bretthauer, University of Illinois*

Future Technologies for Herbicide Resistance Weed Management -- This session will address ongoing and future developments in herbicide resistance management and weed control beyond the mere use of herbicides. Novel approaches from precision agriculture supported by global positioning and image recognition, as well as genomics approaches to address spreading resistance towards chemical weed control measures will be presented. The use of deep sequencing transcriptome data and sophisticated physiological analysis will be discussed in the light of herbicide resistance management. *Instructor: Dr. Burkhard Schulz, University of Maryland*

Use of Seed Treatment Nematicides to Manage Soybean Nematodes -- This session will provide an update on the current disease management strategies for soybean nematodes. Topic will include an introduction to soybean nematodes, the use and efficacy of nematicides with emphasis on nematicides applied as a seed treatment and integrated options with host plant resistance to manage soybean nematodes. *Instructor: Dr. Travis Faske, University of Arkansas*

Fumigant Control of Nematodes in Vegetables -- Plant parasitic nematodes affect several vegetable crops in the Mid-Atlantic region resulting in reduced yields and quality. The loss of methyl bromide coupled with limited stocks of non-fumigant nematicides has brought nematode control to the forefront. This session will cover fumigant nematicides and biocides with special emphasis on nematicidal activity. Non-fumigant nematicides such as Vydate® and Nimitz™ will also be discussed. Comparisons will be made that address efficacy, application methods, phytotoxicty, and cost of application. *Instructor: Dr. David B. Langston, Jr., Virginia Tech*

The Intersection of Cover Crops and Weed Control -- This session will examine the utility of cover crops as a component of an integrated weed management approach, and how to manage cover crops to optimize their weed control potential. Local trial results on integrated cover crops with chemical weed control will be discussed. *Instructor: Dr. Mark VanGessel, University of Delaware*

Pest Management Trivia Challenge -- Put your pest management knowledge to the test! In this session, participants will form teams and compete in a bar trivia style game for the title of the 2015 Crop Management School Pest Management Champions. Questions will focus on insect, weed, and disease management with a short explanation following each question discussing the correct answer. Members of winning teams will receive certificates that will advertise their superior pest management knowledge to their peers. *Instructors: Mr. Bill Cissel, Dr. Nathan Kleczewski, Mrs. Joanne Whalen, and Dr. Mark VanGessel, University of Delaware*

Understanding and Identifying Stalk Rots in Corn -- Stalk rots are a common occurrence in corn. Mitigation of losses due to stalk rots requires an understanding of the factors that result in their development. This talk will cover the physiology behind stalk rots in corn, identification of stalk rot inducing pathogens, scouting, and management options. This session is geared towards new consultants or growers or those seeking an update on stalk rot management in corn. *Instructor: Dr. Nathan Kleczewski, University of Delaware*

V. Soil and Water Sessions

Each Session is Worth 1 CEU in Soil and Water Management

Basic Soil Hydrology and the Hydrologic Cycle -- This training presents and explains some common concepts in hydrology, the hydrologic cycle and soil water relationships. The science or study of hydrology focuses on the distribution, occurrence, circulation and properties of water in the environment. At its most basic level, hydrology is often defined as the study of water, however, basic concepts in hydrology quickly become complex as we apply them to real systems to understand and predict what is occurring. This training distills these complex relationships to provide context-specific information to the reader. While broad hydrologic concepts are defined and discussed, this training also highlights some hydrologic concepts and applications important in agroecosystems, including soil water and vadose zone relationships .Understanding the hydrologic cycle is critical because many of the environmental problems we face today are related to hydrologic or water issues, including climate change, agricultural productivity/food security, energy, and human health. *Instructor: Dr. Zach Easton, Virginia Tech*

Impact of Phosphorus on Estuarine Water Quality -- This talk will summarize the current understanding of the role of phosphorus in estuarine eutrophication, a process largely driven by excess amounts of both phosphorus and nitrogen entering these ecosystems. Water quality problems include loss of seagrasses, algal blooms, development of dead zones (no oxygen in the water) and others. Relatively simple conceptual models have been developed to capture the various water and habitat quality impacts of nutrient enrichment. More recently, strong feedback mechanisms have been identified wherein ecosystem health can change rapidly when these feedback systems come into play. In

the case of phosphorus, low dissolved oxygen conditions, elevated water pH and salinity all play a role enhancing phosphorus mobilization from sediments. Field and laboratory studies and simulation modeling all indicate rapid P responses to changing environmental conditions and a longer "system memory" for phosphorus than for nitrogen. *Instructor: Dr. Walter Boynton, University of Maryland*

Informed Management on a Regional Scale: Estimating Real World Agricultural Management in a Computer World Model -- For the last three years, the Chesapeake Bay Program has worked closely with agricultural partners from around the watershed to develop new methods for estimating nutrient inputs to agricultural lands, runoff from those lands, and the advantages of conservation practices on those lands. The result is a new set of computer models that will help inform managers as they seek to maintain a productive agricultural economy while also protecting local and regional water quality. The talk will provide audience members with a better understanding of how these estimates were made in the past, how they will be made in the new set of tools, and opportunities to improve these estimates in the future. *Instructor: Mr. Matt Johnston, University of Maryland*

Perdue AgriRecycle Sustainable Solutions -- All of us in agriculture, from the seed and fertilizer dealers, to the crop and poultry producers, to the integrators, understand our responsibility as stewards of the land. Perdue-AgriRecycle's contribution in this endeavor is to help keep agriculture sustainable in the area while respecting the environment. We are researching opportunities to help manage nutrients sustainably and preserve the Chesapeake Bay environment. *Instructors: Mr. Scott Raubenstine, Perdue AgriBusiness and Mr. Ed Roche, Perdue AgriRecycle*

Soil Health Principles and Manure Incorporation -- Overview of soil health planning principles, how they impact soil functions and relate to crop management decisions. Overview of how manure incorporation and use fits in with soil health planning principles, including the impacts of disturbance from tillage and how manure incorporation can impact soil physical chemical and biological properties and overall soil health. Discussion on selecting cover crops, purposes, and how they may or may not fit into cropping systems and manure application. Benefits of implementing soil health planning principles such as soil health, water quality and erosion control will also be discussed. *Instructor: Mr. Michael J. Kucera, USDA-NRCS National Soil Survey Center Lincoln, NE*

Water Quality Trading in the Chesapeake Bay -- Water quality trading is increasingly being used across the country as a means of minimizing compliance costs for regulated sources that need to reduce pollution or offset new pollution loads. In the Chesapeake Bay, Maryland, Virginia, Pennsylvania and the District of Columbia have each established water quality trading programs as a means of providing flexibility and reducing costs of compliance with TMDL-related regulations. This presentation will examine the suite of water quality trading programs in the Chesapeake Bay including how each program has approached issues like baseline, risk and uncertainty, and nonpoint source credit estimation, as well as examining the successes and hurdles of faced by these programs in establishing markets. *Instructor: Ms. Mindy Selman, Office of Environmental Markets, USDA*

Incorporating Livestock and Manure Application into No-Till Systems and Reduced Tillage Systems -- Discussion will center on application of manure and how it can fit into a No-Till and reduced tillage systems. Discussion on the entire management system including use of cover crops, livestock, manure application equipment, planting equipment and basics on manure application equipment related to no-till and reduced tillage systems. Discussion on how manure application can best fit into No-Till and reduced tillage systems. Basic comparisons will be made between no-till and vertical tillage systems with and without cover crops. *Instructor: Mr. Michael J. Kucera, USDA-NRCS National Soil Survey Center Lincoln, NE*

Delaware's Cropland Transect Survey – We're Looking for Residue, Have You Seen Any? -- In 2014, Delaware's Department of Natural Resources and Environmental Control's (DNREC) Watershed Assessment and Management Section conducted a cropland roadside transect survey for obtaining tillage types, crop residue, and cover crop data across the state. Through interagency cooperation, a team was assembled with members from DNREC, University of Delaware Cooperative Extension, Delaware Department of Agriculture, Natural Resources Conservation Service, Farm Service Agency, and County Conservation Districts. The purpose of the survey is threefold: (1) to provide information that can be used by individual soil and water conservation districts and others in establishing priorities for conservation programs, (2) to evaluate progress achieved in reaching county, statewide, and watershed wide goals, and (3) to provide accurate data on the adoption of conservation tillage systems by crop type. Data collected will be provided to the Conservation Technology Information Center's National Crop Residue Management Survey making this statistically accurate survey an ideal tool for conducting watershed assessments as well as measuring progress for locally led conservation. This session will include an overview of the information obtained from the survey, as well as the significance of the data to the state and for Chesapeake Bay Watershed Implementation Plan progress. *Instructors: Ms. Marcia Fox and Mr. Tyler Monteith, Delaware's Department of Natural Resources and Environmental Control's Watershed Assessment and Management Section*

Soil and Water Conservation in Organic Agriculture -- This session will focus on the soil and water quality benefits of organic farming systems and discuss practices to increase those environmental benefits. Soil building practices such as crop rotations, cover crops, and compost are central to organic practices. These practices replenish soil organic matter, feed soil life, reduce erosion, improve soil structure, and enhance nutrient cycling. Well-managed organic systems rely mainly on slow-release forms of nutrients which reduce the risk of nutrient runoff and leaching. Enhanced soil structure, water infiltration, and nutrient retention also reduce the risk of groundwater pollution. The workshop will also provide an overview of common challenges for organic farmers and discuss the latest information on the topic from the National Organic Program/NOP and National Organic Standards Board/NOSB. *Instructor: Mr. Ben Bowell, Oregon Tilth and USDA NRCS*

Reducing Nonpoint Source Pollution through Effective Ditch Management -- Artificial drainage through manmade ditches or channelized streams is a common practice to allow for agricultural production of poorly drained soils on the Delmarva Peninsula. Over time, ditches accumulate sediment and vegetation that impedes drainage of water from adjacent fields and the removal of these materials ("dip out") is necessary to restore ditch functionality. Current management of the removed material ("spoil"), which typically involves spreading the sediments across adjacent agricultural fields and incorporating, has not been studied and the mobility of nutrients is unknown. In this session, we will discuss recent ditch management research that suggests increasing the depth of spoil incorporation near the ditch may reduce the risk of dissolved P loss and minimize the area of cropland affected by ditch maintenance. *Instructor: Ms. Melissa Savin, Delaware Department of Natural Resources and Environmental Control, Division of Watershed Stewardship, Drainage Program*

Drainage Basics and Drainage Water Management -- This course focuses on agricultural drainage basics in both tile and surface drained systems. The benefits of agricultural drainage on crop productivity and longer field access will be discussed. Drainage system planning, basic drainage system design considerations and system types, and the tradeoff associated with both surface (ditch) and surface (tile) systems will be shown. Drainage regulations will also be examined. Environmental problems associated with agricultural drainage including land use conversion, wetland and biodiversity loss and water quantity impacts will be talked about. Finally mechanisms to reduce the impact of agricultural drainage on water quality will be examined, including controlled drainage, bioreactors, constructed wetlands, and vegetated ditches. *Instructor: Ms. Emily Bock, Virginia Tech*

VI. Interactive Session

CEUs for each session are provided after the abstract

Produce Food Safety Hands-On Workshop -- Growers of fresh fruits and vegetables are being required by buyers to implement produce food safety programs on their farms and new FDA regulations are to be announced by November that will further affect produce growers. In this session, participants will learn about produce food safety with hands-on demonstrations and activities. Included will be recognizing high risk produce and how produce becomes contaminated; produce washing and monitoring produce wash water; infiltration of bacteria into produce; signs of produce contamination; evaluating irrigation water; employee sanitation; and harvest and packing equipment sanitation. Sample food safety plans will also be provided. There will also be discussions on how consultants can become involved with produce food safety. *Instructors: Dr. Kali Kniel and Mr. Pat Spanninger, University of Delaware (CM = 2.0)*

Forage and Field Crop Identification Hands-On Workshop -- In this session, those new to the industry and those that just want a refresher course will get hands-on experience identifying and distinguishing field crops such as the various small grains and common forage grasses and legumes. We'll learn about some of the common anatomical structures and plant characteristics that can be used to identify these crops. *Instructors: Dr. Richard Taylor, University of Delaware and Dr. Les Vough, Southern Maryland RC & D (CM = 2.0)*

Test Your Horticultural Knowledge: Turf and Ornamentals -- The green industry is wide ranging and includes plant growers (nurseries, greenhouses, turf farms), service providers (landscapers, lawn care) and many end users for plants (commercial, residential, municipal). In this session, participants will test their knowledge of the green industry in a contest format. Included will be plant identification, problem solving in landscapes, turf and ornamental pests, growing and cultural practices, nutrient management, and much more. Winning participants will receive their choice of turf and ornamental references. *Instructors: Mr. Chuck Schuster, University of Maryland and Ms. Marie S. Rojas, Independent IPM Consultant, Borders and Butterflies (CM=1.0)*

Evaluating Quality in Fruits and Vegetables Hands-On Workshop -- In vegetables and fruits, quality will determine marketability and price received. Evaluating quality is therefore necessary when advising fruit and vegetable growers. In this hands-on session quality evaluations will be demonstrated. Included will be grading and grade standards, recognizing defects and foreign matter, maturity evaluations, color evaluations, sugar evaluations (Brix), testing acidity, and firmness testing. The session will end participants doing taste testing and learning about taste panels and evaluation tastes, flavors, and textures. *Instructors: Ms. Emmalea Ernest, Dr. Gordon Johnson, University of Delaware (CM = 2.0)*

Public Relations Workshop – Talking to the Public about Agriculture and Positive Messaging for Your Organization or Business -- Crop advisors often must interact with the general public and many misconceptions about agriculture exist. The press also is looking for stories and headlines with food and agriculture. This double session will focus on talking to the public about agriculture and positive messaging for your organization or business. Different scenarios will be presented and participants will use role playing to learn about different techniques to better interact with the general public, reporters and journalists, and decision makers. *Instructors: Ms. Michele Walfred and Ms. Tracy Wootten, University of Delaware and Mr. Daniel Shortridge, Delaware Department of Agriculture (PD = 2.0)*

Using Crop, Soils, Pest, and other Ag Apps on Your Tablet or Mobile Phone Hands-On Workshop -- Many different applications are available for cell phones and tablets that can be used by crop advisors. In this hands-on session, participants will learn about many different free or low cost apps that are available, what they do, and how they might be used by crop advisors. Included will be GPS based scouting apps, soils apps, pest ID apps, crop evaluation apps, decision assistance apps, and more. As a part of the session, participants will be encouraged to share and demonstrate different apps that they find useful. On the registration please note if you are using Apple or Android based apps. *Instructors: Mr. Phillip Sylvester, Ms. Michele Walfred, and Dr. Gordon Johnson, University of Delaware (CM = 2.0)*

2015 Crop Management School Workshop Schedule

Tuesday, November 17, 2015

Time	Crop Management Palmetto 2 & 3 (upstairs)	Nutrient Management Palmetto 4 & 5 (upstairs)	Soil and Water Mgt. Barbados & Cayman (downstairs)	Pest Management Dominica & Eleuthera (downstairs)	Interactive Session Palmetto 1 (upstairs)
10:00 - 10:50	A Path to Higher Yields: Part I. Understanding Corn Growth and Development *Dr. Dewey Lee*	Lime Rate and Its Relationship to Fertility and Soil Type *Dr. Jarrod Miller*	Basic Soil Hydrology and the Hydrologic Cycle *Dr. Zach Easton*	Making Effective Pesticide Applications *Dr. Scott Bretthauer*	Produce Food Safety Hands-On Workshop *Dr. Kali Kniel and Mr. Pat Spanninger* (CM = 2 CEU)
11:00 - 11:50	A Path to Higher Yields: Part I. Understanding Corn Growth and Development *Dr. Dewey Lee*	Lime Rate and Its Relationship to Fertility and Soil Type *Dr. Jarrod Miller*	Basic Soil Hydrology and the Hydrologic Cycle *Dr. Zach Easton*	Making Effective Pesticide Applications *Dr. Scott Bretthauer*	Produce Food Safety Hands-On Workshop *Dr. Kali Kniel and Mr. Pat Spanninger* (CM = 2 CEU)
11:50 - 1:00	**LUNCH BREAK**				
1:00 - 1:50	Effects of Stress on Corn Early in the Season *Dr. Bob Nielsen*	The Wide World of Controlled Release Fertilizers *Dr. Gordon Johnson*	Impact of Phosphorus on Estuarine Water Quality *Dr. Walter Boynton*	Future Technologies for Herbicide Resistance Weed Management *Dr. Burkhard Schulz*	Forage and Field Crop Identification Hands-On Workshop *Dr. Richard Taylor and Dr. Les Vough* (CM = 2 CEU)
2:00 - 2:50	Effects of Stress on Corn Early in the Season *Dr. Bob Nielsen*	The Wide World of Controlled Release Fertilizers *Dr. Gordon Johnson*	Impact of Phosphorus on Estuarine Water Quality *Dr. Walter Boynton*	Future Technologies for Herbicide Resistance Weed Management *Dr. Burkhard Schulz*	
2:50 - 3:10	**BREAK**				
3:10 - 4:00	High Yield Soybeans: Is There a Recipe? A Roundtable Discussion *Dr. Cory Whaley and Phillip Sylvester*	Fertility Management in High Tunnel Production *Mr. Bruce Hoskins*	Estimating Real World Agricultural Management in a Computer World Model *Mr. Matt Johnston*	Use of Seed Treatment Nematicides to Manage Soybean Nematodes *Dr. Travis Faske*	Forage and Field Crop Identification Hands-On Workshop *Dr. Richard Taylor and Dr. Les Vough* (CM = 2 CEU)
4:10 - 5:00	High Yield Soybeans: Is There a Recipe? A Roundtable Discussion *Dr. Cory Whaley and Phillip Sylvester*	Fertility Management in High Tunnel Production *Mr. Bruce Hoskins*	Estimating Real World Agricultural Management in a Computer World Model *Mr. Matt Johnston*	Use of Seed Treatment Nematicides to Manage Soybean Nematodes *Dr. Travis Faske*	

Wednesday, November 18, 2015

Time	Crop Management Palmetto 2 & 3 (upstairs)	Nutrient Management Palmetto 4 & 5 (upstairs)	Soil and Water Mgt. Barbados & Cayman (downstairs)	Pest Management Dominica & Eleuthera (downstairs)	Interactive Session Palmetto 1 (upstairs)
8:00 - 8:50	A Path to Higher Yields: Part ll. Reducing Stress through Plant Health and Management *Dr. Dewey Lee*	Nitrogen Release from Non-chemical Fertilizers *Mr. Bruce Hoskins*	Perdue AgriRecycle Sustainable Solutions *Mr. Scott Raubenstine and Mr. Ed Roche*	Fumigant Control of Nematodes in Vegetables *Dr. David B. Langston, Jr.*	Test Your Horticultural Knowledge – Turf and Ornamentals *Mr. Chuck Schuster and Ms. Marie Rojas* (CM = 1 CEU)
9:00 - 9:50	A Path to Higher Yields: Part ll. Reducing Stress through Plant Health and Management *Dr. Dewey Lee*	Nitrogen Release from Non-chemical Fertilizers *Mr. Bruce Hoskins*	Perdue AgriRecycle Sustainable Solutions *Mr. Scott Raubenstine and Mr. Ed Roche*	Fumigant Control of Nematodes in Vegetables *Dr. David B. Langston, Jr.*	Test Your Horticultural Knowledge – Turf and Ornamentals *Mr. Chuck Schuster and Ms. Marie Rojas* (CM = 1 CEU)
9:50 - 10:10	**BREAK**				
10:10 - 11:00	Low Grain Prices: Searching for Profits *Dr. Bob Nielsen*	Regulatory Review—PMT and CAFO *Mr. Bryan Harris and Mr. Ben Coverdale*	Soil Health Principles and Manure Incorporation *Dr. Michael J. Kucera*	The Intersection of Cover Crops and Weed Control *Dr. Mark VanGessel*	Evaluating Quality in Fruits and Vegetables Hands-On Workshop *Ms. Emmalea Ernest and Dr. Gordon Johnson* (CM = 2 CEU)
11:10 - 12:00	Low Grain Prices: Searching for Profits *Dr. Bob Nielsen*	Regulatory Review—PMT and CAFO *Mr. Bryan Harris and Mr. Ben Coverdale*	Soil Health Principles and Manure Incorporation *Dr. Michael J. Kucera*	The Intersection of Cover Crops and Weed Control *Dr. Mark VanGessel*	Evaluating Quality in Fruits and Vegetables Hands-On Workshop *Ms. Emmalea Ernest and Dr. Gordon Johnson* (CM = 2 CEU)
12:00 - 1:00	**LUNCH BREAK**				
1:00 - 1:50	Row Crop Planters – Wider, Faster, or Both *Dr. Randy Taylor*	Manure to Energy Byproducts as Agronomic Fertilizers *Dr. Jarrod Miller*	Water Quality Trading in the Chesapeake Bay *Ms. Mindy Selman*	Pest Management Trivia Challenge *Cissel, Kleczewski, Whalen and VanGessel*	Public Relations Workshop – Talking to the Public about Agriculture and Positive Messaging for Your Organization or Business *Ms. Michele Walfred and Ms. Tracy Wootten* (PD = 2 CEU)
2:00 - 2:50	Row Crop Planters – Wider, Faster, or Both *Dr. Randy Taylor*	Manure to Energy Byproducts as Agronomic Fertilizers *Dr. Jarrod Miller*	Water Quality Trading in the Chesapeake Bay *Ms. Mindy Selman*	Pest Management Trivia Challenge *Cissel, Kleczewski, Whalen and VanGessel*	
2:50 - 3:10	**BREAK**				

Wednesday, November 18, 2015 (Continued)

Time	Crop Management Palmetto 2 & 3 (upstairs)	Nutrient Management Palmetto 4 & 5 (upstairs)	Soil and Water Mgt. Barbados & Cayman (downstairs)	Pest Management Dominica & Eleuthera (downstairs)	Interactive Session Palmetto 1 (upstairs)
3:10 - 4:00	Breaking Down Wheat Yield *Dr. Cory Whaley*	Development of BMP Verification Guidance and Implementation Plans for the Chesapeake Bay Watershed *Mr. Mark Dubin*	Incorporating Livestock and Manure Application into No-Till Systems and Reduced Tillage Systems *Dr. Michael J. Kucera*	Understanding and Identifying Stalk Rots in Corn *Dr. Nathan Kleczewski*	Public Relations Workshop – Talking to the Public about Agriculture and Positive Messaging for Your Organization or Business *Ms. Michele Walfred and Mr. Daniel Shortridge* (PD = 2 CEU)
4:10 - 5:00	Breaking Down Wheat Yield *Dr. Cory Whaley*	Development of BMP Verification Guidance and Implementation Plans for the Chesapeake Bay Watershed *Mr. Mark Dubin*	Incorporating Livestock and Manure Application into No-Till Systems and Reduced Tillage Systems *Dr. Michael J. Kucera*	Understanding and Identifying Stalk Rots in Corn *Dr. Nathan Kleczewski*	

Thursday, November 19, 2015

Time	Crop Management Palmetto 2 & 3 (upstairs)	Nutrient Management I Palmetto 4 & 5 (upstairs)	Soil and Water Mgt. I Barbados & Cayman (downstairs)	Soil and Water Mgt. II Dominica & Eleuthera (downstairs)	Interactive Session Palmetto 1 (upstairs)
8:00 - 8:50	Precision Seeding Systems –Evaluation and Performance *Dr. Randy Taylor*	Farm-Scale Manure-to-Energy Technologies: Environmental and Technical Performance *Ms Kristin Hughes Evans*	Delaware's Cropland Transect Survey – We're Looking for Residue, Have You Seen Any? *Ms. Marcia Fox and Mr. Tyler Monteith*	Reducing Nonpoint Source Pollution through Effective Ditch Management *Ms. Melissa Savin*	Using Crop, Soils, Pest, and other Ag Apps on Your Tablet or Mobile Phone Hands-On Workshop *Mr. Phillip Sylvester, Ms. Michele Walfred, and Dr. Gordon Johnson* CM=2 CEU
9:00 - 9:50	Precision Seeding Systems –Evaluation and Performance *Dr. Randy Taylor*	Farm-Scale Manure-to-Energy Technologies: Environmental and Technical Performance *Ms Kristen Hughes Evans*	Delaware's Cropland Transect Survey – We're Looking for Residue, Have You Seen Any? *Ms. Marcia Fox and Mr. Tyler Monteith*	Reducing Nonpoint Source Pollution through Effective Ditch Management *Ms. Melissa Savin*	
9:50 - 10:10	**BREAK**				
10:10 - 11:00	Fine Tuning No-Till Planter Performance *Mr. Dave Dum*	Soil Potassium Status across a Growing Season for Irrigated Corn *Dr. Richard Taylor*	Soil and Water Conservation in Organic Agriculture *Mr. Ben Bowell*	Drainage Basics and Drainage Water Management *Ms. Emily Bock*	Using Crop, Soils, Pest, and other Ag Apps on Your Tablet or Mobile Phone Hands-On Workshop *Mr. Phillip Sylvester, Ms. Michele Walfred, and Dr. Gordon Johnson* CM=2 CEU
11:10 - 12:00	Fine Tuning No-Till Planter Performance *Mr. Dave Dum*	Soil Potassium Status across a Growing Season for Irrigated Corn *Dr. Richard Taylor*	Soil and Water Conservation in Organic Agriculture *Mr. Ben Bowell*	Drainage Basics and Drainage Water Management *Ms. Emily Bock*	

Mid-Atlantic Crop Management School

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Mid-Atlantic Crop Management School

November 17-19, 2015

Princess Royale Hotel and Conference Center, Ocean City, MD

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