STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
DIVISON OF ANIMAL AND PLANT HEALTH
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MAINE REPORT TO THE EASTERN PLANT BOARD APRIL 2017 – MARTINSBURG, WEST VIRGINIA SUMMARY OF 2016 ACTIVITIES

INTRODUCTION

The Division of Animal and Plant Health within the Department of Agriculture, Conservation and Forestry (ACF) includes Maine's plant regulatory programs, responsible for protecting the state's plant resources from the introduction and spread of regulated insects and diseases. The Division provides technical information and support to agricultural producers and issues a number of licenses and permits for individuals to conduct certain business. The Division carries out its mission through the work of various programs including: nursery program, integrated pest management program, apiary program, arborist program, cooperative agricultural pest survey (CAPS), seed potato certification and the Board of Pesticides Control. The Division also works closely with the Division of Forest Health and Monitoring which is charged with protecting Maine's forest, shade and ornamental tree resources from significant insect and disease damage.

NURSERY PROGRAM

LICENSING AND INSPECTION

All businesses or individuals selling nursery stock in Maine must have a license. Nursery stock is defined as: woody plants, including ornamental and fruiting trees, shrubs, vines and all viable parts of these plants; herbaceous plants, including florist stock plants, annuals, perennials, vegetable seedlings, herbs, potted plants and all viable parts of these plants; and any other plant or plant part designated by the commissioner. 1321 nursery stock licenses were issued in 2016. A list of businesses with Maine nursery stock licenses can be found at: www.maine.gov/hort Inspectors performed 826 inspections at nurseries, greenhouses and plant dealers. A variety of pests were observed during inspections, but most were minor or common pests.

PHYTOSANITARY INSPECTION AND SHIPPING CERTIFICATION

461 lots of plant materials were inspected and certified for shipment using phytosanitary certificate forms. 8 federal certificates and 11 state certificates were for nursery/forest materials and 442 federal certificates were for potatoes, feed barley and wheat. 17 federal certificates were issued for processed plant material, mostly samples of engineered wood flooring. 28 businesses operated under compliance agreements and were approved to ship nursery stock to other states. 2 businesses had firewood kilns certified to produce heat-treated firewood for shipment out-of-state.

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INVASIVE PLANTS

In January 2017 the Division adopted rules that will prohibit the sale and distribution of thirty-three invasive terrestrial plant species starting January 1, 2018. The plants were evaluated using a previously established list of invasive plant criteria and then reviewed by a specially-convened committee of horticulture professionals, land managers, foresters, wildlife biologists and other scientists. The full invasive terrestrial plant rule and list of plants is available on our website www.maine.gov/dacf/php/horticulture/invasiveplants.shtml

INDUSTRIAL HEMP

In June 2015 LD 4, An Act to Promote Industrial Hemp, became law. This law instructed the Department to establish rules to license and monitor industrial hemp growers, these rules were adopted in April of 2016. Because the rule was adopted late in the year there were only two licensees and only one of those licensees grew any hemp. That grower planted about one acre and ended up with a crop on less than ¼ of that acre. The crop did test below 0.3% total THC and the grower was able to produce a seed crop. We expect more applications in 2017. More information on Maine's industrial hemp program can be found on our website www.maine.gov/dacf/php/hemp

In addition to licensing industrial hemp producers the Division supports *Cannabis* growers through the IPM program with pest problem solving, education and outreach to promote IPM methods, especially biological control.

GINSENG PROGRAM

Maine's ginseng certification program facilitates the export of American ginseng while meeting the requirements of the Convention for International Trade of Endangered Species of Flora and Fauna. In Maine, American ginseng is considered state endangered and the Department does not certify wild-harvested ginseng for sale. A license is required to grow cultivated ginseng for sale to out-of-state markets; harvested ginseng must be weighed and certified before sale. In 2016 there were 15 licenses issued for ginseng growers. Ginseng can be a difficult crop to grow in Maine and no cultivated ginseng has been harvested and certified for sale since 2001.

INTEGRATED PEST MANAGEMENT PROGRAM

SCHOOL IPM

The Maine School IPM Program continued to support compliance with state pesticide regulations requiring all K-12 schools to utilize IPM methods aimed at minimizing risks of exposure to pests and pesticides. In 2016 the School IPM Program provided training for over 300 public and private school staff at nine workshops. The School IPM program collaborated with Cornell University to evaluate and demonstrate the effectiveness of non-pesticide turf management practices on 50 school sports fields, including 11 in Maine. Outcomes from this project were showcased at a field day organized by the Maine School IPM Program, featuring demonstrations and hands-on learning activities, attended by 100 school staff and landscapers. The School IPM Program also organized an IPM visit to a Maine school to demonstrate IPM practices to tribal representatives from Maine and other northeastern states. In addition, IPM literacy among teachers and youth audiences was supported through teacher workshops and statewide youth education events. In 2016 we trained

50 pre-service teachers at the University of Maine, Farmington and engaged over 3000 young learners and educators at various educational events across the state.

GREENHOUSE IPM

The Maine IPM Program supports Maine's green industry through education and outreach aimed at minimizing pest problems and production costs and growing healthy plants. The IPM program collaborates with partners to offer workshops and share informational resources. In 2016, we offered two day-long workshops, each attended by about 50 greenhouse growers and gave several presentations on IPM to growers at state-wide conferences.

APIARY PROGRAM

In July 2016 Tony Jadczak left his position in the apiary program after 33 years of service. Tony was the first full time employee when the state apiary program was established in 1983 and was instrumental in the development and success of the apiary program. He will be missed.

In late November, Jennifer Lund was hired to replace Tony. Jennifer has a Master's degree in Entomology from the University of Maine and nearly 20 years of entomological experience. Before becoming the State Apiculturist, Jennifer managed the honeybee research program at the University of Maine in Orono. Some of the honeybee projects she has worked on include a national colony collapse disorder study, honeybee colony health comparisons of top bar and Langstroth hives, integrated varroa mite control effectiveness, the role of honeybees as vectors of blueberry disease, sub-lethal effects on colonies to low level pesticide exposure, and health of migratory hives arriving in the State of Maine for blueberry pollination. Jennifer is passionate about honeybee health and helping beekeepers succeed.

REGISTRATION AND INTERSTATE MOVEMENT

In 2016, 1011 resident beekeepers registered 8857 hives. Entry permits were issued for 58,833 hives managed by 37 commercial beekeeping operations contracted for blueberry, apple and cranberry pollination. This was a 22.6% decrease from 2015 (76,058). Over 60,000 honey bee colonies were rented for blueberry pollination in 2016. Maine blueberry growers produced another bumper crop in 2016, estimated to be similar to 2015 where just over 100 million pounds was produced. The average price growers received for processing berries is expected to be lower again in 2016. Since 2011, growers have seen a steady decrease in the average price per pound value of the crop. In 2015 growers averaged $0.46 per pound, down $0.14 from 2014 and $0.29 lower than 2013.

In 2016, 9794 hives were issued Maine health certificates for interstate movement to MA, RI, FL, NC, and GA for crop pollination and wintering purposes. After blueberry pollination, the majority of hives return to their states of origin under certification previously issued by that particular state. In recent years, beekeepers have made fewer requests for Health Certificates for interstate movement.

COOPERATIVE AGRICULTURAL PEST SURVEY (CAPS)

The Division administered the Cooperative Agricultural Pest Survey (CAPS) Program, a cooperative effort between the USDA APHIS PPQ, state departments of agriculture and state universities. The CAPS program supports the position of the state survey coordinator (SSC).

The Maine CAPS Program allowed for survey work of the following in 2016:

- Nursery Commodity Survey; conducted by the Division. Visual inspections of host trees were conducted at 33 nurseries in 11 counties for the following targets: city longhorned beetle (*Aeolesthes sarta*), oak splendour beetle (*Agrilus biguttatus*), emerald ash borer (*Agrilus planipennis*), Asian longhorned beetle (*Anoplophora glabripennis*), sakhalin pine sawyer (*Monochamus saltuarius*), small white-marmorated longhorned beetle (*Monochamus sutor*). Trapping surveys were conducted at 15 nurseries in 6 counties for the following targets: variegated golden tortrix (*Archips xylosteanus*), rosy moth (*Lymantria mathura*), green oak tortrix (*Tortrix viridana*), black fir sawyer (*Monochamus urussovii*), and Japanese pine sawyer (*Monochamus alternatus*). All samples were processed in-house and all beetle and moth specimens identified. No target specimens were found.

- Mixed Berry Pest Survey; conducted by the Division and the University of Maine Cooperative Extension. Traps were deployed for summer fruit tortrix (*Adoxophyes orana*), European grapevine moth (*Lobesia botrana*), light brown apple moth (*Epiphyas postvittana*), spotted wing drosophila (*Drosophila suzukii*), and African fig fly (*Zaprionus indianus*) in various crops of blueberry, blackberry, raspberry and strawberry. The Division deployed traps for all target species at 10 farms in 9 counties; The University Cooperative Extension deployed traps for all target species at 10 farms in 7 counties. SWD was found in all traps (29) except one in Waldo County. No other target species were found.

In addition, the CAPS program administered two projects with funding from the Farm Bill:

- Small Fruit Commodity Survey; conducted by the Division. Traps were deployed at 6 vineyards in 4 counties for Christmas berry webworm (*Cryptoblabes gnidiella*), European grape berry moth (*Eupoecilia ambiguella*), European grapevine moth (*Lobesia botrana*), false codling moth (*Thaumatotibia leucotreta*), light brown apple moth (*Epiphyas postvittana*), silver Y moth (*Autographa gamma*), and spotted wing drosophila (*Drosophila suzukii*). Spotted wing drosophila was collected from all traps except one from Kennebec County. No other target species were found.

- Forest Pest Outreach and Survey Project; discussed elsewhere in this report.

Data was entered into NAPIS for 38 pests. Positive records were entered in 2016 for carrot seed moth (*Sitochroa palealis)*, daylily leafminer (*Ophiomyia kwansonis*), gypsy moth (*Lymantria dispar*), and spotted wing drosophila (*Drosophila suzukii*).

FOREST PEST OUTREACH AND SURVEY PROJECT (FPOSP)

The CAPS Program coordinated the Forest Pest Outreach and Survey Project (FPOSP) for the eighth year. This project has grown to include over 25 states in an effort to build an awareness program aimed at early detection of Asian longhorned beetle (ALB), emerald ash borer (EAB), and other invasive forest pests. For FY15 Farm Bill (9/20/15-9/19/16), Maine submitted a request for proposals to solicit projects that could expand outreach in novel and broader ways. Two organizations were awarded subcontracts, the Saco River Recreational Council and the Maine

Association of Conservation Districts. With the combined efforts of these organizations, over 45 different events occurred, including tabling at more than 12 fairs, trainings to public works and conservation groups, various presentations to school groups and environmental associations, press releases, written articles, etc.

No ALB or EAB have been found in Maine, although hemlock woolly adelgid and browntail moth are expanding their ranges, and the recent establishment of winter moth has caused noticeable defoliation in certain areas of the state. This project has been continued for the next Farm Bill cycle, where we will continue to subcontract to the same organizations, as well as include outreach and education on invasive terrestrial plants that may become threats to Maine's forests.

SEED POTATO CERTIFICATION

Seed potatoes are certified to control the level of pests in Maine's potato industry. Certification is a three step process: inspection of seed potatoes during the summer, post-harvest disease evaluation of samples submitted for testing and inspection during shipping to ensure the potatoes meet grade standards. Only lots that have been found to meet, field, post-harvest testing and shipping point inspection can be tagged as certified seed.

SUMMER FIELD INSPECTION

In 2015, 9917 acres met disease tolerances for regulated diseases and pests during the summer field inspection program. A directory of producers whose seed lots passed the summer inspection program is compiled at the conclusion of the field inspection season and posted at www.maine.gov/dacf/php/seed_potato.

POST-HARVEST TESTING

Maine statutes require a sample be submitted for post-harvest disease evaluation at a state operated farm in Homestead, Florida in order for a seed lot to receive certification. Due to a recent rule change in May of 2016, Field Year 1, Field Year 2 and 7 Latent varieties; (varieties that do not exhibit typical Potato Virus Y (PVY) symptoms) were tested at the Department Disease Testing Laboratory utilizing the ELISA testing method. This change was put into effect as a transition to full laboratory testing in the future for all post-harvest testing for the Maine certified seed program. From November 2016 to January 2017, 1045 samples, representing approximately 9592 acres of potatoes were evaluated for disease in Presque Isle and Homestead Florida. 75% met the certification requirements for foundation seed (total virus <0.55%), 23% met the requirements of certified seed (total virus 0.56-5%) and 2% did not meet the seed certification standards (>5% total virus). Post-Harvest testing results are posted at www.maine.gov/dacf/php/seed_potato/index.shtml

BLACK LEG AND DICKEYA

In recent years, blackleg and Dickeya have contributed to crop losses in Maine and other potato producing states resulting in severe economic losses for several potato growers. With this in mind the Seed Potato Certification Program developed new standards in cooperation with industry stakeholders and university researchers to better inspect and identify Maine seed lots that may contain pectolytic bacteria and Dickeya by adding visual field tolerances for blackleg as part of the summer field inspection. These tolerances were approved and went into effect in May 2016, in time for the 2016 field season.

The hope is that these new standards and inspections will identify problem lots and more quickly flush these lots out of the seed system to better insure seed quality for the end grower receiving the seed, whether they grow seed, table stock or processing potatoes. Due to the new blackleg field tolerances 14 lots out of 1045 failed due to blackleg percentage over 2%. This accounted for 1% of potatoes entered into the program for the 2016 crop year.

POTATO CYST NEMATODE NATIONAL SURVEY

The Seed Potato Certification Program participated in the Potato Cyst Nematode (PCN) National Survey for the seventh year in a row. No seed potatoes could be shipped out of Maine unless they came from fields that have been sampled and tested for PCN (*Globodera pallida*) and Golden nematode (GN) (*Globodera rostochiensis*). Division staff used either soil probes or specialized mechanical samplers to survey choice seed potato fields in Aroostook County that grow seed for export. Each acre was sampled according to protocol to collect a 5 lb sample, resulting in 2642 samples. All soil samples were shipped to the USDA APHIS Nematode Laboratory in Avoca, NY. No PCN or GN was found.

BOARD OF PESTICIDES CONTROL

PESTICIDE USE AND APPLICATOR LICENSING

The Board of Pesticides Control (BPC) licenses pesticide applicators (Agricultural Basic, Private and Commercial) and pesticide dealers (limited/restricted and general use products). As of March 2017, there are 517 active agricultural basic licensees, 1165 active private licensees, 1722 active commercial licensees, 259 spray contracting firm (business) licenses, 62 limited/restricted use dealers, and 964 general use dealers.

LEGISLATION AND REGULATION

The second regular session of the 127th Maine Legislature entertained one bill, carried over from the first session, regarding pesticides. LD 1099 An Act to Establish a Fund for the Operations and Outreach Activities of the University of Maine Cooperative Extension Animal and Plant Disease and Insect Control Laboratory, proposed placing a tax on "homeowner" pesticide products to fund the laboratory. This bill was voted ought to pass as amended by the Joint Standing Committee on Agriculture, Conservation and Forestry. It was then voted ought not to pass by the Joint Standing Committee on Appropriations and Financial Affairs.

The Board did not amend any rules in 2016, however changes to license periods from two years to three and changes to the certification period from six years to three, were implemented.

ARBORIST PROGRAM

All individuals performing arborist work in Maine must have a license. According to Maine Arborist Licensing Law (7MRSA Section 2173-2191) an arborist is anyone who, for compensation, takes down or fells, diagnoses or evaluates, recommends or supervises treatment, or in any manner or for any purpose treats or cares for shade or ornamental trees. In order to become a Maine licensed arborist, individuals must pass an exam demonstrating proficiency in arborist techniques, safe use of arborist tools and equipment, tree identification and pest identification. Licenses and exams are

offered in two categories, landscape and utility. 117 people took and 101 passed the arborist exam in 2016. A total of 1006 arborist licenses were issued by the Division in 2016.

FOREST INSECT AND DISEASE CONDITIONS

Courtesy of the Division of Forest Health & Monitoring. Growing season condition reports are available at www.maine.gov/dacf/mfs/publications/condition_reports.html

SPRUCE BUDWORM

The Maine Forest Service (MFS) and its cooperators are closely watching spruce budworm in Maine in order to monitor and prepare for another epidemic of this native defoliator. Outbreaks occur on a roughly 40-year cycle in response to maturing forest stands and reduced pressure from parasites; the last time budworm was a problem in Maine was in the 1970's and 80's. Over the last several years, many indicators have pointed to the imminence of the next epidemic: pheromone and light trap surveys had shown a steady rise since 2011, defoliation in Quebec has increased year after year, anecdotal and confirmed accounts of defoliation in New Brunswick have cropped up over the past two years. This is an insect whose epidemics cover vast regions and flights of moths from heavily infested areas can migrate to new areas. That there will be another outbreak in Maine, soon, is undeniable. When, where, how severe and what the specific impacts and reactions may be remain to be seen. The Maine Forest Service, cooperators within and outside the state, and Canadian provinces are working together to monitor and predict the growth of the spruce budworm population and its potential impact on the regions forests. Monitoring takes place using pheromone traps, light traps, overwintering larval samples, ground and aerial surveys.

No defoliation from spruce budworm was recorded in Maine in 2016. Defoliation in Quebec increased to more than 17 million acres and small areas of defoliation were recorded in New Brunswick. Pheromone trap catches in Maine were down compared to the previous several years. Light trap catches were up. Most catches in light traps coincided with a migration event from Quebec in late July 2016. At New Brunswick sites this flight was about 80% female moths, moths that would not be captured by pheromone traps. A report on 2016 Maine Forest Service spruce budworm activities is available on-line at www.sprucebudwormmaine.org/wp-content/uploads/2017/01/MFS_2016SpruceBudwormReport_1_4_2017.pdf

BROWNTAIL MOTH

The browntail moth (*Euproctis chrysorrhoea*) is an insect of forest and human health concern which was accidently introduced into Somerville, Massachusetts from Europe in 1897. Previously contained to Cape Cod and a few islands off the coast of Maine browntail moth populations have increased over the last several years.

The larval stage of this insect feeds on the foliage of hardwood trees and shrubs including: oak, shadbush, apple, cherry, beach plum, and rugosa rose. Larval feeding causes reduction of growth and occasional mortality of valued trees and shrubs. While feeding damage may cause some concern, the primary concern is the impact on human health. Contact with the hairs found on the caterpillars of browntail moth causes a rash similar to poison ivy that can be severe on some individuals.

Over 63,000 acres of forest in Sagadahoc County and surrounding towns were defoliated by the tiny, early instar larvae of browntail moth in August and September. In some cases larvae were so

numerous this year that they defoliated the same trees twice. Those trees were stripped in June, re-foliated with a stunted second flush of leaves due to lack of water or still-feeding browntail caterpillars, and then skeletonized in late-summer by the new generation of caterpillars. Add in the stress of the drought and the trees were severely stressed this summer.

In addition, browntail larvae and damage were found from York County in Southern Maine into Kennebec County in Central Maine. This means people and deciduous trees (especially oak and apple) across the southern half of the state could feel the effects of browntail moth in2017.

WHITE PINE HEALTH

Despite overall drier weather conditions this year, the severity of white pine needle diseases was still significant in many parts of Maine in 2016. Further, the impact of the several preceding years of high needle disease severity is becoming increasingly visible as reduced shoot growth, reduced diameter, an overall thin appearance of crowns, branch dieback and in some cases mortality. This type of chronic stress can be an inciting factor leading to a spiral of decline. Damage from one or more agents causes a greater susceptibility to other insect and disease agents that can lead to further insect and disease issues, leading in this case to increased incidence of mortality in the white pine resource. This situation is concerning and white pine health will continue to be a focus in 2017.

Due to the long-term impacts on white pine health seen in Maine and throughout New England, funding is currently being sought from the US Forest Service to formally assess the present state of white pine health, determine how trees are reacting to the stress, the impact on white pine regeneration and what might be done to improve future conditions for white pine in the region.