



**NEBRASKA DEPARTMENT OF AGRICULTURE (NDA)
ANIMAL AND PLANT HEALTH PROTECTION
ENTOMOLOGY PROGRAM
2015 ANNUAL REPORT**



By
Entomology Program Staff

Nursery Stock Inspections and Certifications:

Acres of nursery stock inspected	1,690
Licensed Nursery Stock Distributors	1,217
Certification Inspections Requested.....	262
Dealer locations inspected in the spring.....	84
Dealer locations inspection in the fall.....	0

Phytosanitary Export Inspections and Certifications:

Federal phytosanitary certificates issued	5,099
State phytosanitary certificates issued	59
Processed product certificates issued.....	0
Re-export certificates issued	35
Acres of seed corn fields inspected	2,690
Number of seed corn fields inspected	50
Acres of popcorn seed fields inspected	458
Number of popcorn seed fields inspected.....	54
Acres of wheat/triticale seed fields inspected.....	89
Number of wheat/triticale seed fields inspected	11
Acres of soybean seed fields inspected.....	124
Number of soybean seed fields inspected	15
Acres of sorghum/sudangrass seed fields inspected	24
Number of sorghum/sudangrass seed fields inspected	10
Acres of pearl millet seed fields inspected	1
Number of pearl millet seed fields inspected	1
Acres of dry bean seed fields inspected	8
Number of dry bean seed fields inspected.....	3

European Corn Borer Certifications:

Certification licenses issued.....	133
Shipment certificates issued	5,294

Surveys and Compliance Inspections:

Area Wide Soil Nematode Survey	
Number of fields surveyed	36
Number of counties surveyed	13
Number of positive fields	0
Number of positive counties	0
Christmas Tree Quarantine Compliance Inspections	
Number of sales lots inspected	15
Number of counties surveyed	10
Number of sites with violations.....	0
Emerald Ash Borer Survey	
Traps set and picked up.....	30
Number of beetles captured.....	0
Number of counties surveyed	3
Number of counties where positive traps occurred	0
Firewood Dealer Quarantine Compliance Inspections	
Number of firewood dealers inspected.....	57
Number of counties surveyed	14
Number of quarantine violations found	2
Gypsy Moth Survey	
Traps set (530 detection and 9 delimiting traps)	539
Male moths captured.....	0
Number of positive traps	0
Number of multiple trap catches of the total.....	0
Number of counties where positive traps occurred	0
Japanese Beetle Survey	
Traps set in non-infested counties	200
Number of beetles trapped in non-infested counties.....	1,088
Traps set in infested counties	41
Number of beetles trapped in infested counties.....	1,905
Number of counties surveyed	36
Number of counties where positive traps occurred	21
Number of soil samples collected	185
Number of counties where positive soil samples were collected.....	0
Karnal Bunt Survey	
Number of samples collected.....	69
Number of counties surveyed	36
Number of positive counties.....	0

Khapra Beetle Survey	
Number of sites surveyed.....	44
Number of traps set.....	132
Number of counties surveyed	11
Number of positive sites.....	0
Number of positive counties.....	0
Pine Commodity Survey	
Number of sites surveyed	28
Number of counties surveyed	21
Number of visual inspections	28
Number of positive sites.....	0
Number of positive counties.....	0
Potato Cyst Nematode Survey	
Number samples collected.....	1,710
Number of counties surveyed	5
Number of positive fields.....	0
Number of positive counties.....	0
Seed Potato Quarantine Compliance Inspections	
Number of sites checked.....	135
Number of counties surveyed	20
Number of violations found	10
Small Crops Survey	
Number fields survey	10
Number of counties surveyed	8
Number of positive fields.....	0
Number of positive counties.....	0
Thousand Cankers Disease Survey	
Number of traps set.....	36
Number of sites surveyed	12
Number of counties surveyed	11
Number of visual inspections	11
Number of positive sites.....	0
Number of positive counties.....	0

NURSERY CERTIFICATION PROGRAM:

Nursery Stock Certification Inspections

The Nebraska Department of Agriculture (NDA) received requests for inspections from 262 Nursery Stock Distributors that were growing some portion of the nursery stock they distributed, totaling 1,690 acres of nursery stock.

TOP TEN DISEASE PROBLEMS

1. Various cankers
2. Various leaf spots (iris fungal, peony, linden, ash, redbud . . .)
3. Various rusts (quince, hawthorn, pear, ash . . .)
4. Hosta virus X
5. Root & stem rot
6. Powdery mildew
7. Fire blight
8. Apple scab
9. Black knot
10. Crown gall

TOP TEN INSECT PROBLEMS

1. Oak clearwing borer
2. Pine needle scale
3. Various borers (flatheaded apple tree, ash/lilac, honeylocust, unspecified . . .)
4. Zimmerman pine moth
5. Spidermites
6. Aphids
7. Oyestershell scale
8. Various galls (oak bullet, oak flake, hackberry nipple, jewel oak . . .)
9. Azalea bark scale
10. Various leafminer (birch, columbine, linden, oak...)

TOP WEED AND OTHER PROBLEMS

1. Canada thistle
 2. Weeds in containers
 3. Musk thistle
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1. Trunk damage
 2. Environmental damage (sunscald, frost cracks . . .)
 3. Deer damage

Nursery Dealer Inspections

During the spring of 2015 (April to June), 84 dealer inspections were conducted, as compared to 127 dealer inspections conducted in 2014. These inspections resulted in 23 Withdrawal-From-Distribution Orders (as compared to 38 in 2014). A total 225 plants were withdrawn from distribution due to disease and insect problems, being non-viable, or having environmental, mechanical, or weed problems, as compared to 1,181 plants in 2014.

Disease problems included cankers, viruses, powdery mildew, gummosis, rusts, and leaf spots to name a few. Insect problems included borers, spider mites, aphids, and scales to name a few.

Dealers continue to be informed about requirements for source labeling. Nebraska law does require that nursery stock be labeled as per botanical and/or common name and growing origin.

Black Stem Rust/Barberry Quarantine

Nebraska is a protected state under Federal Quarantine 38 (Black Stem Rust/Barberry Quarantine). NDA inspectors kept track of the barberry varieties each dealer location carried, to ensure that the barberry varieties being distributed within the state complied with this federal quarantine.

EXPORT CERTIFICATION PROGRAM:

Compliance Agreements

NDA entered into eight agreements with nursery firms to facilitate exports of nursery stock to eleven states that have enacted Japanese beetle quarantines or require certification for Nebraska grown nursery stock based on the Japanese Beetle Harmonization Plan. Firms under compliance agreement agree to meet specific requirements set by the receiving state, and NDA staff monitors to ensure the terms of the agreement are being met.

European Corn Borer Certification

In 2015, 133 firms were issued certification licenses with NDA. European corn borer shipment certificates issued during 2015 numbered over 5,294. States that have European corn borer quarantines in effect and require shipment certification include Arizona, California, Hawaii, Idaho, Nevada, Oregon, Texas, Utah, Washington, and the Canadian province of British Columbia.

Export Certification

Phytosanitary certificates are issued to firms exporting plants and plant products. From January to December 2015, a total of 5,193 phytosanitary certificates (5,099 federal, 59 state, 35 re-export, and 0 processed product) were issued. This is an increase in the number of certificates as compared to 2014 (4,722).

Commonly exported commodities for which export certificates were issued include distillers dried grain, soybean grain, corn grain, wheat grain, popcorn grain, great northern beans, pinto beans and corn seed.

Growing Season Field Inspections

The Nebraska Crop Improvement Association (NCIA) cooperated with NDA to conduct growing season field inspections for firms exporting seeds. NCIA inspectors were responsible for inspecting corn production fields, while NDA inspectors inspected corn

nursery and research fields, and fields of all other seed crops. Stewart's and Goss' wilt were found in seed corn during field inspections this year.

Approximately 3,394 acres of corn, sorghum, soybeans, popcorn, wheat, millet, and dry beans were inspected by NDA and NCIA in 2015.

SURVEY AND DETECTION PROGRAM:

Surveys are conducted for various pests, across the state. Surveys help to determine the presence or absence of a pest. Results can be utilized to facilitate the movement of Nebraska plants and plant products interstate and internationally. The findings may also be utilized to target management and eradication activities, as appropriate, and educate the industry and the general public on pest issues.

Area-wide Nematode Survey

Field locations for seed potatoes, tablestock potatoes, and nursery growers who export were sampled in September, October, and December. A total of 36 soil samples were taken in thirteen counties across Nebraska. Samples are analyzed by the UNL Plant Pathology Department for the presence of quarantine and export significant nematodes including: potato rot (*Ditylenchus destructor*); potato cyst (*Globodera pallida*, *G. rostochiensis*); soybean cyst nematode (*Heterodera glycines*); root knot nematodes (*Meloidogyne chitwoodi*, *M. hapla*, *M. javanica*); and other plant parasitic nematode genera. Dr. Tom Powers, UNL nematologist, and his staff conducted morphological and molecular diagnostics of all adult and juvenile nematodes found in the soil samples. The identification of plant parasitic nematodes will establish and maintain pest-free areas for the export of plants and plant products. The documentation of species distribution will document compliance to certification of potatoes. All fields were negative.

Christmas Tree Lot Quarantine Compliance Inspections

During the 2015 season, NDA inspectors inspected Christmas trees at 15 dealers in 10 counties. Inspections took place in November and December, to verify compliance with the Federal Gypsy Moth and Pine Shoot Beetle quarantines. Inspectors confirm compliance through paperwork reviews and inspections of the trees. No violations were found.

Emerald Ash Borer (EAB) Survey

As part of a national survey, NDA set and/or monitored 30 traps in three counties at high-risk areas, such as state parks and rest stops. All traps were negative. NDA also continues to inspect nursery stock for insect and disease problems, including EAB. Particular attention is given to ash stock entering the state. NDA Inspectors also check for labeling of place of origin on nursery stock, as required by the Nebraska Plant Protection and Plant Pest Act, to ensure federal and state quarantines are being followed. NDA continues to educate the nursery industry about this potential threat to ash trees in Nebraska, through outreach programs. NDA has developed EAB outreach

materials, which continue to be distributed at various industry meetings and conferences.

Firewood Dealer Quarantine Compliance Inspections

NDA inspectors have inspected firewood dealers across the state to collect data on the distribution of firewood in Nebraska, and the origins of the firewood. A total of 57 firewood dealers in 14 counties were inspected to verify compliance with the Federal Gypsy moth, EAB, and Asian Longhorn Beetle quarantines and the Nebraska Thousand Cankers Disease of Walnut quarantine. While most of the wood was of Nebraska origin, wood was also found to have originated in other states, including California, Colorado, Iowa, Kansas, Kentucky, Missouri, Pennsylvania, Texas, and Wisconsin. Two Withdrawal-From-Distribution Orders were issued for 24 bundles of firewood that were missing origin information.

Outreach is also part of this effort. For more information, please see the Education and Outreach Events section.

Gypsy Moth Survey

A total of 539 gypsy moth traps were set in 2015. Of those traps, 530 were detection and 9 were delimiting traps. Traps were set in 47 counties across the state. All traps were negative.

One delimiting block was set and monitored based on positive trap catches 2013. The delimiting block was in York (York County). It was negative.

Firewood surveys are also conducted as part of Nebraska's gypsy moth prevention efforts. For details, see Firewood Dealer Quarantine Compliance Inspections above.

Japanese Beetle (JB) Survey

In 2015, a total of 200 JB traps were set in non-infested counties. Forty-one traps were set in known infested counties. Traps are located at airports, state parks, special quarantine compliance areas, and nurseries. Nursery stock distributors in non-infested counties that import balled and burlapped nursery stock are considered high-risk sights and, therefore, trapped individually. The traps were in place from the end of May until October.

After the 2015 trapping season, NDA declared five more counties as being infested with JB: Burt, Merrick, Otoe, Platte, and Wayne. Prior to 2015, Adams, Buffalo, Cass, Dakota, Dawson, Dodge, Douglas, Gage, Hall, Hamilton, Jefferson, Lancaster, Lincoln, Madison, Phelps, Saline, Sarpy, Saunders, Seward, Thayer, Washington, and York were already listed as infested.

Soil sampling for JB grubs was conducted in 2015, at select firms in known infested counties, where JB populations had previously been confirmed via trapping. Firms were selected based on several factors, including level of infestation, nursery production methods, and desire to ship out-of-state. A total of 185 soil samples were collected on over 42 acres from three firms in four counties. No JB grubs were found.

Karnal Bunt Survey

Karnal Bunt sampling occurred in July 2015. A total of 69, four-pound wheat samples were pulled in 36 counties, based on the 2015 National Karnal Bunt Survey Protocol. All samples were sent to the National Karnal Bunt Lab in Phoenix, Arizona, for analysis. All samples tested negative for Karnal Bunt.

Khapra Beetle Survey

In 2015, a total of 132 Khapra beetle traps were set at 44 sites in 11 counties. Traps were screened for Khapra beetles every 30 days while replacing lure and remained in place for 90 days before being picked up. All traps were negative for Khapra beetle.

Pine Commodity Survey

During the spring and summer of 2015, NDA conducted a detection and visual survey for various pine pests. The survey was carried out at 28 sites which included national and state parks, nurseries, and Christmas tree farms in 21 counties. The targeted species in the survey were large pine weevil (*Hylobius abietis*), great spruce bark beetle (*Dendroctonus micans*), Sakhalin pine sawyer (*Monochamus saltuarius*), small white-marmorated longhorned beetle (*Monochamus sutor*), pine shoot beetle (*Tomicus destruens*), pink gypsy moth (*Lymantria mathura*), pine beauty moth (*Panolis flammea*), Scots pine blister rust (*Cronartium flaccidum*), and needle blight of pine (*Mycosphaerella gibsonii*). The trapping survey consisted of 3 different types of traps, funnel, bucket, and wing. This survey was very labor intensive. In order to maintain the viability of the sample for accurate ID of the pest, traps were serviced every two weeks. Inspectors also conducted visual surveys of pine trees at each trapping site. All were negative.

Potato Cyst Nematode (PCN) Soil Survey

NDA again participated in the National PCN survey from September through early November, collecting 1,710 – five-pound soil samples from potato fields in five potato producing counties. All samples were sent to the USDA Idaho Falls PCN laboratory for PCN (*Globodera pallida* and *Globodera rostochiensis*). All fields were negative.

Seed Potato Quarantine Compliance Inspection

During early spring of 2015, NDA inspectors conducted compliance inspections at 135 seed potato dealer locations in 20 counties. These inspections were to confirm compliance with Nebraska's Columbia Root Knot Quarantine, and the Federal Potato Cyst Nematode quarantine. Ten violations were found.

Small Crops Survey

During June and July 2015, NDA inspectors set various traps and conducted visual surveys for numerous pests as part of the small crops survey. These pests included old world bollworm (*Helicoverpa armigera*), Egyptian cottonworm (*Spodoptera littoralis*), tomato leaf miner (*Tuta absoluta*), curcurbit beetle (*Diabrotica speciosa*), brown marmorated stink bug (*Halyomorpha halys*), spotted wing drosophila (*Drosophila*

suzukii). Traps were monitored approximately every two weeks throughout the summer. All results were negative.

Spotted wing drosophila has previously been confirmed in Nebraska, and it is believed to be relatively widespread at this time.

Thousand Cankers Disease (TCD) Survey

In 2015, NDA trapped for walnut twig beetle at a total of 12 sites in 11 counties. Each trapping site consisted of three funnel traps in various locations for a total of 36 traps in the state. This survey was very labor intensive. In order to maintain the viability of the sample for accurate ID of the pest, traps were serviced every two weeks. Along with doing trapping surveys, the inspectors also conducted visual surveys of walnut trees. Eleven visual surveys were conducted in 11 different counties. These surveys were site visits to campgrounds and nut growers/walnut plantations to look for signs and symptoms of TCD. All traps and visual surveys were negative.

ENTOMOLOGY PROGRAM NOTES

Education and Outreach Events

During 2015, NDA disseminated education and outreach materials, both through mailings and at conferences/talks, to individuals and groups throughout the state. This includes licensed nurseries, arborists, farmers' market vendors, school and university groups and classes, Master Gardeners, garden clubs, Girl Scouts, the Nebraska Invasive Species Council, and the general public. We also disseminated articles through other organizations' and agencies' publications, including the Nebraska Nursery and Landscape Association, Nebraska Arborist Association, Nebraska Forest Service, and Nebraska Invasive Species Council.

This year, NDA continued to distribute reusable grocery bags encouraging Nebraskans to purchase and burn local firewood. These and other educational materials were distributed at various events. NDA had display booths and/or gave presentations at the following events in 2015: Nebraska Great Plains Winter Conference, Governor's Ag Conference, Nebraska Community Forestry Conferences, Pro-Hort Training, Omaha Landscapers Meeting, EAB Training for UNL Extension Educators, Nebraska Game and Parks Outdoor Discovery Days, NNLA/NAA Great Plains Summer Field Day, Nebraska State Fair, Husker Harvest Days, Maxwell Arboretum Spring and Fall Festivals and Nebraska Forest Service EAB Training.

Ads promoting local firewood were also published in the annual Hunt & Fish guides created by the Nebraska Game & Parks Commission, Spring Affair mailing, and the GreatPlants publication from the Nebraska Statewide Arboretum.

NDA printed the invasive species pocket guides, developed by the Nebraska Invasive Species Council, for distribution at trainings and outreach events.

NDA also produced several radio public service announcements informing the public on invasive pests, which ran throughout the year. They were available on the NDA web site, and carried by various radio stations statewide. NDA has over 2,600 individuals that have subscribed to receive these reports directly.

Miscellaneous updates

The Entomology Program hosted the 91st Annual Central Plant Board meeting in Lincoln, April 13 – 16. The meeting was attended by more than 75 regional and national regulatory officials, plant pest experts, and government administrators. Topics discussed included emerald ash borer, thousand cankers disease, and Japanese beetle.

The Department is moving forward with the development of software that will allow inspectors to enter inspection data directly into a tablet and send the data electronically to the office. The first phase of electronic forms for the Entomology Program is complete, and staff will begin using them in 2016. Additional forms will be shifted to the electronic format in the future.

The Entomology program has also started the process toward online nursery license renewals. This will mean a change in how renewals are initiated and processed, starting with the 2017 license year. Sometime in November 2017, a postcard with instructions for accessing the renewal information online will be sent out to each current licensee. Firms can choose to renew directly online, or print and mail the renewal form to the Department. Firms that lack internet access may request a paper form by contacting the office.

One intern was hired to assist the Entomology field inspectors, in 2015. This was a great benefit to the program, and provided the UNL student with excellent pest survey field experience. We hope to hire up to two interns for the 2016 summer field season.

The number of phytosanitary certificates issued by NDA continues to increase each year. Two-thousand fifteen saw a 10% increase in the number of certificates issued as compared to 2014, and more than double the certificates issued in 2010. This is primarily driven by strong agriculture product exports.

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OTHER PROGRAM E-MAILS

Export (phytosanitary) Program: agr.phyto@nebraska.gov
Questions about export issues and applications for export/phytosanitary
certificates can be e-mailed to this address.

Certification documentation: agr.plant@nebraska.gov
Shipping notifications required by the USDA Federal Order for *Phytophthora
ramorum*, and firms submitting certification or quarantine compliance paperwork
as a follow-up to an inspection, can send those documents to this e-mail
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