2015 Signature Program Annual Report

Title: Nutrient Stewardship for Cleaner Water

1. Describe how the program was implemented across the state of Ohio in 2015.

• Who: Nutrient stewardship was taught to 5658 producers and agriculture business persons who apply fertilizer with a guaranteed analysis to more than 50 acres of agricultural production grown primarily for sale received the Fertilizer Applicator Certification Training (FACT) by 50 Agricultural and Natural Resources educators.

Attendees to the Farm Science Review attended the display in the Firebaugh building and participated in a panel discussion regarding nutrient management.

25% of OSU Extension Agriculture and Natural Resources Educators have conducted onfarm and field trials of best management practices of application method, timing and nutrient rates. Another 8% will be conducting on-farm research in 2016.

• Where: Nutrient stewardship was taught to 5658 producers and ag business persons who apply fertilizer with a guaranteed analysis to more than 50 acres of agricultural production grown primarily for sale received the Fertilizer Applicator Certification Training (FACT) by 50 Agricultural and Natural Resources educators.

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• **How:** Approximately 100 meetings where Nutrient Stewardship was taught were held throughout the state in either a county or regional meeting.

Producers and agriculture business persons completed nutrient stewardship training in FACT two or three hour trainings, field days, seminars, displays and soil and nutrient management series.

Other events where the public could learn about nutrient stewardship included the Farm Science Review, Chamber AG Days and Conservation Tillage Conference.

- **How many:** In 2015, 5658 people received FACT certification. Nearly 900 persons attended the Conservation Tillage Conference where many of the topics address soil and nutrient management. About 120,000 participated in Farm Science Review where activities regarding Nutrient Stewardship were featured.
- **How long:** Nutrient Stewardship education was received in casual observation, two and three hour meetings, day long field events, 2 day conferences and season long On Farm research projects.

• **Other:** Numerous articles and radio spots featured nutrient stewardship education along with direct testimony to legislators regarding the efforts of OSU Extension in being part of the water quality solution.

*Signature Program leaders were given the option to upload supporting documentation for this criteria (see Appendix A). NOTE: Please refer to Appendix A to see additional information about program implementation.

2a. Describe the short-term outcomes of the program (changes in awareness, knowledge, attitude, skills, aspiration).

Educators report that 95% of OSU Extension clientele have adopted soil testing and 68% follow Tri-State fertilizer recommendations for agronomic and other crops and are using organic and inorganic nutrient sources for optimal crop production.

Fertilizer Applicator Certification Training by Extension Educators is emphasizing the optimization of the efficiency of fertilizer use by incorporating the 4R concept: the Right fertilizer source, at the Right rate, at the Right time and in the Right place.

Agriculture and Natural Resources Educators and Program Coordinators from across the state participated in an intense educational inservice to provide training and consultation to their clientele.

Survey results from FACT meetings found the following:

- 76% agreed or strongly agreed that farm field phosphorous is a significant problem to our water resources (streams, rivers, lakes).
- 51% agreed or strongly agreed that they would change their nutrient management practices as a result of the meeting.
- 59% agreed or strongly agreed that they would use an economic based nitrogen calculator to determine their nitrogen rate.

Fields with high nutrient loss risk have been identified. The implementation of appropriate cost effective Best Management Practices on these fields will be studied for effectiveness of reduction in nutrient loss.

2b. Describe the medium-term outcomes of the program (changes in behavior or practice).

There have been many changes in behavior and practice as a result of the nutrient management work being done by OSU Extension. Producers are using the information they receive from educators and field specialist to make better soil and nutrient management decisions.

Livestock producers in Western Ohio are now using livestock manure as a nutrient source for top dressing wheat and side-dressing corn. They know that applying the manure to a growing crop will be more beneficial to them and is environmentally sound.

Producers are using less nitrogen and phosphorous as they have been taught the correct way to interpret soil reports and to use economic calculators for determining their nutrient needs.

2c. Describe the long-term outcomes of the program (changes in conditions or policy).

The long term goals of this signature program have not been met but our goals are to:

- 1. Reduce the incidence of Microcystis, a cyanobacterium—more commonly called bluegreen alga – blooms in Lake Erie.
- 2. Reducing phosphorus loading in waterways.
- 3. Improve water quality by helping growers Use adaptive management to lessen phosphorus and nitrogen use increasing crop yields and boosting farm profits.
- 4. Offering training for producers and commercial fertilizer applicators on: the current state of Ohio waters, soils and soil testing, best management practices for phosphorous and nitrogen use.

*Signature Program leaders were given the option to upload supporting documentation for this criteria (see Appendix B). NOTE: Appendix B is blank for this annual report.

3. Describe the extent to which the program elevates the public's knowledge of OSUE.

OSU Extension is quickly becoming known as the source for water quality and soil and nutrient management research and education. Within the legislative process Educators around the state have been consulted by their legislators regarding on farm research and nutrient management.

It is projected that nearly 15,000 persons will complete the Fertilizer Applicator Certificate Training program. The participants will complete re-certification training every three years to maintain the certificate. This exposure to researched based, quality education will demonstrate the value of Ohio State University Extension.

Intentional branding of all Fertilizer Applicator Certificate Training curriculum and materials including PowerPoint's have been branded with the appropriate university, college, Extension and nutrient stewardship logo to focus the training on unbiased, research based information.

*Signature Program leaders were given the option to upload supporting documentation for this criteria (see Appendix C). NOTE: Appendix C is blank for this annual report.

4. Describe the extent to which proposed program marketing, communication, implementation and evaluation methods and strategies were followed.

The communications team for the College of Food, Agricultural and Environmental Sciences has been developing marketing tools to promote the Nutrient Stewardship for Cleaner Water Program.

Currently there are branded templates for yard signs, ink pens, banners, flyers, brochures and PowerPoint's available. Be Part of the Solution window clings, manuals and ink pens have been distributed to Fertilizer Applicator Certification Training completers and to others to further promote the program, college and university.

Evaluations are being completed for each meeting being held and the information tabulated within a spreadsheet environment.

*Signature Program leaders were given the option to upload supporting documentation for this criteria (see Appendix D). NOTE: Appendix D is blank for this annual report.

*Signature Program leaders were given the option to upload supporting documentation to supplement this annual report (see Appendix E). NOTE: Appendix E is blank for this annual report.

APPENDIX A: PROGRAM IMPLEMENTATION

Fertilizer Certification Training Evaluation Summary

Two and Three Hour Meetings, December 2014 – April 2015

Total Evaluations Collected: **2074** (1153-3hr / 921-2hr) Participation rate approximately 33% Questions 3-5, 7-9, 12 not included in two-hour survey

2. How many acres do you farm or advise?

| | Under | | | 1001- | | | Not |
|-------------|----------------|---------|-----------|----------|-----------|---------|------------|
| | 250 | 251-500 | 501-1000 | 2500 | 2501-5000 | >5000 A | applicable |
| a. Farmers | 544 | 419 | 367 | 350 | 100 | 22 | 24 |
| n=1826 | 30% | 22% | 20% | 19% | 6% | 1% | 1% |
| b. Ag Bus. | 33 | 27 | 40 | 33 | 11 | 22 | 69 |
| n=236 | 2% | 1% | 2% | 2% | <1% | 1% | 3% |
| | 18-30 | 31-40 | 41-50 | 51-60 | 60+ | | |
| 3.Age Group | 128 | 153 | 154 | 263 | 258 | | |
| n=956 | 13% | 16% | 16% | 28% | 27% | | |
| | High School | Assoc. | Bachelors | Masters+ | | | |
| 4.Education | 521 | 161 | 189 | 43 | | | |
| n=914 | 57% | 18% | 21% | 5% | | | |
| | Yes | No | | | | | |
| 5. Attended | 743 | 187 | | | | | |
| OSUE | 80% | 20% | | | | | |
| programs | | | | | | | |
| n=930 | | | | | | | |

Based on your experience at today's meeting, please rate your level of agreement with each of the following statements:

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Not Applicable |
|----------------------------------|----------------------|----------|---------|-------|-------------------|-------------------|
| 6. Farm field P loss is a | | | | | | |
| significant problem to our water | 29 | 72 | 386 | 1057 | 455 | 11 |
| resources n=2010 | 1% | 4% | 19% | 53% | 23% | <1% |
| 7. I have improved my knowledge | | | | | | |
| about nutrient management | 5 | 5 | 66 | 625 | 272 | 2 |
| n=975 | <1% | <1% | 7% | 64% | 28% | <1% |
| 8. The educational materials | 4 | 7 | 58 | 614 | 283 | 2 |
| shared were appropriate n=968 | <1% | <1% | 6% | 63% | 29% | <1% |
| 9. The training method used was | 5 | 9 | 74 | 606 | 271 | 1 |
| appropriate n=966 | <1% | 1% | 8% | 63% | 28% | <1% |
| 10. Current Tri-State Fertility | | | | | | |
| Recommendations for P will limit | | | | | | |
| my corn and soybean yields | 115 | 484 | 785 | 379 | 163 | 71 |
| n=1997 | 6% | 24% | 39% | 19% | 8% | 4% |
| 11. I will change my nutrient | | | | | | |
| management practices as a result | 26 | 135 | 794 | 819 | 191 | 50 |
| of this meeting n=2015 | 1% | 7% | 39% | 41% | 10% | 2% |
| 12. When setting a corn nitrogen | | | | | | |
| rate, I will utilize an economic | 9 | 50 | 340 | 514 | 141 | 55 |
| based nitrogen calculator n=1109 | 1% | 4% | 31% | 46% | 13% | 5% |



| | 1. More than 25 acres/ sample | 2. Less than 25 acres/ sample | 3. Grid soil samples | 4. Zone sampling | 5. Zone sampling by yield monitor | 6. Not sampling, or samples older than 5 yrs. |
|---|--|-------------------------------------|----------------------|---------------------|---|--|
| 13. Describe your soil testing n= 1845 | 165 9% | 632 34% | 639 35% | 274 15% | 47 2% | 88 5% |

| | Sept. – Nov. | Dec. – Feb. | March – May | June – Aug. |
|--|-------------------|-----------------|--------------------|-----------------|
| 14.When the majority of fertilizer P applied when corn is next crop n=1814 | 505 28% | 47 3% | 1187 65% | 75 4% |

| IF broadcasting Phosphorus, | Broadcast & incorporate <1 week later | Broadcast & incorporate >1 week later | Do not incorporate | Apply to standing crop | Not broadcasting P |
|---|---|---|-----------------------|------------------------|-----------------------|
| 15.Method of phosphorus application n=1782 | 805 45% | 257 14% | 373 21% | 115 6% | 232 13% |

| | 1. Soil test p is too low | 2. N rate is too low | 3. Soil pH is too low or high | 4. Pests | 5. Drainage | 6. Compaction | 7. Tillage program |
|--|---------------------------------|----------------------------|-------------------------------------|-------------------|-------------------|-------------------|-----------------------|
| 16. Limiting factor to higher corn yields n=1611 | 79 5% | 176 11% | 148 9% | 169 10% | 775 48% | 217 14% | 47 3% |

| | 1. Will increase P soil test level | 2. Will increase K soil test level | 3. Will increase soil pH to 6.8 | 4. May decrease soil erosion | 5. May improve water infiltration | 6. None of the above |
|--|--|---------------------------------------|---------------------------------------|------------------------------------|---|----------------------|
| 17. How do cover crops mitigate P loss n=1600 | 99 6% | 18 1% | 24 2% | 963 60% | 358 22% | 138 9% |

| | (Bray Mehlich) | (Bray Mehlich) | (Bray Mehlich) | (Bray Mehlich) | |
|--|-------------------|-------------------|-------------------|-----------------|--|
| | 15 ppm ≈ 28 ppm | 30 ppm ≈ 46 ppm | 40 ppm ≈ 50 ppm | 50 ppm ≈ 70 ppm | |
| 18. Critical soil test level for P for corn & soybeans n=1606 | 758 47% | 349 22% | 425 26% | 74 5% | |



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Written Comments

- 1. Excellent training manual. Good info and easy to read Nice job!
- 2. We need more education. People need informed and it was obvious people don't understand there process yet. They are disconnected.
- 3. Soil PH is a factor to P intake
- 4. One breakfast was worth the registration fee. Thanks to trainer for professional program and event. Nitrogen program was very good and followed handouts. Phosphorous program became difficult for me to understand and was harder to follow. Projection screen was too small for much of highly detailed PowerPoint slide programs,, 6 weather charts on one slide. . Site + meals + service exceptional as always from the Founders Hall.
- 5. Did not talk on how P.H. I related to nutrient uptake and its effects on fertilizers rates.
- 6. Would like to have slides from Greg LeBarge.
- 7. Cities such as Detroit, Fort Wayne, and Toledo should be held accountable for all the large tonnage of sewage sludge that is released in times if high rainfall. This high prosperous sludge ends up in lake Erie, creating the algae bloom issues! What are the cities doing to alleviate this pollution problem?
- 8. There was a lot of information put out-- somewhat confusing but was a good program.
- 9. White mold problems on soybeans
- 10. Excellent job guys -- well done
- 11. More activities to teach content are needed. Give them something besides classroom lecture
- 12. Should also enforce laws onto the commercial lawn/landscape companies! They're the dumb people applying in the rain!!!
- 13. I think the data is fabricated to shift blame to farmers away from cities dumping raw sewage into Lake Erie. The fact that OSU invited President Obama to speak at their university tells me what OSU's political motives are to push this agenda. This appears to be a huge government money grab.
- 14. Very informative and beneficial! Well done presentation!
- 15. There was no mention of how commercial applicators are to be held accountable for there over application of fertilizer
- 16. I saw no landscapers or golf course operators in the meeting, also how are you training the homeowners who apply their own fertilizer
- 17. What about people in towns and/or cities that fertilize their yards, shouldn't they be limited to fertilizer applications as well?

- 18. No mention of the total system, Everything in balance (macro/minor/trace minerals), planting time, water management, "Doing Everything Right", Find the weak spots in the whole system.
- 19. The slides did not match the book
- 20. This fertilizer training program appears only to be a way to satisfy special interest groups so that farmers know what they are doing. When the actual truth of the matter is we don't want to apply more fert. than necessary.
- 21. Once again, our tax dollars are at work: It doesn't take a rocket scientist to figure out tile will remove much quicker than not. Soil had a way to remove excess nutrient through percolation and wetlands. Now we systematic tile and drain wetlands. What did you expect? Solutions! Curl systematic tiling and use riparian buffers. 2. Are homeowners and lawn care people monitored and regulated from application of N, P, and K? Why do farmers take most of the crap? 3. Put figures in English, not metric! Should have date and figures calculated and up to date so there is no guessing or speculation. 4. CRP should be considered! Money seems to be more important that conservation. How sad! look at central and southern Darke county corn and soybean desert

Distribution of FACT Evaluations from two and three hour meetings

December 2014 - April 2015 Frequency Distribution of Region

| Region | Freq | Percent |
|----------------------|------|---------|
| Not Western Lake Bas | 1215 | 58.6 |
| Western Lake E Basin | 859 | 41.4 |
| Total No Evals | 2074 | |

Frequency Distribution by EERA

| EERA | Freq | Percent |
|----------------|------|---------|
| TopofOhio | 574 | 27.7 |
| ErieBasin | 390 | 18.8 |
| Crossroads | 376 | 18.1 |
| MaumeeValley | 348 | 16.8 |
| HeartofOhio | 181 | 8.7 |
| OhioValley | 90 | 4.3 |
| MiamiValley | 51 | 2.5 |
| WesternReserve | 41 | 2.0 |
| BuckeyeHills | 23 | 1.1 |
| Total | 2074 | 100.0 |



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Private Pesticide Applicator Training Evaluation Summary

December 2014 – April 2015

1.) Total Evaluations Collected: 708

Number of acres owned, rented or worked: Minimum acreage:1 Maximum acreage:5100 Average acreage: 456

- 2.) Number of acres owned, rented, or worked where pesticides are applied: Minimum acreage:1 Maximum acreage:7000 Average acreage: 391
- 3.) Have you improved your pesticide use practices as a result of the pesticide education programs that you have attended over the years?

Please rate your agreement with the following statements:

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Not Applicable |
|---|----------------------|----------------|-------------------|-------------------|---------------------------|-------------------|
| I have improved personal safety practices n= 698 | 13 2% | 4 1% | 35 5% | 432 61% | 212 30% | 2 < 1% |
| I have improved practices to protect the environment n= 697 | 12 2% | 4 1% | 26 4% | 425 60% | 228 32 <i>%</i> | 2 <1% |
| I have improved pesticide handling practices (mixing, loading, storing, applying) n=696 | 11 2% | 2 1% | 46 7% | 391 55% | 242 34% | 4 < 1% |
| I get better control from pesticide applications n= 688 | 11 2% | 6 1% | 115 16% | 363 51% | 187 26% | 6 < 1% |
| I use pesticides more cost effectively n=683 | 12 2% | 4 1% | 93 13% | 380 54% | 187 26% | 7 1% |



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| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | N/A |
|---|----------------------|----------------|-----------------|-------------------|---------------------------|-----|
| I have learned how to control pests, diseases, or weeds more effectively n=696 | 13 2% | 2 1% | 42 6% | 415 57% | 224 32 <i>%</i> | 0 |
| I am better informed about how to apply pesticides safely n=693 | 13 2% | 3 1% | 30 4% | 408 59% | 239 34% | 0 |
| This program brought me up to date on current pesticide- related topics, issues,or regulations n=694 | 13 2% | 2 1% | 10 1% | 376 53% | 293 41% | 0 |

4) These questions apply to today's training:

A. What is the most important thing you have learned today?

Options for grain bin fumigation same as always pay attention New products available Drift Control Drift and nozzles Pesticide Safety Importance of spray nozzle and application Weed control Read Label That a calm day is not the best time to spray Explanation of a temperature inversion New herbicides, ponds, crops New pesticides Don't spray at 0 wind speed about new pesticides spray

fungicides only work with correct timing of application Not all measurements equal Safety Dangers of fumigation Calibration info.

mold board plowing has a place in today's farming, mold board plowing will make a comeback Weed environments are changing Sprayer management measuring and calibration and pesticide and disease control safety on handling fungicides pesticide measure

Fumigation safety, calibration on sprayer old products with new homes

New weeds to watch out for Have not confirmed Palmer amaranth in Erie County yet Timing/rotation Be careful

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Name and combination of spray and calibration of control weeds and tread grain

safety Weed control and threats accuracy of measuring herbicide notes chemical combinations and different names, resistant weeds Chemical and spray tanks may not be calibrated correctly

Mt and PA control Post I.D. the importance of correct nozzle selection

Be careful weed control on no till reeves

some different weed control control of material, water temp New weed program in Ohio, Control of resistant weeds New weed resistance How much wind plays a factor

Ohio Sensitive Crop Registry New products

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Water pH MOA Measuring devices measuring chemicals measuring Different measuring containers Concise measurement is crucial Fertilizer regulations

Fly control Pesticide use, Bees New sprays/bugs Insecticides seed treatments may not be effective Identifying and contacting apiaries w/ in 1/2 mile of operation

Stay updated on products and uses Importance of accurate measuring Safety/Mixing New Pesticides and comparing Fluid measurement vs. Dry measurement New products Correct Measurement Safety Willow bush management safety Pinkeye control Marestail control How fast weeds reproduce and spread, How important it is to recognize and control early Updates and safety Toxic weeds that effect livestock, Proper measurements of pesticides Measurement of dry and liquid pesticides Lyme disease

All ounces are not equal Marestail control Read labels and documents Be cost effective, More is not always best Phosphorous run-off related to poison Hemlock Measuring chemicals, Flow meter to mark tank Measurers are not always true Weed resistance Mode of actions MOA/SOA charts Herbicide groups, Manure bugs SOA

Herbicide class chart Measuring cup herbicides, Weed control The importance of multiple SOA

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THE OHIO STATE UNIVERSITY COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES Use of different herbicides to control weeds pH water quality Watch your measurements Measuring properly Mixing of solids and liquids Ash Bore, Rose disease New chemicals and procedures Measuring sprays different in measuring cups, containers, and tanks Better, safer application/mixing techniques Mixing herbicides, Neonics, Bees Fumigants Accurate measuring SWD traps and ID

Be safe Marestail seed life span New Pesticides Use of adjuvants New products New results of new chemicals or additives New herbicides and pesticides to use livestock section invasive species Rates of use Calibration Calibration Good to use a water meter Dry measurements should be by weight

Safety Ticks

Toxic weeds

Tillage can be effective against problem weeds, Do not abuse herbicides, Use different MOA Details of mixing Weeds getting carried in other materials Marestail control Correct measure is needed Pesticide volume **Emerald Ash Bore** MOS, SOA chart Pesticide group # New chemicals Action poster MOA and SOA on herbicide MOA is extremely important in managing resistant weed populations MOA/SOA Herbicide classifications Ticks

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| Ticks | How to use and not to use pesticides |
|---|--|
| Ticks | Weigh everything |
| Measurements | Weed control in forages |
| Weighing is more accurate | Be careful when applying pesticides |
| Chemical measurement, Test soils | Safety |
| Measurement | Control |
| Nozzles | Palmer Amaranth |
| | Ticks |
| Measure containers for spray, Trees and bugs | Invasive pests and controlling them |
| Phosphorous | Measuring devices |
| Updates | Measurement in containers |
| How to correctly measure or weigh out chemicals | Read labels |
| Use scales | Mare Tail weed |
| Weed control | Spray application |
| Measuring properly | Weigh chemicals don't measure |
| Measuring or weighing product properly | Measurements |
| Measure and weigh chemicals carefully | End date of Endosulfan use |
| Safety handling chemicals | Measure and weigh chemicals carefully |
| Updates on weed control | Toxic weeds |
| Type water pH | Water electiveness on spraying |
| How water pH effects chemicals | Some of the problem weeds, insects, and how to |
| | control them |
| Modification of water to be more compatible with | Thistle control |
| spray being used | |
| Info on pH and acidic levels and the effect on | Different kinds of weeds |
| application process | |
| Methods of control for Marestail | Water use, Surfactants |
| Testing the water, Lasting effects of pesticides, | Water pH makes a difference on how effective |
| How "new" weeds are getting started | spray is |
| How water effects spray | Info on fertilizer certification |
| How to control weeds | Invasive plants and insect pests |
| Awareness | Water pH |
| Critical time to control weeds | Pasture weed control |
| How pH and hardness effects | Be safe |
| Forage crops | Times are changing, Consumers are getting a |
| | bigger say in some issues. |
| Bayer insecticide seed treatment does not work. | Measurement accuracy between like products in |
| XX7 1 | different years. |
| Weeds | Up to date regulations |
| New chemistry in fruits | How to control Marestail |
| Sprayer management | Not to fumigate |
| Measuring chemicals | Using the right amount of chemical and weighing |
| | It . |
| New insects and plants | Measuring |
| Nozzie types | |
| Learning to kill pesticides | About chemicals |
| Pink eye | New pesticides being developed |
| Good Review | pH control and hard water issues |
| updates | New mehlem woods |
| Salety Weed control | New problem weeds |
| Weed control prestings | Salety Water pll and abancing after 24 by paris d |
| weed control practices | water pH and changing after 24 nr period |
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PPE requirements Safety in handling pesticides New weeds and bugs ODA can punish you for drift New insects in our area, New laws safety Ways to control resistant weed Black rot grapes measurements dry vs. liquid, mixing of chemicals to avoid resistance rotation Surfactants Importance of adjuvants Mixing spray measure pesticide covertly

Public awareness has caused us to be more cautious than ever water quality conditioners and buffers for spray water quality and drift water quality water quality and impact on chemicals pH control and hardwater issues Measurement Techniques

Main Stable control Stink Bugs Better way to control marestail Weed control and new chemicals Different mixture and trade names of each control of marestail Enlist tech. Check Measuring Cups Volume vs. density - new containers to measure per same herbicides Measurements The new spotted DSWP Use current measuring devices for dry pesticides measure accurately Stink bugs and tomato blight Safety Be proactive in asking for help with issues Herbicide mode of action Label is the law The law Fumigation rules New products Read the label Safety

Legume use Stay current Liability of spraying New bugs Watch wind drift proper sprayer calibration Pesticide safety weigh product instead of using container markings sprayer tips on calibration

Water intersecting with chemicals importance of surfactant Weed control and Invasive Pest Measure Carefully I liked the focus on soil testing, also heard a fair bit on economic threshold levels - good stuff. Importance of using multiple product in a group or groups to be more effective water quality Phosphorus run off and marestail water(the importance of testing) water quality affects spray effectiveness Good Review updates Better understand new herbicides and cattle disease Weed Control Resistance started on certain weeds proper use of pesticides Be careful Control of marestail is important New weeds new things Pesticides that have been less effective than others To handle all products used for Pest and weed control How to apply chemicals at the proper rate Importance of correct measuring devices Safety and prevention measure more accurate Modes of action, Sites of action Modes of action Measuring container not all the same The impact of insects on crops P movement with water Info on Palme Safely apply pesticides and weed control Weed/pest resistance update Take care of bees New products



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What was not covered today, - you would like more information?

cover crops mixing procedures application of pesticides on livestock

More info on weed identification Control of Russian Olive, Tree of Heaven, and Grape Vines Fly control for cattle Weed control in pasture and forage crops Buffer strips around waterways Health Awareness Toxicity All covered Mixing order of chemicals Crop safety of various herbicides according to soil types and other variables More pros and cons Drift management lawn application Cucumber vine control

Wind speed Grapes Greenhouse info. Storage and handling How to rate adjuvants

Additional Comments

Good session

Sprayer techniques, Fertilizer rules, Soil test info Spray tip info, Calibrating sprayer with spot dot, Pressure gauge maintenance Variety of modes of action available in sprays, Air injected nozzles, brownies taste great

Marestail control, Spray nozzle tip demo really cool, Testing of pressure gauge Very enjoyable class Good session! Good program! Weekend recert classes? Great job! Very interactive question and answer period at all sessions I liked the copies of the overhead to make notes on Good class! Thanks! Helpful Presented well Well presented Seed treatment I.D. Palmer Amaranth Do chemical Adjuvants or drift control agents work. Best sprayer tips to use Chemicals Livestock barn pest control Insect ID New prevention chemicals Everything was covered well How to use flow control systems on sprayers Spray additives Data on stacked corn or conventional corn in extreme weather conditions as far as mold aspect Effective pesticide options for Yellow Nutsedge Best empty bin treatments Sprayer calibration Fumigation of ground before planting trees, Eradication of vines in orchard setting Wind when spraying Covered well Little info relevant to my crop was presented Greenhouse info.

Timing of phosphorous application, Sprayer calibration importance, Importance of crop rotation and varying chemical families Herbicide classification Spray nozzles, Spot on calculator, Cover crop relation to phosphorous Different nozzle size spray pattern, Effects of spray drift, different nozzles used for different types of spray All 3 instructors did a great job!

Thank you for your time and knowledge! Very good! Best recert yet! Excellent presentation! Best one yet! Fine program! Good!

Very educational!

Well Done Couldn't see well Very informative and educational!

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APPENDIX B: EVALUATION / IMPACT

APPENDIX C: PUBLIC KNOWLEDGE OF OSUE

APPENDIX D: IMPLEMENTATION OF PROGRAM STRATEGIES

APPENDIX E: ADDITIONAL INFO / REPORTS