2nd National Weed Contest
Hosted by: The Ohio State University
Location: South Charleston, OH
Date: 20-22 July 2015

The National Weed Contest, called the WeedOlympics, is a joint activity between the Northeastern, North Central, Southern, and Western Weed Science Societies. The purpose of this national contest is to provide an educational experience from which students from universities across the country can broaden their applied skills in Weed Science. The contest provides an opportunity for students to meet and interact with each other, be exposed to researchers from other universities and industry, and apply what they have learned using a contest to measure their capabilities. It is also hoped that the contest will increase the visibility of Weed Science and intensify the interest level of those participating in the discipline of Weed Science.

CONTEST RULES

Note: student cell phones or other communication devices will not be permitted during the contest. Students should leave their cell phones and devices with their coaches during the day of the contest. Any violation of this rule will result in disqualification of that student from the contest

A. Eligibility

Any undergraduate or graduate student currently enrolled and pursuing an A.S., B.Sc., M.Sc. or Ph.D. is eligible to participate. Eligibility includes A.S. students, including 2-year schools, who will compete as undergraduate individuals and teams. Each team will consist of three or four members. If a team has four students, the top three scores will be used to calculate a team score. If a team has three students, all three scores will be used to calculate the team score. A team may be composed of: (a) graduates, (b) undergraduates, or (c) combination (graduates and undergraduates). A combination team must compete as a graduate team; however, the undergraduate students remain eligible for individual undergraduate awards. Conversely, universities within a region may form a three or four member team with students from different universities as long as all participating universities in the joint team have no other teams competing. There is no restriction on the number of teams a single college or university may enter in the contest; however, if resources become constrained universities that bring multiple teams may be asked to reduce their level of participation and preference will be given to graduate student teams. If a college or university does not have sufficient students for a team of three, students may enter as individuals, but will not be eligible for a team award.

All students graduating with an A.S. or B.Sc. degree six months before the contest (and not actively enrolled in a graduate program) will be able to participate as an undergraduate. Each society will be required to bring a <u>minimum of 2 teams</u> in order to compete at the society level.

B. Awards

Plaques and/or trophies will be awarded for the following categories:

National Level

Team – Members of the top overall graduate and undergraduate team will be awarded a plaque. Weed identification, written test and sprayer calibration, unknown herbicides, and problem solving will determine the overall contest winner in both the graduate and undergraduate divisions.

Individual – The highest combined scores from the weed identification, written calibration test, unknown herbicides, and problem solving events will determine the overall top three graduate and top three undergraduate individual winners. The team sprayer calibration event will not count towards individual scores. Each winner will be recognized by a plaque. The highest individual scores by a graduate and an undergraduate student for each contest event (weed identification, problem solving, unknown herbicides, and written calibration test) will be recognized with a plaque.

Society Level

Hosts of the WeedOlympics will not be presenting awards at the society level. All awards at the society level are the responsibility of each individual society's weed contest committee. Societies are not required to present awards at the society level. The breakdown below is only a suggestion of how plaques could be awarded should a society chose to do so.

Team – Members of the top three overall graduate and undergraduate teams in each society will be awarded a plaque. Weed identification, written test and sprayer calibration, unknown herbicides, and problem solving will determine the overall contest winner in both the graduate and undergraduate divisions.

Individual – The highest combined scores from the weed identification, written calibration test, unknown herbicides, and problem solving events will determine the overall top three graduate and top three undergraduate individual winners. The team sprayer calibration event will not count towards individual scores. Each winner will be recognized by a plaque. The highest individual scores by a graduate and an undergraduate student for each contest event (weed identification, problem solving, unknown herbicides, and written calibration test) will be recognized with a plaque if individual societies choose so.

Teams are expected to compete in a society that recognizes them as part of their current region. Some teams have the option of competing in one of two regional societies. For example, "North Carolina State University" is recognized by the SWSS and NEWSS, "University of Kentucky" is recognized by the NCWSS and SWSS, and "Oklahoma State University" is recognized by the SWSS and WSWS. An example of a team regional declaration that would be invalid would be if the "University of Maine" decided to compete as a WSWS team. Teams must declare which society they are competing with before the competition begins or will be designated by the host.

Level	Place	Plaques Awarded
National Level	1st Place Graduate Team	4
	1st Place Undergraduate Team	4
	1st Place Graduate Individual	1
	1st Place Undergraduate Individual	1
Society Level		
	1st Place NEWSS Graduate Team	4
	2nd Place NEWSS Graduate Team	4
	3rd Place NEWSS Graduate Team	4
	1st Place NEWSS Undergraduate Team	4
	2nd Place NEWSS Undergraduate Team	4
	3rd Place NEWSS Undergraduate Team	4
	1st Place NEWSS Graduate Individual	1
	2nd Place NEWSS Graduate Individual	1
	3rd Place NEWSS Graduate Individual	1
	1st Place NEWSS Undergraduate Individual	1
	2nd Place NEWSS Undergraduate Individual	1
	3rd Place NEWSS Undergraduate Individual	1
	1st Place SWSS Graduate Team	4
	2nd Place SWSS Graduate Team	4
	3rd Place SWSS Graduate Team	4
	1st Place SWSS Undergraduate Team	4
	2nd Place SWSS Undergraduate Team	4
	3rd Place SWSS Undergraduate Team	4
	1st Place SWSS Graduate Individual	1
	2nd Place SWSS Graduate Individual	1
	3rd Place SWSS Graduate Individual	1
	1st Place SWSS Undergraduate Individual	1
	2nd Place SWSS Undergraduate Individual	1
	3rd Place SWSS Undergraduate Individual	1

	1st Place NCWSS Graduate Team	4
	2nd Place NCWSS Graduate Team	4
	3rd Place NCWSS Graduate Team	4
	1st Place NCWSS Undergraduate Team	4
	2nd Place NCWSS Undergraduate Team	4
	3rd Place NCWSS Undergraduate Team	4
	1st Place NCWSS Graduate Individual	1
	2nd Place NCWSS Graduate Individual	1
	3rd Place NCWSS Graduate Individual	1
	1st Place NCWSS Undergraduate Individual	1
	2nd Place NCWSS Undergraduate Individual	1
	3rd Place NCWSS Undergraduate Individual	1
	1st Place WSWS Graduate Team	4
	2nd Place WSWS Graduate Team	4
	3rd Place WSWS Graduate Team	4
	1st Place WSWS Undergraduate Team	4
	2nd Place WSWS Undergraduate Team	4
	3rd Place WSWS Undergraduate Team	4
	1st Place WSWS Graduate Individual	1
	2nd Place WSWS Graduate Individual	1
	3rd Place WSWS Graduate Individual	1
	1st Place WSWS Undergraduate Individual	1
	2nd Place WSWS Undergraduate Individual	1
	3rd Place WSWS Undergraduate Individual	1

C. Events

The contest will consist of four major events.

1) **WEEDIDENTIFICATION** Plants will be grown in either a field nursery or greenhouse pots and may be in any stage of growth or development, including seed samples. From this list, 30 weeds will be presented in identifiable condition for the contest. Weeds may be presented in any stage of growth or development (seeds, seedlings, mature weeds or plant parts).

No more than five specimens shall consist of weed seeds only. Students will be responsible for correct identification of twenty-five

weed species using either the correct scientific name or common name (either will be accepted) with correct spelling. An additional five species will need to be identified by correct scientific name (genus and species) and common name with correct spelling. These individuals will be clearly marked "scientific name and common name both".

Total points available for each of the twenty-five weed species whereby a common or scientific name is required is 3 points. Total points for the five weed species whereby a common and scientific name are required is 5 points. One (1) point will be deducted for a slight misspelling of the common or scientific name (such as incorrect capitalization, a one-letter error, or "*arvensis*" instead of "*arvense*"). Two (2) or more points will be deducted for a more serious misspelling, an incomplete name, or the incorrect choice of closely related weeds (i.e. green foxtail instead of yellow foxtail). While touching of plants may be required to aid in weed identification, willful destruction of plants in order to prevent others from observing key characteristics will result in disqualification.

Common names, scientific names, and spellings must conform to the most current "A composite list of weeds", compiled by the Standardized Plant Names subcommittee of the WSSA, published by Weed Science Society of America, revised April 2007 (www.wssa.net). A list of weeds for the identification is provided below.

Amaranthaceae Amaranth (Pigweed) Family
Amaranthus blitoides prostrate pigweed
Amaranthus palmeri Palmer amaranth
Amaranthus retroflexus redroot pigweed
Amaranthus rudis common waterhemp

Apiaceae (Umbelliferae) Parsley Family
Daucus carota wild carrot
Conium maculatum poison hemlock

Apocynaceae Dogbane Family
Apocynum cannabinum hemp dogbane

Asclepiadaceae Milkweed Family
Asclepias syriaca common milkweed

Asteraceae (Composite) Aster Family
Achillea millefolium common yarrow
Ambrosia artemisiifolia common ragweed
Ambrosia trifida giant ragweed
Arctium minus common burdock
Carduus nutans musk thistle
Centaurea biebersteinii spotted knapweed
Centaurea solstitialis yellow starthistle
Cichorium intybus chicory
Cirsium arvense Canada thistle
Cirsium vulgare bull thistle
Conyza canadensis horseweed

Eclipta prostrata eclipta
Galinsoga quadriradiata hairy galinsoga
Helianthus annuus common sunflower
Lactuca serriola prickly lettuce
Senecio vulgaris common groundsel
Solidago canadensis Canada goldenrod
Taraxacum officinale dandelion
Tragopogon dubius Western salsify
Vernonia gigantea tall ironweed
Xanthium strumarium common cocklebur

Brassicaceae (Cruciferae) Mustard Family
Alliaria petiolata garlic mustard
Barbarea vulgaris yellow rocket
Sinapis arvensis wild mustard
Capsella bursa-pastoris shepherd's-purse
Thlaspi arvense field pennycress

Caprifoliaceae Honeysuckle Family
Lonicera japonica Japanese honeysuckle

Caryophyllaceae Pink Family
Stellaria media common chickweed

Chenopodiaceae Goosefoot Family
Chenopodium album common lambsquarters
Kochia scoparia kochia
Salsola tragus Russian thistle

Commelinaceae Spiderwort Family
Commelina benghalensis Benghal dayflower
Commelina communis Asiatic dayflower

Convolvulaceae Morningglory Family
Calystegia sepium hedge bindweed
Convolvulus arvensis field bindweed
Ipomoea coccinea red morningglory
Ipomoea hederacea ivyleaf morningglory
Ipomoea lacunosa pitted morningglory
Ipomoea purpurea tall morningglory
Ipomoea quamoclit cypressvine morningglory
Ipomoea wrightii palmleaf morningglory
Jacquemontia tamnifolia smallflower morningglory

Cucurbitaceae Gourd Family
Cucumis anguria burgherkin
Cucumis melo smell melon
Sicyos angulatus burcucumber

Cyperaceae Sedge Family
Cyperus esculentus yellow nutsedge
Cyperus rotundus purple nutsedge
Kyllinga brevifolia green kyllinga

Dipsacaceae Teasel Family
Dipsacus fullonum common teasel
Dipsacus laciniatus cutleaf teasel

Equisetaceae Horsetail Family
Equisetum arvense field horsetail

Euphorbiaceae Spurge Family
Acalypha ostryifolia hophornbeam copperleaf
Acalypha virginica Virginia copperleaf
Chamaesyce maculata spotted spurge
Croton glandulosus tropic croton
Euphorbia esula leafy spurge
Euphorbia helioscopia sun spurge

Phyllanthus urinaria Chamber bitter

Fabaceae Bean Family
Lespedeza cuneata Sericea lespedeza
Pueraria montana kudzu
Sesbania herbacea hemp sesbania
Trifolium repens white clover

Geraniaceae Geranium Family
Erodium cicutarium redstem filaree
Geranium carolinianum Carolina geranium
Geranium dissectum cutleaf geranium

Haloragaceae Watermilfoil Family
Myriophyllum spicatum Eurasian watermilfoil

Hydrocharitaceae Frog's-bit Family
Hydrilla verticillata hydrilla

Labiatae (Lamiaceae) Mint Family
Glechoma hederacea ground ivy
Lamium amplexicaule henbit
Lamium purpureum purple deadnettle
Perilla frutescens perilla mint
Salvia lyrata lyreleaf sage

Lemnaceae Duckweed Family
Lemna minor common duckweed

Liliaceae Lily Family
Allium vineale wild garlic
Ornithogalum umbellatum Star of Bethlehem

Lythraceae Loosestrife Family
Lythrum salicaria purple loosestrife

Malvaceae Mallow Family
Anoda cristata spurred anoda
Abutilon theophrasti velvetleaf
Hibiscus trionum Venice mallow
Malva neglecta common mallow
Sida spinosa prickly sida

Molluginaceae Carpetweed Family
Mollugo verticillata carpetweed

Moraceae Mulberry Family
Fatoua villosa mulberry weed

Phytolaccaceae Pokeweed Family
Phytolacca americana common pokeweed

Plantaginaceae Plantain Family
Plantago lanceolata buckhorn plantain
Plantago major broadleaf plantain

Poaceae (Gramineae) Grass Family
Andropogon virginicus broomsedge
Avena fatua wild oats
Bromus secalinus cheat
Bromus tectorum downy brome
Cenchus spinifex field sandbur
Digitaria ischaemum smooth crabgrass
Digitaria sanguinalis large crabgrass
Echinochloa crus-galli barnyardgras
Eleusine indica goosegrass
Elymus repens quackgrass
Eragrostis cilianensis stinkgrass

Eriochloa villosa woolly cupgrass
Microstegium vimineum Japanese stiltgrass
Panicum dichotomiflorum fall panicum
Panicum miliaceum wild proso millet
Panicum repens torpedograss
Paspalum dilatatum dalligrass
Phragmites australis common reed
Poa annua annual bluegrass
Setaria faberi giant foxtail
Setaria pumila yellow foxtail
Setaria viridis green foxtail
Sorghum bicolor shattercane
Sorghum halepense johnsongrass
Urochloa platyphylla broadleaf signalgrass

Polygonaceae Buckwheat Family
Brunnichia ovata redvine
Polygonum aviculare prostrate knotweed
Polygonum convolvulus wild buckwheat
Polygonum pensylvanicum Pennsylvania smartweed
Polygonum perfoliatum mile-a-minute weed
Polygonum persicaria ladysthumb
Rumex crispus curly dock
Rumex obtusifolius broadleaf dock

Portulacaceae Purslane Family
Portulaca oleracea common purslane

Rubiaceae Madder Family
Diodia virginiana Virginia buttonweed
Galium aparine catchweed bedstraw

Scrophulariaceae Figwort Family
Verbascum thapsus common mullein
Veronica arvensis corn speedwell

Solanaceae Nightshade Family
Datura stramonium jimsonweed
Physalis longifolia var. *subglabrata* smooth groundcherry
Solanum carolinense horsenettle
Solanum ptycanthum eastern black nightshade
Solanum rostratum buffalobur

Typhaceae Cattail Family
Typha latifolia common cattail

Resources: Common names, scientific names, and spellings must conform to the most current
"A composite list of weeds", compiled by the Standardized Plant Names subcommittee of the
WSSA, published by Weed Science Society of America, revised April 2007 (www.wssa.net).

Other resources include:
Weeds of the Northeast, 1997. Uva, R.H., J.C. Neal, and J.M. DiTomaso, eds., Cornell University Press, Ithaca, NY.

Weeds of the Great Plains, 2003. Stubbendieck, J., M.J. Coffin, and L.M Landholt, eds.,Nebraska Department of Agriculture, Lincoln, NE.

Weeds of the South, 2009. Bryson, C.T. and M.S. DeFelice, eds., Southern Weed Science Society, Athens, GA.

2) **APPLICATION TECHNOLOGY** Each component of the two application technology events will be worth 100 points for a total of 200 points.

A. Written Test on Sprayer Calibration (100 points): Questions can potentially be related to all aspects of sprayer calibration, such as volume of spray needed, amount of herbicide needed per gallon or liter, nozzle nomenclature and selection, sprayer pressure, droplet size, boom height, drift reduction techniques, etc. The test will be comprised of multiple choice, short answer, and written calculation questions. The major reference will be the TeeJet Agricultural Spray Products Catalog from Spraying Systems Company, but other sources may be used. Test information will be provided in both English and metric units. Correct answers will be accepted in both English and metric units. A 45-minute time limit will be imposed for the written test. All participants will take this portion of the calibration event as an individual. Students will be provided with calculators.

B. Sprayer Calibration (100 points): This portion of the calibration will be a team event; however those students competing as individuals will also compete as an individual in this portion of the event. All sprayer components, calculators, and stopwatches will be provided. Use of personal calculators will not be permitted. Safety glasses (provided by the host) are required to be worn by all students, judges, observers, etc. who are in the calibration event area. If the judge sees any student without safety glasses during the time they are working on the problem (calculations, sprayer setup and calibration, and calibration run), 25 points will be deduced from the team score.
Part one of this contest section, entitled "Sprayer Calibration", challenges each team to calibrate a CO_2 backpack sprayer based on a basic written problem that will be calculated during this session. The student must apply a designated number of gallons/acre (liters/hectare) that will be determined by the output of each spray tip and the required amount based on the intended combination of tip selection, pressure and speed. Speed will be timed over a measured course. When the team is satisfied that the sprayer is prepared properly, they should notify the judge, and the final calibration will begin. No further adjustments can then be made to the sprayer following this determination by the team. The calibration will be checked with the judge watching for correct boom height, uniformity of spray pattern, and speed. Each nozzle will then be checked for accurate output. Variation in nozzle output of up to +/---10% will be accepted. As an example, if the correct nozzle output is 90 ml/min, the acceptable range will be 81 to 99 ml/min. For each ml of inaccuracy outside this range, one (1) point will be deducted up to a possible 5 points per nozzle. Obtaining the correct output from all four nozzles is worth 15 points.

In the second phase of the sprayer calibration, entitled "Sprayer Competency", teams will demonstrate proper sprayer use and accuracy in application. In this part of the contest, the team will take the calibrated equipment, calculate the amount of pesticides to be added to treat a prescribed area, and will proceed to that prescribed area where they will be judged on the technique and accuracy of their application. If the team accidentally calibrates the sprayer to a different gallons/acre (liters/hectare) then requested in part one ("Sprayer Calibrations") it will not disqualify them from the opportunity to demonstrate proper sprayer use and accuracy with their sprayer calibrated as is. Spray pattern, overlap of spray between passes, and proper boom height will be evaluated by the judges in this portion of the contest as well as accuracy in the application based on the area treated and the mix size of the application.

Sample question: You are asked to spray some research plots with Atrazine 4L at 1 lb ai atrazine/acre plus necessary adjuvants. Each plot is 25 ft long and replicated 4 times. You will spray at 18 GPA with the provided boom (your pressure regulator can only operate in the range of 30---55 psi.). The grassy weeds are 3 inches tall and the corn is 12 inches tall. Calibrate the boom so you can proceed with this job. Using the equipment provided, determine the proper spray tips, pressure, boom height and ground speed to obtain the needed delivery volume. Assume that the distance between spray tips is 20 inches. All sprayer components will be provided. Sprayers should consist of a four---nozzle boom. Each person must choose the appropriate nozzle tips, pressure and speed for accurate calibration and application. Nozzle tips, strainers, and a Tee Jet Agricultural Spray Products catalog will be provided to assist in accurate calibration.

Teams will have 45 minutes to complete both Part I and Part II of the sprayer calibration portion of the WeedOlympics.

Part 1--- Sprayer Calibration (60 points total):

1. Correct problem calculation (20 points)
2. Nozzle output (4 points/nozzle; 32 points total)
3. Walking speed and height (8 points total)

Part 2--- Sprayer Competency (40 points total)

1. Boom height and pattern quality (10 points total)
2. Accuracy in spraying the prescribed area (20 points total)

3) **IDENTIFICATION OF UNKNOWN HERBICIDES**

Crop and weed species will be planted and treated with herbicides. Approximately 4 wks prior to the contest, PRE and PRE---plant incorporated applications will be made, with POST treatments applied approximately 7 to 10 days prior to the event. A list of crops, weeds, and herbicides are provided below. All herbicides in the list below will be applied at a 1X rate only and only 10 of the 30 herbicides applied will be selected for the contest. From these lists, selections will be made. At least 5 crops but no more than 10 crops from the list below will be used in this portion of the contest. Similarly, at least 5 weeds but no more than 10 weeds from the list below will be used in this portion of the contest. Students will be required to identify the unknown herbicide by visual symptoms on crops and weeds the herbicide previously applied. There will be ten plots and each plot will be worth 10 points. For graduate students and undergraduate students competing on a mix graduate/undergraduate team, scoring will be 5 points for correct common name, 3 points for correct herbicide family, and 2 points for correct site of action and/or group number. For undergraduates, scoring will be 10 points for correct site of action and/or group number. Undergraduates will write both site of action and/or group number and common name, but will be scored only for correct site of action. Correct common name will be used only for tiebreaker.

One (1) point will be deducted for a slight misspelling of the common names, herbicide family, and sites of action (such as a one---letter error, for example "bentazan" instead of "bentazon"). More serious misspellings will result in complete loss of points for that section. There will also be a control plot identified for easy comparison to the herbicide treated plots. Herbicide plots may also be duplicated. While touching of plants may be required to aid in herbicide identification, willful destruction of plants in order to prevent others from observing these symptoms will be grounds for disqualification.

Herbicides, Trade Names, Families, Sites of Action, Use Rates, and Application Timings for Identification Exam

Herbicide	Trade Name	Herbicide Family	Site of Action*/Group (#)	Application Timing	Rate herbicide (g ai/ha) + adjuvant (%v/v unless otherwise specified)
1. Atrazine	AAtrex 4L	triazine	Photosystem II Inhibitor (5)	PRE	2240 g ai/ha
2. Bentazon	Basagran	benzothiadiazole	Photosystem II inhibitor (6)	POST	1120 g ai/ha + COC 1%
3. Bromoxynil	Buctril	nitrile	Photosystem II inhibitor (6)	POST	420 g ai/ha
4. Chlorimuron	Classic	sulfonylurea	ALS inhibitor (2)	POST	9 g ai/ha + COC 1%
5. Clomazone	Command 3ME	isoxazolidinone	Diterpene Synthesis Inhibitor (13)	PRE	420 g ai/ha
6. Clopyralid	Stinger	pyridine carboxylic	T1R1 Auxin Receptors (4)	POST	210 g ai/ha
		acid			
7. 2,4-D	2,4-D L.V. 4 ester	phenoxy	T1R1 Auxin Receptors (4)	POST	420 g ai/ha
8. Dicamba	Clarity	benzoic acid	T1R1 Auxin Receptors (4)	POST	280 g ai/ha
9. Dithiopyr	Dimension	pyridazine	Microtubule Inhibitors (3)	PRE	560 g ai/ha

10. Diuron	Karmex	substituted urea	Photosystem II inhibitor (8)	PRE	896 g ai/ha
11. Flumioxazin	Valor SX	phenylphthalimide	PPO Inhibitors (14)	PRE	107 g ai/ha
12. Glufosinate	Liberty 280 SL	phosphinic acid	Glutamine Synthesis Inhibitor (10)	POST	450 g ai/ha + AMS 3 lb/acre
13. Glyphosate	Power Max	glycine	EPSP Synthase Inhibitor (9)	POST	1058 g ai/ha
14. Halosulfuron	Sandea	sulfonylurea	ALS inhibitor (2)	POST	35 g ai/ha + NIS 0.25%
	/Sedgehammer				
15. Imazethapyr	Pursuit 2 AS	imidazolinone	ALS inhibitor (2)	POST	70 g ai/ha + NIS 0.25%
16. Isoxaben	Gallery	benzamide	Cellulose synthase inhibitor (21)	PRE	840 g ai/ha
17. Isoxaflutole	Balance Pro	isoxazole	HPPD inhibitor (27)	PRE	105 g ai/ha
18. Fomesafen	Reflex	Diphenylether	PPO inhibitors (14)	POST	219 g ai/ha + NIS 0.25%
19. Mesosulfuron	Osprey	sulfonylurea	ALS Inhibitor (2)	POST	15 g ai/ha + MSO 1%
20. Mesotrione	Callisto	triketone	HPPD Inhibitors (27)	POST	105 g ai/ha + COC 1%
21. Metribuzin	Metribuzin 75DF	triazine	Photosystem II inhibitor (5)	PRE	840 g ai/ha
22. Nicosulfuron	Accent	sulfonylurea	ALS inhibitor (2)	POST	35 g ai/ha + COC 1%
	75WG				
23. Paraquat	Gramoxone	bipyridylium	Photosystem I electron diverter (22)	POST	560 g ai/ha + NIS 0.25%
24. Pendimethalin	Prowl H_2O	dinitroanaline	Microtubule Inhibitor (3)	PRE	1596 g ai/ha
25. Quinclorac	Drive	quinoline	T1R1 Auxin Receptors (4)	POST	840 g ai/ha + MSO 1%
		carboxylic acid			
26. Saflufenacil	Sharpen	pyrimidinedione	PPO inhibitor (14)	PRE	62 g ai/ha
27. Clethodim	Select Max	cyclohexanedione	ACCASE inhibitor (1)	POST	210 g ai/ha + COC 1%

28. *S*-Metolachlor	Dual II Magnum	chloroacetamide	Long-chain fatty acid inhibitor (15)	PRE	1423 g ai/ha
29. Tembotrione	Laudis	triketone	HPPD Inhibitors (27)	POST	92 g ai/ha + MSO 1%
30. Trifloxysulfuron	Envoke	sulfonylurea	ALS inhibitor (2)	POST	5 g ai/ha + NIS 0.25%

*** A specific site of action is provided when known, while a general mode of action is provided for all other herbicides.**

Crops list for the herbicide identification plots.

Alfalfa
Canola
Corn, field
Cotton
Pea, field
Pumpkins
Peas and/or snap beans
Rice (dry land)
Snapbeans
Soybean
Sunflower
Wheat
Grain sorghum

Weed list for herbicide identification plots.

Barnyardgrass
Broadleaf signalgrass
Common cocklebur
Common lambsquarters
Common ragweed
Crabgrass, large
Downy brome
Field bindweed
Foxtail, Yellow
Kochia
Morningglory, Ivyleaf
Pigweed, redroot
Ryegrass, Italian
Velvetleaf
White Clover
Wild mustard
Wild oat
Yellow nutsedge

4) PROBLEM SOLVING AND RECOMMENDATION

Students will be required to evaluate a crop production problem in weed management or general aquatic, non---crop, horticultural, or agronomic situations and recommend an effective solution to that problem. Recommendations must comply with accepted practices. Students should consider all factors which influence crop growth and development or all aspects of managing non---crop or aquatic environments. Although several possible answers may be correct, the best answer considering all alternatives will be determined by a designated advisory panel. This event is to be presented and handled in a "role---playing" situation. The student will be asked to assume the role of an extension, sales, or research person when dealing with the client. Any commodity (such as corn, cotton, soybean, wheat, vegetable crop, etc.) or scenario (such as herbicide injury, weed resistance, agronomic errors, etc.) is eligible to be the focus of the problem solving and recommendation section.

Each student will handle only one situation, for a total possible score of 100 points. This will allow for a possible team score of 300 points. Students will be selected randomly for each possible situation. Each team member will evaluate a different situation. Scores will be normalized and winners of this portion of the contest will be verbally recognized. Each problem will be scored by the following point structure.

- 25 points – How the student approached the client
- 45 points – Assessment of situation; determine the problem
- 15 points – Recommendation – now
- 15 points – Recommendation – next year