Revised February 2009.

North Central and Northeastern Collegiate Weed Science Contest

The purpose of the joint North Central and Northeastern Collegiate Weed Science Contest is to provide an educational experience from which students in North Central and Northeastern universities can broaden their applied skills in Weed Science. The contest provides an opportunity for Weed Science students to meet and talk 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

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. There is no restriction on the number of teams a college or university may enter in the contest. If a college or university does not have sufficient students for a team of three, students may enter as individuals.

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.

B. Awards

Plaques will be awarded for the following categories:

Team – The members of the top three overall graduate and undergraduate team scores from 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. Second and third place teams will also be recognized. Teams must declare which society they are competing with.

Individual – The highest three combined scores from all events from each society (weed identification, written calibration test, unknown herbicides, and problem solving) will determine

the overall top three graduate and top three undergraduate individual winners. Each will be recognized by a plaque.

Winners of each event will be recognized verbally at the awards ceremony.

Awards		Total plaques	
Overall Grand Champion Graduate Team		4	
Overall Grand Champion Undergraduate team		4	
	Placing	NCWSS plaques	NEWSS plaques
Graduate Team	First	4	4
	Second	4	4
	Third	4	4
Undergraduate Team	First	4	4
	Second	4	4
	third	4	4
Graduate individual	First	1	1
	second	1	1
	Third	1	1
Undergraduate individual	First	1	1
	Second	1	1
	third	1	1

C. Events

The contest will consist of four major events.

1) WEED IDENTIFICATION

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. A complete list of potential species will be sent to each university and will be posted on the NEWSS and NCWSS weed contest websites. From this list, 25 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 weed species using either the correct scientific name or common name (either will be accepted) and spelling. The other five species will need to be identified by correct scientific name (genus and species) and spelling. These individuals will be clearly marked “scientific name only”.

In addition, students must choose a biological characteristic for each weed species from a list of four, only one of which is correct. These could include growth habit, reproduction, habitat, seed dispersal mechanism, native origin, leaf shape, etc.

Total points available for each weed species is 4 points: correct identification and spelling of the weed species will be worth 3 points and choice of the correct biological characteristic will be

worth 1 point. 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).

In the example below, for common lambsquarters, 3 points would be awarded for the correct identification and spelling and 1 point for choosing "summer annual."

Name (3 points)		Circle the correct characteristic for each weed (1 point)			
	common lambsquarters	summer annual	herbaceous perennial	monocot	forms stolons

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).

2) APPLICATION TECHNOLOGY

Each component of the application technology event will be worth 50 points.

A. Written Test on Sprayer Calibration

Questions will cover 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 30-minute time limit will be imposed for the written test. This will be the first event of the contest. All participants will take the test during this time period.

B. Sprayer Calibration

Each student will calibrate a CO_2 backpack sprayer based on a basic written problem that will be calculated during this session. If the individual answered the written test question incorrectly, the correct answer will be given so the calibration can be performed.

Sample question: You are asked to spray some research plots with Accent 75 DF at 0.031 lb ai nicosulfuron/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. Contestants should provide a stopwatch while a non-programmable calculator will be provided. 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.

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. Spray pattern and proper boom height will also be evaluated by the judges. Scoring will be based on the accuracy of the calibration and application. Each person will be allotted 15 minutes to complete the calibration. For each minute over 15 min, one (1) point will be deducted from a possible 20 points. Help will be available to assist the student in collecting output from nozzles during calibration.

When the student is satisfied that the sprayer is prepared properly, he or she should notify the judge, and time will be stopped. No further adjustments can then be made to the sprayer. The calibration will be checked with the judge watching for correct boom height (3 points), uniformity of spray pattern (3 points), and speed (4 points). 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 20 points. If the spray boom does not contain four nozzles, the 20 points possible will be distributed evenly among the number of nozzles used.

Scoring breakdown summary (50 points total):

1. Correct problem calculation (5 points)
2. Elapsed time (15 points)
3. Boom height (3 points)
4. Spray pattern quality (3 points)
5. Walking speed (4 points)
6. Nozzle output (5 points/nozzle; 20 points total)

3) IDENTIFICATION OF UNKNOWN HERBICIDES

Crop and weed species will be planted and treated with herbicides. A list of crops, weeds, and herbicides will be provided prior to the contest. From this list, selections will be made. Students will be required to identify by visual symptoms on crops and weeds the herbicide previously applied. Approved common names, herbicide family, and mode of action for herbicides will be utilized. This event is worth 100 points. There will be ten plots and each plot will be worth 10 points (5 points for correct common name, 3 points for correct herbicide family, and 2 points for correct mode of action). There will also be a control plot, which must be identified as a control. Herbicide plots may be duplicated.

4) PROBLEM SOLVING AND RECOMMENDATION

Students will be required to evaluate a crop production problem in a field situation and recommend an effective solution to that problem. Recommendations must comply with accepted agricultural practices. Students should consider all factors which influence crop growth and development. Although several possible answers may be correct, the best answer considering all alternative 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 farmer.

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

Each student will handle only one situation, for a total possible score of 100 points. This will allow for a possible team score of 400 points. Students will be selected by chance 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.