2018 NEWSS COLLEGIATE WEED SCIENCE CONTEST RULES AND REGULATIONS

PURPOSE

The purpose of the Northeastern Collegiate Weed Science Contest is to provide an educational experience for students at northeastern colleges and universities to broaden their applied knowledge and skills in weed science. The contest provides an opportunity for students to meet and visit with each other, interact with researchers from other universities and industry, and apply what they have learned in preparation for the contest. It is also hoped that the contest will increase the visibility of Weed Science and intensify the participants' interest in the discipline of Weed Science.

ELIGIBILITY

Any undergraduate or graduate student enrolled in a degree program is eligible to participate in the contest. All students will compete in the same contest, but separate awards will be given to graduate and undergraduate contestants. Students from a college or university can compete as teams of three or four members, or as individuals. A team may be composed of all graduate students, all undergraduate students, or a combination of graduates and undergraduates. A combination team must compete in the graduate division, but any undergraduate members on the team will be eligible for individual awards in the undergraduate division. A team of two members will only be allowed if no more than two students are participating from the same school.

A student can compete in the undergraduate division if they are currently enrolled in an undergraduate studies program or if they earned a B.A. or B.S. degree no more than 6 months prior to the contest. A student is eligible to compete a maximum of three times in the undergraduate division, and a maximum of four times in the graduate division.

EVENTS

The contest will consist of four events. Each of these events will be worth 100 points for a total of 400 possible points for individual scores and 500 total points for team scores. See Addendum 12 for lists.

I. WEED IDENTIFICATION

At least 3 months prior to the contest, a weed identification list will be sent to the coach or contact person for each participating college or university. The list will contain the accepted common and scientific names of each species according to *Composite List of Weeds* (Weed Science Society of America, 2010). The USDA plant database will be used for species not found in the *Composite List of Weeds*. Students will be responsible for correctly spelling the common names and scientific names of the weeds on the list.

Twenty-five (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. Broadleaf seedlings with four true-leaves or less need to be identified by genus only. For example, a smooth pigweed seedling with four or fewer leaves can be identified only as pigweed or *Amaranthus*. Grass seedlings must be indentified to species (i.e. giant foxtail or *Setaria faberi*).

Students must identify 20 weeds by either common or scientific name (either will be accepted). Five (5) weeds (clearly marked "scientific name only") must be identified by genus and species. The correct identification of each weed is worth 3 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 mis-spelling, an incomplete name, or the incorrect choice of closely related weeds (i.e. green foxtail instead of yellow foxtail).

In addition, students must choose a characteristic for each weed 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. Choice of the correct characteristic will be worth 1 point. Correct identification and choice of the correct characteristic will be worth a total of 4 points. In the example below, for common lambsquarters, 3 points would be awarded for the correct identification and 1 point for choosing "summer annual." This event is worth 100 points.

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

At the discretion of the contest organizers, one of the specimens may not be included on the weed identification list. If so, the botanical key pages from an appropriate flora manual (Weeds of the Northeast, Weeds of the Northern U.S. and Canada, Manual of the Vascular Flora of the Carolinas) will be available to the students.

II. APPLICATION TECHNOLOGY

Each component of the application technology event will be worth 100 points.

A. Written Test on Sprayer Calibration (All participants)

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 composed 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 and all participants will take the test during this time period.

B. Sprayer Calibration (Team only)

Each team will calibrate a CO_2-powered backpack sprayer based on a basic written problem that will be calculated during this session. If the team answers the written test questions incorrectly, the correct answer will be given so the calibration can be performed, however, 10 points will be deducted from the event score. Each team will be given a set of conditions upon which a CO_2 backpack sprayer with a four-nozzle boom is to be calibrated based upon the application of a herbicide mixture. Nozzle tips, strainers, and a TeeJet Agricultural Spray Products catalog will be provided to assist in accurate calibration. Calculators and stopwatches will be provided. (Use of personal calculators will not be permitted.) Each team will be expected to choose the appropriate nozzle tips, speed, pressure, and amount of herbicide for accurate calibration and application. Each team will be asked to deliver a designated number of gallons/acre or liters/hectare over a given area. Scoring will be based on accuracy of elapsed time, application and calibration. A 15-minute time-limit will be given to solve the problem and calibrate the sprayer. Time will start when the team approaches the spray table. For every 15 seconds over the 15-minute allotment, one point will be deducted from a possible 20 points. When the team is satisfied that the sprayer is prepared properly, they 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 (5 points), uniformity of spray pattern (5 points), and speed (6 points). Each nozzle with then be checked for accurate output. Points for correct nozzle output will be as follows: 8 points/nozzle plus 8 additional points awarded if all four nozzles are correct; no additional points awarded if any of the four nozzles are incorrect. Variation in nozzle output of up to +/- 3% will be accepted. As an example, if the correct nozzle output is 90 ml/min, the acceptable range will be 87 to 93 ml/min. For each ml of inaccuracy outside the range, two (2) points will be deducted up to, but not exceed, 8 points per nozzle. Also, each team member must contribute a critical service during this event (i.e. one or two team members should not dominate all aspects); up to 5 team-participation points may be awarded.

Scoring breakdown summary (100 points total):

1. Correct problem calculation (10 points)
2. Elapsed time (20 points)
3. Boom height (5 points)
4. Spray pattern quality (5 points)
5. Walking speed (7 points)
6. Correct screens/check valves (8 points)

7. Nozzle selection and output (8 points/nozzle for correct output = 32 points + additional 8 points if all selected nozzles are correct; 40 points total)
8. Participation of each team member (5 points)

The team portion will not be used in calculating individual scores, but will be used to calculate team scores only. Those participants competing as "individuals" will not be required to complete the sprayer calibration portion of the contest.

III. IDENTIFICATION OF UNKNOWN HERBICIDES

At least 3 months prior to the contest, contestants will be provided with lists of crops and weeds to be planted, as well as herbicides and their approved common names, herbicide families and modes of action. These crops and weeds will be planted in rows at the contest site approximately 1 month before the contest. Herbicides will be applied to plots containing all crops and weeds. The application timing (preemergence or postemergence) for each herbicide will be according to the timing specified in the list provided to the contestants. Herbicide plots may be duplicated. Any untreated plots must be identified as controls. Based on visual symptoms on crops and weeds, students will attempt to identify the herbicides applied to ten (10) plots selected by the contest organizers. Each plot will be worth 10 points: 2 points for identification of the herbicide mode of action, 2 points for herbicide site of action, 2 points for the herbicide family, and 3 points for the specific herbicide by approved common name, and 1 point for including the correct WSSA Herbicide Group number.

	Mode of Action (2 points)	**Site of Action (2 points)**	**Herbicide Family (2 points)**	**Common Name (3 points)**	**WSSA Herbicide Group Number (1 point)**
1	Plant growth regulator	TIR1 auxin receptor	phenoxy	2,4-D	4

IV. PROBLEM SOLVING AND RECOMMENDATIONS

All contestants will be provided at least 3 weeks in advance with a list of crops involved in the grower problems planned by the contest organizers. Turf, landscape or ornamental problems may be identified only by these broad designations. Students will not know in advance which problems they will be assigned to at the contest.

This event is to be presented and handled in a "role play" situation. Students will be asked to assume the roles of extension, sales, or research professionals when talking to the grower. Each student will be assigned two problems in field or office situations. The goal is to determine the cause or causes of each problem and to recommend an effective and reasonable course of action. Recommendations must comply with accepted agricultural practices. Students should consider all factors that influence plant growth and development. There may be more than one appropriate recommendation for the grower's situation.

For each problem, a judge will be assigned to evaluate student performance. Points will be assigned in the following categories by the judge in consultation with the grower.

1. How the student interacted with the grower. (20 points)
2. Method of assessing the problem. (40 points)
3. Determining the cause of the problem. (20 points)
4. Recommendation – now and next year. (20 points)

Contest organizers should divide the problems into two groups: those deemed "more difficult" and those deemed "less difficult" to solve. Each student should be assigned to one problem from both of these groups. Alternatively, a student can be assigned to one problem within the student's discipline and one outside his/her area of concentration. If possible, members of the same team should not be assigned to the same problems. The total possible score is 100 points (average score for the two problems).

SCORING

An advisory panel consisting of five members will be responsible for scoring the contest. The panel will be the final authority for all questions regarding scores. People from the host location and contest volunteers from other locations can serve on the advisory panel. Individuals from the host location will be the authority for questions relating to the field portions of the contest.

Team Scoring: The team score for each event will be the average of the individual scores for that event, with the exception of team sprayer calibration. The team scores for each event will then be summed and the team calibration score will be added to the sum for the total team score.

AWARDS

Separate awards will be presented for graduate and undergraduate divisions.

Individual Awards

The highest combined score from all four events (excluding sprayer calibration) will determine the individual winners in the graduate and undergraduate divisions. Awards will be presented to the top three graduate individuals and to the top three undergraduate individuals.

For each of the four events, the graduate student and the undergraduate student who earned the highest score will be recognized at the banquet.

Team Awards

For each event, the team score will equal the average of the individual scores among team members and the sprayer calibration event. The sum of the four average scores plus the

team calibration score will equal the total team score. Awards will be presented to the top three graduate teams and to the top three undergraduate teams.

WEED CONTEST COMMITTEE

A committee of at least seven people will be responsible for periodically reviewing the rules and procedures for the contest, and proposing and voting on possible changes to the contest rules and/or procedures. The committee will also be responsible for any revisions to the weed identification list and the list of herbicides used in the contest (Addendum 12). Any changes must be approved by a majority of the committee members and be reported to the current year's contest organizer by March 31.

The committee will consist of contest organizers from the current year and previous three contests, the current President and President-elect of the Northeastern Weed Science Society (NEWSS), and the NEWSS Graduate Student Representative. In addition, the committee may choose to include other members, such as experienced contest volunteers or a representative from the Northeast Aquatic Plant Management Society.

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