Appendix I

How to Organize and Manage a Soil-Judging Contest

Competency: Evaluate the soil landscape.

Appendix I: How to Organize and Manage a Soil-Judging Contest

This information is intended primarily to help those who may be asked to organize a soil-judging contest, prepare the pits at the site, and do the official judging and scoring. Instructors and students, however, may wish to read this section so they will have a better idea of what to expect when they arrive at a contest.

Locating a Contest Site

An official contest has three or four soil pits. One pit could be used as practice or demonstration pit. At least three are used as contest pits. Each pit should represent a distinctly different soil. If at all possible, the pits should all be within a short (5-10 minute) walk from each other. However, buses could be used to transport students several miles if necessary.

Local soil scientists from the Natural Resources Conservation Service, the U.S. Forest Service, or university extension services should be able to provide assistance in suggesting possible contest areas and in selecting precise locations for each pit.

These same people or other area experts may be willing to serve as official judges as well. They should not be asked to arrange for the pits to be dug.

What Shape Should the Pits Be?

Ideally, pits should be large enough for five to eight people to get into the pit at the same time. An ideal pit would be 3-6 feet wide, 10-12 feet long at the bottom, and deep enough to see all the horizons that are to be judged.

Pits should be dug in a T-shape (see Figure A-1) with the tail of the T pointing southwest for an afternoon contest and southeast for a morning contest. This positioning takes advantage of the best light on the fact of the pit to be judged. Slope the tail of the T so contestants can walk down into the pit. The other two ends and sides of the pit can be vertical for observation. The pit should be 48 inches deep with a small area in one end that is at least 72 inches deep, for safety precautions. If pits are dug on steep slopes, the tail of the T should point downhill for ease of entry. This situation may not permit orientation of the pit to take advantage of using the best light for viewing.

When digging pits, try to keep both walls as straight as possible and the bottom as level as possible. If the pit has water in it, use suction pumps to keep it dry while it is being judged. Wooden pallets placed in the bottom provide a good surface to stand on while judging wet soils.

Circumstances often require the use of pits, road cuts, or stream banks that are smaller than ideal. If this is the case, there are a couple of things you can do to make it easier for the students to judge the soil.

One helpful technique is to place soil from each of the horizons to be judged into large pans. Label all pans clearly, and place them on the ground near the pit.

Students can use the soil in these pans to judge color and texture, and they can do this while others are examining the soil in the pit. they will still have to get into the pit to determine structure, coarse fragments content, horizon names and effective depth.

Rotate groups of students into and out of the pit at 5 to 10 minute intervals to give each student an equal judging opportunity. With large groups, it may be necessary to allow a longer total judging time in order to make sure that everybody has adequate time to study the soil profile.

Setting Up and Judging the Official Profile

The official judge(s) should select a single area on the face of the pit within which all decisions regarding scorecard entries will be made. This area should be about 1 1/2 to 2 feet wide, and should be plainly marked with colored ribbons on each side running from the top to the bottom of the pit. Each boundary between horizons should be marked with a tag, card, ribbon, or string.

If more than four horizons are present, place a small numbered card in the middle of each horizon for which the students are to record answers on their scorecards.

Suppose, for example, a soil has an Ap-A-E-B-C-Cr-R profile, and the students are to judge the first, third, fifth, and sixth horizons. Place card number 1 in the Ap, card number 2 in the E, card number 3 in the C, and card number 4 in the Cr.
If fewer than four horizons are present, students will normally judge each horizon in the profile. In any case, the official judges always have the right to specify which horizons are to be judged if, for any reason, they do not want students to judge a particular horizon.

It is imperative, however, that students be able to easily determine which horizons they are to judge and how the horizons marked in the soil profile correspond to the four horizons listed on the scorecard.

Contestants should use only the same kinds of resources for making decisions as are available to all students. That is, colors should be estimated according to the guidelines in the *Soil Science Student Guide* without the aid of a Munsell soil

color chart. Coarse fragments should be estimated by eye rather than using a sieve, and percent slope should be estimated without the use of instruments. The judge(s) may decide to allow more than one correct answer if the texture, color, structure, or any other property or interpretation is very close to the boundary between two choices.

Information that Must be Provided at Each Pit/Site

Each pit needs to be clearly identified, either with a letter, number, or color-coded scorecard. Post this identification in a prominent place, to minimize the possibility that students will record their answers on the wrong card for that pit/site.

Additional information that the students need for judging each pit/site MUST BE provided, including the following:

1. the upper and lower depth limits for each horizon;
2. slope stakes 100 feet apart and four (4) feet out of the ground;
3. whether or not irrigation water is available;
4. whether or not drainage outlets are available; and
5. the available water capacity for horizons that are not judged.

Finally, the elevations could be given for slope determination. Select an area near the pit that is to be used for judging the slope of the site. Drive two stakes into the ground, one directly down slope from the other, at a horizontal separation distance of 25,50, or 100 feet and four (4) feet out of the ground.

Write the lower elevation on a card and tack it to the lower stake. Write the higher elevation on a card and tack it to the upper stake. Be sure that the elevation difference, when divided by the separation distances, does, in fact, calculate out to be the slope gradient intended.

Supplies and Equipment

The host should provide materials such as stakes, posters, ribbons, pumps, water bottles for moistening texture samples, pans/buckets, tape measures, flag or horizon indicators, pallets needed to set up the contest pits, and make arrangements for digging the soil pits. (See Checklist, page 187). They should also have enough Scorecards and Interpretation Help Sheets on hand to provide four scorecards and one help sheet for each student. Scorecards and Interpretation Help Sheets are located in Appendix II in this guide. Additional scorecards are available from Instructional Materials Laboratory at 1-800-669-2465.

Students should come dressed for the weather and should bring field equipment necessary to judge the soil. A suggested list is:

1. warm clothing and a warm coat
2. rain gear
3. rubber boots
4. clipboard
5. clear plastic bag to cover clipboard and keep scorecards dry
6. two no. 2 pencils (don't use harder pencils, the judges won't be able to read the answers)
7. pocket knife or probing utensil
8. non-programmable calculator (If rules allow)

Ground Rules

At the beginning of the contest, remind all students of the rules and announce any special conditions that may also apply. Ground rules include (but aren't necessarily limited to) these eight:

1. The time allowed for judging each pit/site is 40 minutes. Local officials may extend this limit if it is necessary to allow enough time to rotate small groups into and out of the pits.

2. Allow time after each pit/site has been judged (and the scorecards have been collected) for an official judge to review the correct answers for that pit, or to review each pit with all students after the contest is completed.

3. Allow necessary time for rotation between pit/site after student judging at each pit has been completed.

4. The official profile, between the ribbons, is reserved as a reference area. It is not to be disturbed in any way by any of the contestants.

5. Discuss location conditions, and/or local deviations from the guidelines in the *Soil Science Student Guide* with each group at each pit, if necessary. Examples include specific kinds of landforms and parent materials, exceptions to drainage class criteria, etc.

6. Students must record their answers on the scorecard for each question. *Enter one and only one answer*. The official judge(s) may decide to accept more than one answer, but in no case should the students give more than a single answer.

7. If the correct answer splits a class boundary (for example, 15 percent coarse fragments, 6 inches AWC, 9 percent slope), always mark the next higher class.

8. Scorecard and Interpretation Help Sheets will be provided. Students aren't expected to memorize all the criteria required to reach a correct decision. However, they should be familiar with the proper way to *use* the tables.

Scoring

The most important rule in scoring is to do it consistently. The official judge(s) should provide a completed card for each of the contest pits, from which additional keys can be made up. The scorecards are designed so that the edge of the key card can be placed right alongside the column of answers on a contestant's card.

It doesn't matter whether you mark right answers or wrong answers, as long as everyone who is helping with the scoring does it the same way. Similarly, it doesn't matter if you total up right answers or wrong answers, as long as everyone does it the same way. In any case, each answer, on both sides of the scorecard, is worth one point.

Scorecard graders usually enter the number of points earned in each of the boxes on the scorecard. Some may prefer, however, to enter the number of points missed, and determine the outcome of the contest on the basis of the lowest, rather than the highest, score. Again, it doesn't matter, as long as it is done consistently.

If you have enough time, it is a good idea to double-check some of the scoring. After all cards have been graded and team scores have been compiled, you could rescore all cards for the top ten teams and check the arithmetic. This ensures that the ranking of the winning teams is not affected by inadvertent errors in scoring.

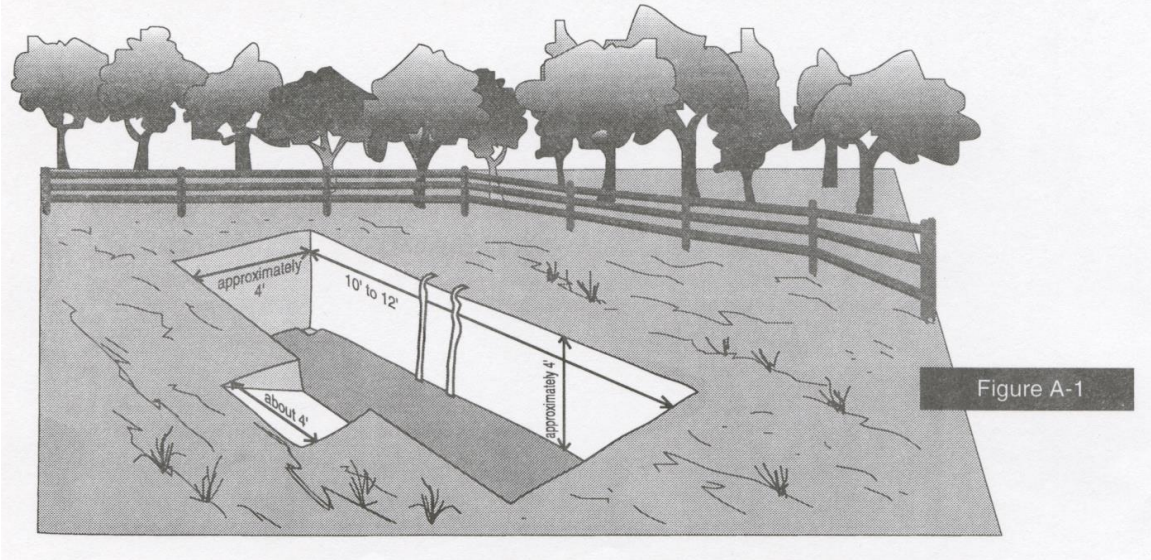

Figure A-1