Run-off Race

Objective: Students will understand how plants help anchor soil and prevent erosion.

Summary: Students will compare soil run-off from different surfaces.

Time: 1½ hours

Student Grouping: Groups of four to five

Materials: Per group: One plot of sod and one plot of soil (both in equal-sized trays), a watering can, a bucket or large bowl to catch run-off, two clear quart jars to let run-off settle in.

Background Information: Soil is a precious resource that is easily lost if not protected and used wisely. When bare soil is left exposed to the elements, it can be washed and blown away in large volumes. Activities such as road-building, logging and agriculture sometimes leave soil vulnerable to the elements. Vast tracts of land in our country's breadbasket were rendered barren during the "Dust Bowl" of the 1930s. Every day there are tons of soil washed out to sea by the Mississippi River.

When soil is washed into streams it can silt up dams and ruin fish spawning habitat. Because of this the U.S. Soil Conservation Service works to recommend various practices and remedies to prevent soil loss.

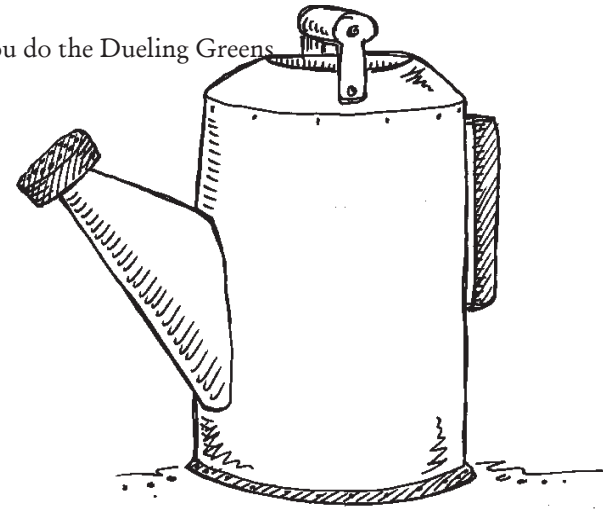
Marin Ag. Facts: Potato farming in this county caused erosion in the late 1800s. (See One Potato, Two Potato on page 57 for more details.) Mining has also contributed to erosion here. The results can be seen in the bare soil gullies above Walker Creek. Today local farmers avoid soil erosion by not farming on steep slopes, planting across the grade and growing crops that don't disturb the soil as much as potatoes did.

Preparation:

1. Collect the materials. If you do the Dueling Greens activity on page 33 you will have perfect plots to compare soil run-off with. Otherwise, grow several plots of grass or get some pieces of sod from a nursery or landscaper. You will need a similar-sized plot with plain soil in it. Make sure the watering can simulates rainfall; if it pours a hard stream it will still give results but be much less realistic. A hose with a fan-shaped sprinkling head can work, but it's harder to measure volume and there is a lot of waiting involved.
2. If you can use a table outside, you'll have fewer clean-up problems.
3. Students will need something to prop up one end of their plots (see illustration page 35), preferably something unaffected by water and dirt, like a brick, rocks or a soda can.

Procedure:

1. Explain to students that they are going to compare the soil run-off from different surfaces. Ask them



what results they expect.

2. Have students set up their plots and pour the water on them. They should use an equal angle and volume of water (not more than one quart) on each plot. They must catch the run-off for each plot separately, save and label the run-off. Record observations of the procedure, the condition of the plots before and after the "rain," and the jars of run-off.
3. Allow the run-off to settle overnight. Measure the amount of soil that settles out and compare the two samples.

Questions for Discussion:

- How did the plots change after being watered?
- What happened to the soil in each plot?
- Was there a difference? Why?
- How would this apply to farms and farming?

Extensions:

- Try different plant types to see which grows fastest and retains the soil best.
- Write to the U.S. Soil Conservation Service (see "Soils" in the Resource Directory) for information on erosion. Ask a speaker to class for a demonstration/presentation.
- Explore the school grounds and look for evidence of erosion. Develop a plan to prevent further erosion.