Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Raindrop Erosion

**Purpose**

The purpose of this exercise is to evaluate erosion and factors affecting soil movement by raindrop erosion.[[1]](#endnote-2)

**Background Information**

Erosion is a significant problem in California and around the world. Erosion causes agricultural land to be less productive, while polluting streams and rivers. When raindrops hit soil they have the potential to cause “raindrop erosion”. Progressive agriculturists have implemented conservation practices such as no-till and minimum till to limit raindrop erosion, because of cover from the previous crop remaining in the field.

**Procedure**

**Materials**

1. 1” x 1” stakes, white works best (2- 8’ long) (1-5’ long)
2. Tape measures
3. Crop residue/mulch
4. Rain gauge
5. Sprinkler

**Sequence of Steps**

1. Locate test plots approximately 10’ by 10’

2. Place the 5’ stake in the ground vertically near the center of the plot (3-4’ exposed).

3. Place two stakes on the ground perpendicular and adjacent to the vertical stake, forming the x, and z

axis (See Figure 1). This will allow 3D measurement of maximum distances soil particles move due to

raindrop impact.

4. Set-up additional stakes on other plots having different percentages of crop residue cover.

5. Simulate a rainfall event using a lawn sprinkler or similar device. Intensity may be determined by

collecting simulated rainfall in a rain gauge for a given time.

Ex. \_\_\_\_\_in/hour = in/min x 60 min/hour

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6. Measure and record the maximum distance soil splashed along x, y, and z for each replication

C:\Users\Angela\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\DRP2N1IJ\MCj04242300000[1].wmf (percent residue coverage) for a given simulated rainfall event in Data Table A.

7. Plot maximum splash distance x, y, and z vs. percent residue coverage on graph paper. Interpret the

findings.

8. Repeat data collection and analysis for each additional variable studied. (Ex. slope, wind,

intensity and duration.)

Figure 1. Stake layout for each plot Y

3-4’

Z

4-5’

X

**C:\Users\Angela\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\DRP2N1IJ\MCj04242300000[1].wmf Observations**

1. What is erosion?

2. How does raindrop impact (force) affect soils and erosion of soils?

Data Table A

|  |  |  |  |
| --- | --- | --- | --- |
| **Replication** | **X** | **Y** | **Z** |
| \_\_\_\_% residue |  |  |  |
| \_\_\_\_\_ % residue |  |  |  |
| \_\_\_\_\_% residue |  |  |  |

3. Summarize your observations using complete sentences. What did you discover from this experiment?

4. What effect does vegetative cover (or other variable) have on raindrop erosion?

5. Agricultural Application: Based on this study, what do agriculturists need to know about raindrop erosion?

7. Agricultural Application: Why is this knowledge important to agriculturists? Brainstorm at least 3 reasons why this information is important.

1. Osborne, Dr. E, & Moss, Dr. J (Eds.). *Physical Science Applications in Agriculture*. Illinois: (FCAE) Facilitating Coordination in Agricultural Education. [↑](#endnote-ref-2)