

Appendix E

Sprinkler Application Rates

When applying liquid manure to fields, it is important to apply the manure at a rate which matches the soils' capacity to absorb the liquid. Soil type, amount of solid material in the manure, slope, soil moisture, and the duration of application are factors that affect infiltration rate. If manure application exceeds the soils' infiltration rate, a portion of the manure may run off the area into nearby surface waters.

| Surface Soil Texture | Total Liquid Applied (in inches) | | | | | | | | | | | | | | | |
|--|----------------------------------|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|
| | 0.25 | | | | 0.50 | | | | 1.0 | | | | 1.25 | | | |
| | ----- % Total Solids ----- | | | | | | | | | | | | | | | |
| | 1 | 2 | 5 | 7 | 1 | 2 | 5 | 7 | 1 | 2 | 5 | 7 | 1 | 2 | 5 | 7 |
| Maximum Sprinkler Application Rate (inches per hour) | | | | | | | | | | | | | | | | |
| Sand | 3.3 | 1.9 | 0.8 | 0.6 | 3.3 | 1.9 | 0.8 | 0.6 | 3.3 | 1.9 | 0.8 | 0.6 | 3.3 | 1.9 | 0.8 | 0.6 |
| Loamy Sand | 3.2 | 2.2 | 1.1 | 0.8 | 3.2 | 2.2 | 1.1 | 0.8 | 2.3 | 1.6 | 0.8 | 0.6 | 2.1 | 1.4 | 0.7 | 0.5 |
| Sandy Loam | 3.8 | 3.1 | 2.0 | 1.6 | 2.3 | 1.9 | 1.2 | 1.0 | 1.5 | 1.2 | 0.8 | 0.6 | 1.4 | 1.1 | 0.7 | 0.6 |
| Loam | 2.9 | 2.7 | 2.3 | 2.1 | 1.6 | 1.5 | 1.3 | 1.1 | 0.9 | 0.9 | 0.7 | 0.7 | 0.8 | 0.7 | 0.6 | 0.6 |
| Silt Loam | 2.6 | 2.5 | 2.2 | 2.0 | 1.4 | 1.3 | 1.2 | 1.1 | 0.8 | 0.7 | 0.7 | 0.6 | 0.7 | 0.6 | 0.6 | 0.5 |
| Sandy Clay Loam | 1.7 | 1.6 | 1.5 | 1.4 | 0.9 | 0.9 | 0.8 | 0.8 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 |
| Clay Loam | 1.3 | 1.2 | 1.2 | 1.2 | 0.7 | 0.7 | 0.6 | 0.6 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 |
| Silty Clay Loam | 1.1 | 1.1 | 1.1 | 1.1 | 0.6 | 0.6 | 0.6 | 0.6 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Sandy Clay | 0.6 | 0.6 | 0.6 | 0.6 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Silty Clay | 0.8 | 0.8 | 0.8 | 0.8 | 0.4 | 0.4 | 0.4 | 0.4 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Clay | 0.4 | 0.4 | 0.4 | 0.4 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |

The infiltration rates listed above are found when there is full vegetative cover and when initial soil moisture content is 50% of the available water capacity. (Source: Agricultural Waste Management Field Handbook, Soil Conservation Service, 1992)

This table identifies maximum sprinkler application rates based on soil infiltration rates. Soil texture, solids content, and the amount of liquid applied are the factors used in determining these infiltration rates.

The maximum sprinkler application rates can be used to estimate a rate of application at which liquid manure can be applied without exceeding the soils capacity to absorb the liquid. For example, you want to apply 0.50 inches of liquid manure to your field. You know from manure test results that the total solids content is 5%. You also know that the soil texture in your field is sandy loam. To determine the maximum sprinkler application rate, go to the section at the top of the table titled "Total Liquid Applied - 0.50". In that section, find the column titled "5% total solids" and go down the table to "sandy loam". The maximum sprinkler application rate shown is 1.2 inches per hour.

