

Experiment No. 10

Calculations of Herbicide Doses

Herbicides have ample scope to use on both croplands and non-cropland. On croplands total quantity of chemical reaching the target area, where as in non-cropped area herbicide rates in terms of their spray concentration.

10.1 Objectives

To learn about calculations of herbicide doses

To determine quantities of herbicide required for weed control in crops

10.2 Introduction

Rate of application: It is the amount of active ingredient or acid equivalent of herbicide applied to a unit area of land or water body. It is usually given in terms of kg *ai* / *a.e* / ha. The herbicides are available either in solid or liquid form.

Active ingredient:

It is that part of a chemical formulation which is directly responsible for herbicidal effect. Thus, the commercial herbicide production is made up of two parts i.e. the effective part and the inert part. Since all the recommendations are made on the basis of *a.i* certain calculation becomes necessary to find out the quantity of commercial product to be required for a given area.

Acid equivalent (*a.e*): Refers to that part of a formulation that theoretically can be converted to the acid. Eg. Some herbicide structures are active organic acids. Eg. Phenoxyalkanoic, picloram are acids but they are prepared in the form of their salts and esters for the ease of their field application. Eg: For instance 2,4-D in acid form is water insoluble then we have to use its sodium and amine salts and esters. The acid equivalent (*a.e*) of sodium salt of 2,4-D is 92.5%. It indicates that 2,4-D dichlorophenoxy acetic acid is 92.5% in sodium salt of 2,4-D.

10.3 Calculation for required weight of commercial product

Formula for calculating herbicide required to an area.

$$\text{Herbicide required (Kg)} = \frac{\text{Recommended dose}}{\text{Active ingredient (a.i/a.e)}} \times 100 \times \text{Area in ha}$$

Problems

- 1. Post emergence application of 2.4-D Na salt containing 80%WP @ 0.5 kg of per ha is sprayed. Find out the quantity of 2.4-D Na salt isrequired for a hectare.**
- 2. Define acid equivalent?**
- 3. Farmer wants to apply diuron(Karmex 80%) at 1 kg/ha. Find out the quantity of commercial produce required per ha.**

7. In transplanted rice, pretilachlor 50 EC @ 0.5 kg /ha is applied as pre emergence spray followed by 2,4 - D Na salt 80 WP @0.50 kg/ha as post emergence spray . Calculate the quantities of herbicide is required in 1.50 ha.

8. Calculate the amount of alachlor containing 500g a.i/lt required for 2 acres of maize. The desired rate of application is 1.25 kg/ha.

9. Find out the area sprayed by fulltank of sprayer and herbicide dose required for that area from the following data.

Recommended spray volume = 400 lt/ha, Volume of sprayer = 12 lt, Recommended dose of nomine gold = 2.5kg/ha,a.i of nomine gold =25%

**10. Calculate the amount of atrazine required to spray for 30 plots with an a.i of 50%.
Each plot size was 20m². The desired rate of application is 1.5 kg/ha.**

10.4 Conclusion

Signature of faculty