Finding the Amount of Active Ingredient in a Formulated Product

Some pesticide labels give the application rate in amount of active ingredient (a.i.) per acre or per 1,000 sq. ft. You must convert the a.i. to the amount of formulated product needed. For dry formulations such as wettable powders, granules, and dusts, the amount of a.i. is expressed as a percentage of the weight. A 75WP tells that 75% of the product weight is the a.i.

How many pounds of a.i. will a 50-pound bag of a 75WP pesticide have? First, convert the percentage (75%) to a decimal.

$$\frac{75}{100} = 0.75$$

Then multiply the total amount of product in the bag by the decimal for the amount of a.i.

$$50 \text{ pounds} \quad X \quad 0.75 = 37.5 \text{ pounds}$$

Practice:

1. *Herbicide 20G has how many pounds of a.i. in a 50-pound bag?*

2. *The label for Herbicide 20G says: Do not apply more than 3 lbs of a.i. per acre. What is the maximum amount of the Herbicide 20G product that can be applied per acre?*

Answers

1. Herbicide 20G has how many pounds of a.i. in a 50-pound bag?

20% = $\frac{20}{100}$ = 0.20

50 pounds of Herbicide 20G X 0.20 = 10 pounds a.i.

2. The label for Herbicide 20G says: Do not apply more than 3 lbs of a.i. per acre. What is the maximum amount of the Herbicide 20G product that can be applied per acre?

Using the information in Problem 1 (above), 50 pounds of product has 10 pounds of a.i. You can set up a ratio or proportion, having the same units on top (pounds of product) and the same units on the bottom (pounds of a.i.):

$\frac{50 \text{ lb product}}{10 \text{ lb a.i.}}$ = $\frac{N \text{ lb of product}}{3 \text{ lb. a.i.}}$

10N = 50 X 3 = 150

N= $\frac{150}{10}$ = 15 lbs. of product

Another way of doing this is that if 50 lbs of product has 10 lbs of a.i., 5 lbs of product has 1 lb of a.i. That means that you'd have 3 lbs of a.i. in 15 lbs of product (3 X 5).