CALCULATION:

Active Ingredient vs. Formulation

Various calculations need to be made from time to time when figuring the amount of a formulated pesticide needed per 100 gallons or per acre. The following formulae should aid you to do this regardless, whether the material is a wettable powder or liquid.

HOW TO FIGURE AMOUNT OF FORMULATED (PACKAGED) PESTICIDE TO USE

1. If recommendation says:
   - Use 2 lbs. a.i. of a. 80% WP/100 or /acre
   
     $2 \text{ lbs.} \times \frac{100\%}{80\%} = 2 \times 1.25 = 2.5 \text{ lbs.}$

     \[\therefore\text{this means either } 2.5 \text{ lbs./100 or } /\text{acre}\]

2. If recommendation says:
   - Use 2 lbs. a.i. of a. 4 lbs./gal. E.C./100 or /acre

     $1 \text{ gal.} + 4 \text{ (lbs.)} = 1 \text{ lb./qt.}$

     \[\therefore 2 \text{ lbs.} = 2 \text{ qts. or } 1/2 \text{ gal./100 or } /\text{acre}\]

NOTE: If the E.C. is listed as % a.i. then first figure amount (lbs.) necessary as per example No. 1 and then utilize example No. 2 to determine how many ounces, pints, quarts or gallons of the liquid formulation is required/100 or /acre.

(Continued)
3. If recommendation says:
- Use 4 oz. a.i. of a. 80% WP/100 or /acre

\[
\text{lbs. to use} = \frac{6.25}{80(\% \text{ WP})} \times 4 \text{ (oz.)}
\]
\[
= 0.08 \times 4
\]
\[
= 0.32 \text{ lbs./100 or /acre}
\]

*(NOTE: to correct to oz. = 0.32 \times 16 \text{ oz.} = 5 \text{ oz.})*

4. If recommendation says:
- Use 4 oz. a.i. of a. 4 lb./gal E.C./100 or /acre

\[
\text{pints to use} = \frac{4 \text{ (oz.)}}{4 \text{ (lbs./gal.)}} \times 2
\]
\[
= 0.5 \text{ pt.}
\]

*(NOTE: to correct to oz. = 0.5 \times 16 \text{ oz.} = 8 \text{ oz.})*

5. If recommendation says:
- Prepare a spray of a certain percent strength from a W.P. formulation

\[
\text{W.P. (lbs.) needed} = \frac{\text{gals. of spray needed} \times \% \text{ strength} \times 8.3}{\% \text{ W.P.}}
\]
\[
i.e. = \frac{100 \text{ (gal.)} \times 0.6 \text{ (\%)} \times 8.3}{25 \text{ (\%)}
\]
\[
= 20 \text{ lbs.}
\]

*(\text{lbs. of W.P. to use} = 20 \text{ lbs.})*

6. If recommendation says:
- Prepare a spray of a certain percent strength from a E.C. formulation

\[
\text{E.C. (gals.) needed} = \frac{\text{gal. of spray needed} \times \% \text{ strength} \times 8.3}{\text{lbf. a.i./gal. E.C. \times 100}}
\]
\[
i.e. = \frac{100 \text{ (gal.)} \times 0.05 \text{ (\%)} \times 8.3}{2 \text{ (lbs. a.i./gal.)} \times 100}
\]
\[
= 0.2 \text{ gals.}
\]

*(\text{gals. of E.C. to use} = 0.2 \text{ gals. (or 1.6 pts.)})*

***************

16 fluid oz/pint
16 dry oz/pound
2 pints/quart
4 quarts/gallon

\[
\text{a.i.} = \text{active ingredient}
\]
\[
\text{a.i.a.} = \text{active ingredient per acre}
\]
\[
\text{W.P.} = \text{Wettable powder}
\]
\[
\text{E.C.} = \text{Emulsifiable concentrate}
\]

1/ Adapted from "PEST AIDS" written by John E. Dibble, U.C. Ext. Entomologist.

Sincerely,

Rudy A. Neja
Farm Advisor
118 Wilgart Way
Salinas, CA 93901
Phone: (408) 758-4637