1. A sprayer holds 1200 gallons. You read the label and find that with your selected pesticide you need to spray a volume of 12 gallons per acre. The label also says to apply pesticide at a rate of 18 oz/acre. You need to mix a MSO (methylated seed oil) adjuvant at a rate of 0.75 v/v %. You are going to spray 150 acres.
   a. How many acres can you spray with one tank?
   b. How many gallons of pesticide need to be added to a full tank?
   c. How many gallons of MSO need to be added to a full tank?
   d. How full will your last tank be in gallons?
   e. How many gallons of pesticide need to be added to your final not full tank?
   f. How many gallons of MSO need to be added to your final not full tank?
   g. How much total MSO and pesticide do you use?

2. A sprayer holds 500 gallons. You read the label and find that with your selected pesticide you need to spray a volume of 14 gallons per acre. The label also says to apply pesticide at a rate of 4 oz/acre. You need to mix a MSO (methylated seed oil) adjuvant at a rate of 0.55 v/v %. You also need to apply an anti-drift agent at a rate of 1 pt/acre. You are going to spray 150 acres.
   a. How many acres can you spray with one tank?
   b. How many gallons of pesticide need to be added to a full tank?
   c. How many gallons of MSO need to be added to a full tank?
   d. How many gallons of anti-drift agent must be added to a full tank?
   e. How full will your last tank be in gallons?
   f. How many gallons of pesticide need to be added to your final not full tank?
   g. How many gallons of MSO need to be added to your final not full tank?
   h. How many gallons of anti-drift agent need to be added to your final not full tank?
   i. How much total MSO, anti-drift agent, and pesticide do you use?
A. \[ \frac{1200 \text{ gal}}{1 \text{ tank}} \times \frac{1 \text{ acre}}{12 \text{ gal}} = \frac{100 \text{ ac}}{1 \text{ tank}} \]

B. \[ \frac{100 \text{ ac}}{1 \text{ tank}} \times \frac{180 \text{ oz}}{1 \text{ acre}} \times \frac{1 \text{ gal}}{128 \text{ oz}} = \frac{14.0625 \text{ gal}}{1 \text{ tank}} \]

\[ \frac{1800 \text{ oz}}{1 \text{ tank}} \]

C. \[ \frac{1200 \text{ gal}}{1 \text{ tank}} \times \frac{0.75 \text{ gal MSO}}{100 \text{ gal}} = \frac{9 \text{ gal MSO}}{1 \text{ tank}} \]

or \[ \times 0.0075 \]

D. \[ 150 - 100 = 50 \text{ acres} \]

\[ \frac{50 \text{ acres}}{1} \times \frac{12 \text{ gal}}{1 \text{ acre}} = \frac{600 \text{ gal}}{1 \text{ tank}} \]
C. \[
\frac{50 \text{ acres}}{1 \text{ tank}} \times \frac{180 \text{ oz}}{1 \text{ acre}} \times \frac{1 \text{ gal}}{128 \text{ oz}} = \frac{7.03125 \text{ gal}}{1 \text{ tank}}
\]

F. \[
\frac{600 \text{ gal}}{1 \text{ tank}} \times \frac{.75 \text{ gal MSO}}{100 \text{ gal}} = \frac{4.5 \text{ gal MSO}}{1 \text{ tank}}
\]

g. post \[
14.0625 + 7.03125 = 21.09375 \text{ gal Pesticide}
\]

\[
\text{MSO} \quad 9
\]

\[
\text{MSO} \quad 4.5
\]

\[
21.09375 \text{ gal Pesticide} + 13.5 \text{ gal MSO} = 34.69375 \text{ gal}
\]
2A. \[ \frac{500 \text{ gal}}{1 \text{ tank}} \times \frac{1 \text{ acre}}{14 \text{ gal}} = \frac{35.714 \text{ acres}}{1 \text{ tank}} \]

B. \[ \frac{35.714 \text{ ac}}{1 \text{ tank}} \times \frac{4 \text{ oz}}{1 \text{ acre}} \times \frac{1 \text{ gal}}{128 \text{ oz}} = \frac{1.116 \text{ gal}}{1 \text{ tank}} \]

C. \[ \frac{500 \text{ gal}}{1 \text{ tank}} \times \frac{0.55 \text{ gal MSO}}{100 \text{ gal}} = \frac{2.75 \text{ gal MSO}}{1 \text{ tank}} \]

D. \[ \frac{35.714 \text{ acres}}{1 \text{ tank}} \times \frac{1 \text{ pt}}{1 \text{ acre}} = \frac{35.714 \text{ pts antifreeze}}{1 \text{ tank}} \]

\[ \frac{35.714 \text{ pts}}{1 \text{ tank}} \times \frac{1 \text{ gal}}{8 \text{ pts}} = \frac{4.46 \text{ gal antifreeze}}{1 \text{ tank}} \]
e. \[ 150 - (35.714 \times 4) \]
\[ 150 - 142.856 = \boxed{7.144 \text{ gal}} \]
\[ \frac{7.144 \text{ acres}}{\text{1 tank}} \times \frac{\text{14 gal}}{\text{1 acre}} = \boxed{\sim 100 \text{ gal}} \]

f. \[ \frac{7.144 \text{ acres}}{\text{1 tank}} \times \frac{4 \text{ oz}}{\text{1 acre}} \times \frac{\text{1 gal}}{128 \text{ oz}} = \boxed{\frac{0.22325}{\text{gal}} \text{ or } 28.576 \text{ oz}} \]

g. \[ \frac{100 \text{ gal}}{\text{1 tank}} \times \frac{0.55 \text{ gal MSO}}{100 \text{ gal}} = \boxed{0.55 \text{ gal MSO}} \]

h. \[ \frac{7.144 \text{ acres}}{\text{1 tank}} \times \frac{1 \text{ pt}}{\text{1 acre}} \times \frac{\text{1 gal}}{8 \text{ pts}} = \boxed{0.893 \text{ gal Anti}} \]
1. Pesticide

\[
\frac{150 \text{ acres}}{1 \text{ acre}} \times \frac{40 \text{ oz}}{1 \text{ gal}} \times \frac{1 \text{ gal}}{128 \text{ oz}} = 9.6875 \text{ gal}
\]

\[
\frac{150 \text{ acres}}{1 \text{ acre}} \times \frac{1 \text{ pt}}{1 \text{ gal}} \times \frac{1 \text{ gal}}{8 \text{ pts}} = 18.75 \text{ gal}
\]

M.S.O.

\[
\frac{2.75 \text{ gal M.S.O.}}{1 \text{ Full tank}} \times \left( \frac{4 \text{ full tanks}}{1} \right) = 11 \text{ gallons}
\]

\[
\text{From last tank} + .55 \text{ gal} = 11.55 \text{ gal M.S.O.}
\]
Sprayer Questions:

1. You read a label of herbicide. It tells you to apply 24 oz/acre. How much would you need to spray 2500 acres? Give your answer in gallons.

2. You are reading a label of chemical. You find that you need to spray 15 gallons of liquid per acre. The recommended rate of herbicide is 20 oz/acre. The spray tank you have is 1000 gallons. How much chemical in gallons do you add to your tank?

3. You have a solid herbicide. The recommended rate is 2 oz/1acre. You need to spray 17 gallons per acre (found this on the label and from doing research). You have a 1100-gallon tank. How many pounds of the herbicide do you add to the tank?

4. I am spraying a fungicide. I need to spray 25 gallons of liquid per acre. The recommended rate of herbicide to apply per acre is 1 pint. The tank on my sprayer is 1500 gallons. How many acres can I spray with a whole tank?

5. You need to add a 1.5% v/v mixture of adjuvant to a 1200-gallon tank. How many gallons of adjuvant do you add?

6. From number 2, if you need to add a 2% mixture of adjuvant 1, and 2 pts/acre of non-ionic surfactant (NIS), how much adjuvant and NIS do you add?
\[ \frac{24 \text{ oz}}{1 \text{ acre}} \times \frac{2500 \text{ acres}}{1} \times \frac{1 \text{ gal}}{128 \text{ oz}} = 468.75 \text{ gal} \]

60000 oz

\[ \frac{1000 \text{ gal/m}}{1 \text{ acre}} \times \frac{1 \text{ acre}}{15 \text{ gal/m}} \times \frac{20 \text{ oz/c}}{1 \text{ acre}} \times \frac{1 \text{ gal}}{128 \text{ oz/c}} = \frac{10.416 \text{ gal}}{1 \text{ tank}} \]

\[ \frac{66 \frac{2}{3} \text{ acres}}{1 \text{ tank}} \]

\[ 1333 \frac{1}{3} \text{ oz} \]

\[ \frac{1 \text{ tank}}{1 \text{ tank}} \]
3) \[
\frac{1100 \text{ gal}}{1 \text{ tank}} \times \frac{1 \text{ acre}}{17 \text{ gal}} \times \frac{2 \text{ oz}}{1 \text{ acre}} \times \frac{1 \text{ lb}}{16 \text{ oz}} = \frac{16 \text{ lb}}{1 \text{ tank}}
\]

64.7 \text{ ac} = \frac{8.088 \text{ lb}}{1 \text{ tank}}

129.4 \text{ oz} = \frac{1 \text{ tank}}{}

4) \[
\frac{1500 \text{ gal}}{1 \text{ tank}} \times \frac{1 \text{ acre}}{25 \text{ gal}} = \frac{60 \text{ acres}}{1 \text{ tank}}
\]
(5) \[
\frac{1200 \text{ gal}}{1 \text{ tank}} \times \frac{1.5 \text{ gal A}}{100 \text{ gal}} = \frac{18 \text{ gal A}}{1 \text{ tank}}
\]

or

\[
\frac{1200 \text{ gal}}{1 \text{ tank}} \times 0.015 = \frac{18 \text{ gal A}}{1 \text{ tank}}
\]

(6) \[
\frac{1000 \text{ gal}}{1 \text{ tank}} \times \frac{2 \text{ gal A}}{100 \text{ g}} \times \frac{\text{acre}}{\text{acre}} = \frac{20 \text{ gal A}}{1 \text{ tank}}
\]

or \times 0.62

\[
\frac{1000 \text{ gal}}{1 \text{ tank}} \times \frac{1 \text{ acre}}{15 \text{ gal}} \times \frac{2 \text{ pts}}{1 \text{ acre}} \times \frac{1 \text{ gal}}{8 \text{ pts}} = \frac{16 \frac{2}{3} \text{ gal A}}{1 \text{ tank}}
\]

66 \frac{2}{3} \text{ ac}

\[
\frac{13 \frac{1}{3} \text{ pt}}{1 \text{ tank}}
\]