Orifice Selection for Actual GPA

GPA   1. Need gallons per acre - actually set Pump
2. Putting out what product- you need weight per 1 gallon
Actual GPA x WT   a. Chart based on Water Conversion Factor is 1.00
Conversion   b. Convert to product other than Water - See Spraying Systems book for explanation.

GPA Water Standard x WT Conversion x Space Conversion* = GPA to look for (not actual)

In. Space divided by Standard

STANDARD   **20** **Inch (Std.)**   **FURTHER APART**

$$\frac{\text{ActualGals./Acre}}{28.70} \times \frac{11 \text{ Lbs./Gallon}}{1.15} \times \frac{36 \text{ In. Space*}}{1.80} = \frac{\textbf{GPA}}{\textbf{59.41}}$$

STANDARD   **20** **Inch (Std.)**   **CLOSER**

$$\frac{\text{ActualGals./Acre}}{28.70} \times \frac{11 \text{ Lbs./Gallon}}{1.15} \times \frac{9 \text{ In. Space*}}{0.45} = \frac{\textbf{GPA}}{\textbf{14.85}}$$

STANDARD   **40** **Inch (Std.)**   **CLOSER**

$$\frac{\text{ActualGals./Acre}}{28.70} \times \frac{11 \text{ Lbs./Gallon}}{1.15} \times \frac{36 \text{ In. Space*}}{0.90} = \frac{\textbf{GPA}}{\textbf{29.70}}$$

Actual GPA x WT Conversion x Space Conversion
3. Chart based on 20" as Standard
a. Space further apart puts on less GPA, therefore with chart based on 20", need space divided by 20 (36/20=1.80). Larger amount will equal the amount when spread out.
b. Space closer together puts on more GPA, therefore with chart based on 40", need space divided by 40 (36/40=.90). Smaller amount will equal the amount when run closer together.

From NCI Catalog

Weight of Solution	Specific Gravity	Conv. Factor
7.0 lbs/gallon	0.84	0.92
8.0 lbs/gallon	0.96	0.98
8.34 lbs/gallon - WATER	1.00	1.00
9.0 lbs/gallon	1.08	1.04
10.0 lbs/gallon	1.20	1.10
10.65 lbs/gallon - 28% Nitrogen	1.28	1.13
11.0 lbs/gallon	1.32	1.15
12.0 lbs/gallon	1.44	1.20
14.0 lbs/gallon	1.68	1.30

Example: Desired application rate is 20 GPA of 28%N. **Asume spacing of chart**

1. Determine the correct nozzle size as follows: GPA (solution) x Conversion Factor = GPA (from table)
    20 GPA (28%) x 1.13 = 22.6 GPA (water) - Standard

2. The applicator should choose a nozzle size that will supply 22.6 GPA of water at the desired pressure.
   But set metering pump for 20 GPA of 28%nitrogen