

**MULTIPLE NOZZLES OVER THE ROW
BAND SPRAYING APPLICATION - LPH FORMULAS**

Do not confuse band applications with cutting recommended liters per hectare rates. The rate applied on a Banding basis is normally the same rate recommended for broadcast applications. Banding of agricultural chemicals allows to be covered with the same tank volume by reducing the area being treated. Multiple nozzles over the row applications are calculated similar to a single nozzle banding except the flow calculated by the formula should then be divided by the quantity of nozzles producing the band.

FORMULA (1) - To determine the liters per minute (LPM) capacity required for each spray tip to band agrichemicals in a multiple nozzle application.

$$\text{LPM (Per Nozzle)} = \left(\frac{\text{LPH} \times \text{KPH} \times \text{W}}{60,000} \right) \div \text{N}$$

Where: LPH = Liters Per Hectare (Application) Rate
KPH = Actual field speed in Kilometers Per Hour
W = Band width Centimeters
N = Number of nozzles producing the Band

FORMULA (2) - To determine the Liters per Hectare (LPH) on treated spray band:

$$\text{LPH (Treated Band)} = \frac{(\text{LPM} \times \text{N}) \times 60,000}{\text{KPH} \times \text{W}}$$

Where: LPM = Liters Per Minute Per Nozzle
KPH = Actual field speed in Kilometers Per Hour
W = Band width Centimeters
N = Number of nozzles producing the Band

FORMULA (3) - To determine the liters of solution used over the actual Field Hectare:

$$\text{LPH (Field Hectare)} = \text{LPH (Treated Band)} \times \frac{\text{Band Width}}{\text{Row Spacing}}$$

EXAMPLES

If a farmer wants to find the correct capacity spray tip to use for "multiple nozzle banding" pesticide, he should know the chemical manufacturer's suggested application rate (LPH), actual field speed, and the quantity of nozzles per row. For example:

The farmer decides to use a recommended rate of 80 LPH, travel at 10 KPH, and spray a 40 cm wide band over the crop using 3 ConeJet® tips. The correct capacity spray tip to use would be:

FORMULA (1): LPM (Per Nozzle) = $\left(\frac{80 \times 10 \times 40}{60,000} \right) \div 3 = 0.17 \text{ LPM (Per Nozzle)}$

Using a TXSS-4 ConeJet Spray Tip at 6 bar, we calibrate the equipment and note that the capacity is 0.17 LPM. If we are spraying a 40 cm band on 75 cm row spacing at 10 KPH, the LPH on the "Treated Band" would be:

FORMULA (2): LPH (Treated Band) = $\frac{(0.17 \times 3) \times 60,000}{10 \times 40} = 80 \text{ LPH (Treated Band)}$

If we are spraying a 40 cm band on 75 cm row spacing at 10 KPH, the LPH on the "Treated Band" would be:

FORMULA (3): LPH (Field Hectare) = $\frac{80 \times 40}{75} = 42.7 \text{ LPH (Field Hectare)}$

It can be seen that applying agrichemicals in a narrow band as opposed to a broadcast application of 80 LPH increases the actual hectares (field hectares) covered with a tank solution. Figuring the farmer used a 400 liter spray tank:

Banding:	9.4 Hectares	=	$\frac{400 \text{ Liter Tank}}{42.7 \text{ LPH (Field Hectare)}}$
Broadcast:	5 Hectares	=	$\frac{400 \text{ Liter Tank}}{80 \text{ LPH (Field Hectare)}}$

DESCRIPTION:
CALCULATING LITERS PER HECTARE
IN BAND SPRAYING APPLICATIONS
USING MULTIPLE NOZZLES
OVER THE ROW



Spraying Systems Co.®
Spray Nozzles and Accessories
P.O. Box 7900 - Wheaton, IL 60189-7900

Rev. No.

Data Sheet No.

36590M

Ref.

SHEET OF