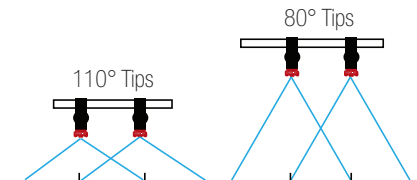
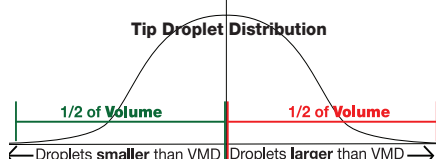



Guide to using TIP-WIZARD to help pick Spray Tips

Where do I find TIP-WIZARD?

<p>1 WILGER.net Website (for computer/smartphone internet)</p>  <p>Visit www.wilger.net and click the Tip-Wizard icon or menu</p>	<p>2 Tip-Wizard App (for smartphone or tablet)</p> <p>FREE DOWNLOAD</p>  <p>Available for:</p>  <p>Smartphones & Tablets</p> <p>Available to download from your device's app store</p>	<p>3 WILGER.net Website USBs (for PC/MAC without internet)</p> <p>No INTERNET? No PROBLEM.</p>  <p>Credit card USB USB Stick</p> <p>Access the entire Wilger website including Tip-Wizard on your PC/MAC</p>
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What should I know before using TIP-WIZARD?

<p>1 Target Application Rate (in US Gallons, Imperial Gallons, or Liters)</p> <p>Each chemical label recommends rates for different application timing and crops. Consult your chemical representative.</p>	<p>2 Average/Max Sprayer Speed (in MPH/KPH)</p> <p>Speed effects how you spray and tips selected, regardless of spray system. Be aware of your speed.</p>	<p>3 Nozzle Spacing (in inches/centimeters)</p> <p>Most sprayers have 20 inches (50.8cm) between nozzle bodies. Be aware if your sprayer has different spacing.</p>
<p>4 Spray Tip Angle (in degrees)</p>  <p>While most new sprayers use 110° tips, some may use 80° tips. Spray angles are determined by boom height.</p>	<p>5 Target Droplet Size (in microns or VMD)</p> <p>Volume Median Diameter (VMD)</p>  <p>VMD is the midpoint in your spray tip's droplet distribution. Each chemical has a recommended droplet size in microns.</p>	<p>6 Droplet Selective Tip Series (4 series of Tips - ER / SR / MR / DR)</p>  <p>Smallest Medium Large Largest</p> <p>Each series of tip make different droplet distributions for the same application rates. The SR, MR & DR provide drift reduction.</p>

Standard (Auto-Rate) & Pulse Width Modulation Spray Systems Explained

<p>Auto-Rate Controller sprayer system</p> <p>An auto-rate controller locks in your application rate. To maintain the rate at lower speeds, the controller will reduce the boom pressure, resulting in larger droplets (less droplets; less coverage; loss of pattern). To maintain the rate at higher speeds, the controller will raise the boom pressure, resulting in smaller droplets (more droplets; more coverage; more drift).</p>	<p>Remember: Constant Rate, Variable Pressure, Variable Speed</p>
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<p>Pulse Width Modulation (PWM) sprayer system</p> <p>Pulse width modulation (SharpShooter®/AIM Command®) locks in your application rate and your pressure. PWM has solenoids that open up and spray every tenth of a second. PWM keeps the boom pressure constant, and modulates(changes) the length of time that the solenoid are kept open during each pulse to maintain a constant application rate. The length of time that the solenoid is kept open per second is referred to as the duty cycle. To ensure there are no 'skips' in the coverage, the solenoids work in a buddy system that has one solenoid on while the other one is off.</p> <p>Duty cycle is important in determining the best speed range to use with a tip. If a tip is being used at a speed that is too fast (surpassing a 100% duty cycle), the result will be underapplication. If a tip is being used at a speed that is too slow (under 10% duty cycle), the result would be overapplication.</p> <p>When selecting a tip for a chemical application which will require a range of droplet sizes (i.e. Glyphosate in drift-sensitive areas vs. open field), special attention should be given to the duty cycle at the different pressure settings required to achieve those droplet sizes.</p>	<p>Remember: Constant Rate, Constant Pressure, Variable Speed</p>
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The TIP-WIZARD Interface

Select 'Tip Wizard' on the menu.

WILGER

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Products

Tipwizard

Standard spray system
Search for spray tips

Standard spray system
Search specific tip

Pulse Width Modulation
System Search for Tips

Pulse Width Modulation
System Search a
Specific Spray Tip

Fertilizer App (USGPA)

Fertilizer App (LPH)

Tipology

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Tip Wizard Digital
An easy-to-use on-line digital spray nozzle size and droplet size that is

To use TIP WIZARD: From the boxes below, 1) Select the application unit, 2) Select the spray system you have, 3) Select the search function

1. Select Application Unit ▼
Click above to select application unit

2. Select spray system ▼
Standard spray systems regulate either the pressure or the flow to the spray controller.
Pulse Width Modulation (PWM) systems have a controller that can control the flow to the spray tips.

3. Select search function ▼
Search for spray tips searches for spray tips based on their characteristics.
Search a specific tip displays the operating characteristics of a specific tip.

4. :: Continue ::

Please note:

- Verify search results with our published Tipology.
- Refer to and follow the information and recommendations in the Tipology.
- Spray tip output and droplet size are measured under specific test conditions. Field condition may affect results.
- For Pulse Width Modulation use, required controller is needed.

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1. SELECT APPLICATION UNIT

Choose from your choice of units:

US Gal/Acre US Gal/1000 sq ft
Imperial Gal/Acre Litres/Hectare

2. SELECT SPRAY SYSTEM

Choose your spray system:

Standard Spray System - Auto-rate controller
Pulse Width Modulation - AIM Command/Sharpshooter

3. SELECT SEARCH TYPE

Choose how you would like to search:

Search for Spray Tips - Search all spray tips by criteria
Search for Specific Tip - Find results for a specific tip

4. CONTINUE

Before you start..

TIP-WIZARD FOR PULSE WIDTH MODULATION

(Trade Names include: Capstan Sharpshooter, AIM Command, AIM Command PRO)

If your sprayer is controlled by an auto-rate controller,
proceed to 'TIP-WIZARD FOR STANDARD SPRAY SYSTEMS'

SEARCH FOR SPRAY TIPS - Using Pulse Width Modulation Spray Systems

For sprayers using systems including Capstan Sharpshooter, AIM Command and AIM Command PRO.

Tip Wizard: Pulse Width Modulation Spray System
SEARCH FOR SPRAY TIPS

To use the TIP WIZARD please select or enter the following information, then
Spray Tips Button.

1. Target Application Rate select ▼ or US Gal/Acre

2. Target Droplet Size select ▼ or VMD

3. Maximum Sprayer Speed select ▼ or MPH

4. Nozzle Spacing select ▼ or Inches

5. Spray Tip Angle select ▼ Degrees

1. Target Application Rate

Either choose from the drop-down menu, or type in your required application rate

2. Target Droplet Size

Each chemical product has their own recommended droplet size for best efficacy of application. For best results, refer to your chemical label or sales representative for target droplet size for application (in microns)

3. Maximum Sprayer Speed

Either choose a speed from the drop-down menu, or type in the maximum speed you are wanting to travel

4. Nozzle Body Spacing

Most sprayers have 20 inch spacing between nozzle bodies, but enter your sprayers nozzle spacing if different

5. Spray Tip Angle

Required spray tip angle is determined by the boom height or boom shield/cones. Select either 80° or 110° tips



Sharpshooter

Pulse Width Modulation technology allows for greater flexibility and stability in droplet size over various speeds.

SEARCH FOR SPECIFIC SPRAY TIP - Using Pulse Width Modulation Spray Systems

To check the rates/results of a certain spray tip. Useful for checking existing tips for application results.

Tip Wizard: Pulse Width Modulation Spray System
SEARCH A SPECIFIC SPRAY TIP

To use the TIP WIZARD please select or enter the following information, then click
Specifications button.

Please note that the spray tip model (ER, SR, MR, DR) is not shown on the Tip Number
Just select the numerical portion of the Tip Number from the pull-down. All the models
the search results.

1. Tip Number **COMBO-JET®** 80-005 ▼

2. Application Rate #1 select ▼ or US Gal/Acre

3. Application Rate #2 select ▼ or US Gal/Acre (enter)

4. Nozzle Spacing select ▼ or Inches

1. Tip Number Selection

Choose whichever tip classification you want to view the results for. The whole series (ER/SR/MR/DR) will be shown when selected

2. Required Application Rate

Select/Enter the application rate you would want to check

3. Compared Application Rate (optional)

Select another application rate you would like to see the tip performance for. Useful to find ranges for rates.

4. Nozzle Body Spacing

Most sprayers have 20 inch spacing between nozzle bodies, but enter your sprayers nozzle spacing if different

SEARCH FOR SPRAY TIPS - Using Standard (Auto-Rate Controller) Spray Systems

For pull-type, high-clearance and self-propelled sprayers which use an auto-rate controller to maintain the required flow rate by increasing or decreasing the boom pressure based on the speed.

Tip Wizard: Standard Spray System SEARCH FOR SPRAY TIPS

To use the TIP WIZARD please select or enter the following information, then click the Spray Tips Button.

1. Target Application Rate select ▼ or US Gal/Acre

2. Target Average Sprayer Speed select ▼ or MPH

3. Nozzle Spacing select ▼ or Inches

4. Spray Tip Angle select ▼ Degrees

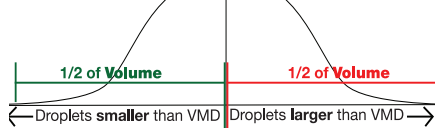
5. Target Droplet Size select ▼ or VMD (Leave blank)

Target Droplet Size

(in microns or VMD)

Volume Median Diameter (VMD)

Tip Droplet Distribution



VMD is the midpoint in your spray tip's droplet distribution. Each chemical has a recommended droplet size in microns.

1. Target Application Rate

Either choose from the drop-down menu, or type in your required application rate

2. Target Average Sprayer Speed

Either choose a speed from the drop-down menu, or type in your average speed

3. Nozzle Body Spacing

Most sprayers have 20 inch spacing between nozzle bodies, but enter your sprayers nozzle spacing if different

4. Spray Tip Angle

Required spray tip angle is determined by the boom height or boom shield/cones. Select either 80° or 110° tips

5. Target Droplet Size

Each chemical product has their own recommended droplet size for best efficacy of application. For best results, refer to your chemical label or sales representative for target droplet size for application (in microns)

SEARCH FOR SPECIFIC SPRAY TIP - Using Standard (Auto-Rate Controller) Spray Systems

To check the rates/results of a certain spray tip. Useful for checking existing tips for application results.

Tip Wizard: Standard Spray System SEARCH A SPECIFIC SPRAY TIP

To use the TIP WIZARD please select or enter the following information, then click the Tip Specifications button.

Please note that the spray tip model (ER, SR, MR, DR) is not shown on the Tip Number. Just select the numerical portion of the Tip Number from the pull-down. All the models will be shown in the search results.

1. Tip Number **COMBO-JET®** 80-005 ▼

2. Nozzle Spacing select ▼ or Inches

3. Application Rate select ▼ or US Gal/Acre

4. Sprayer Speed select ▼ or MPH

1. Tip Number Selection

Choose whichever tip classification you want to view the results for. The whole series (ER/SR/MR/DR) will be shown when selected

2. Nozzle Body Spacing

Most sprayers have 20 inch spacing between nozzle bodies, but enter your sprayers nozzle spacing if different

3. Required Application Rate

Select/Enter the application rate you would want to check

4. Sprayer Speed

Enter the sprayer speed that you would like to check the tips against

PULSE WIDTH MODULATION (PWM) - Search for Spray Tips

PICKING TIPS BASED ON APPLICATION - Example: Glyphosate at 5 US Gal/Acre

1. Target Application Rate or US Gal/Acre

2. Target Droplet Size or VMD

3. Maximum Sprayer Speed or MPH

4. Nozzle Spacing or Inches

5. Spray Tip Angle Degrees

1. Target Application Rate

Using 5 US Gal/Acre as an example. Actual volume can vary as per chemical label.

2. Target Droplet Size

Based on drift sensitive areas in crop, using a droplet size of 375 microns as the VMD. Talk to your chemical rep for the best VMD for your farm.

3. Maximum Sprayer Speed

The max speed that you are wanting to go.

4. Nozzle Spacing

Generally 20" spacing.

5. Spray Tip Angle

PWM system computers base their pulsing on 110° tips.

6. Search for Spray Tips

Click to continue.

Understanding & Sorting Tip Results - Example: Glyphosate at 5 US Gal/Acre

COMBO-JET® DR110-03 Part No. 40286-03 Part Colour Blue					COMBO-JET® DR110-025 Part No. 40286-025 Part Colour Purple				
Gage Press. PSI	Speed Range MPH	Drop VMD	% <200	% <600	Gage Press. PSI	Speed Range MPH	Drop VMD	% <200	% <600
20	3.2 - 12.6	531	4	61	20	2.6 - 10.5	484	6	67
25	3.5 - 13.8	508	6	68	25	2.9 - 11.5	461	8	74
30	3.8 - 15.2	484	8	73	30	3.2 - 12.6	438	10	79
35	4.1 - 16.4	463	9	77	35	3.4 - 13.7	418	12	83
40	4.4 - 17.6	446	10	80	40	3.7 - 14.7	401	13	86
45	4.6 - 18.5	433	11	81	45	3.9 - 15.6	386	15	88
50	4.9 - 19.5	419	12	83	49	4.1 - 16.2	374	16	89
55	5.1 - 20.5	407	13	85	50	4.1 - 16.4	372	16	89
60	5.4 - 21.5	395	13	86	55	4.3 - 17.3	360	17	90
62	5.5 - 21.8	391	14	86	60	4.5 - 17.9	351	18	91
Pre-office No. R03 Part No. 40285-03					Pre-office No. R025 Part No. 40285-025				
Screen Mesh/Color: 50/Red Part No. 40250					Screen Mesh/Color: 50/Red Part No. 40250				
COMBO-JET® MR110-04 Part No. 40291-04 Part Colour Red					COMBO-JET® MR110-03 Part No. 40291-03 Part Colour Blue				
Gage Press. PSI	Speed Range MPH	Drop VMD	% <200	% <600	Gage Press. PSI	Speed Range MPH	Drop VMD	% <200	% <600
20	4.2 - 16.8	471	6	73	20	3.2 - 12.6	443	8	77
25	4.5 - 18.0	452	8	78	25	3.5 - 13.8	421	10	82
30	5.0 - 19.9	425	10	83	30	3.8 - 15.2	399	13	86
35	5.4 - 21.6	403	12	86	35	4.1 - 16.4	379	15	88
40	5.8 - 23.2	384	14	89	36	4.2 - 16.7	375	15	89
42	5.9 - 23.8	376	15	89	40	4.4 - 17.6	363	17	90
45	6.1 - 24.3	370	16	90	45	4.6 - 18.5	351	18	91
50	6.4 - 25.8	355	17	91	50	4.9 - 19.5	338	20	92
55	6.8 - 27.1	341	18	93	55	5.1 - 20.5	326	21	93
60	7.0 - 28.1	331	19	93	60	5.4 - 21.5	315	22	94
Pre-office No. R04 Part No. 40285-04					Pre-office No. R03 Part No. 40285-03				
Screen Mesh/Color: 50/Red Part No. 40250					Screen Mesh/Color: 50/Red Part No. 40250				

1. Qualify by Pressure and Speed

The easiest way to sort out tips is to justify if the speed and pressure are reasonable for your conditions. Keep in mind you may want to adjust droplet size (i.e. less drift around fence lines) by using a lower pressure P2 setting.

- DR 110-03:** 15MPH is achievable from 30-65 PSI
No limitation on speed/duty cycle.
- DR 110-025:** 15MPH is achievable from 45-65PSI
Limited Speed/Pressure. Ignore Results.
- MR 110-04:** 15MPH is achievable from 25-65PSI
No limitation on speed/duty cycle.
- MR 110-03:** 15MPH is achievable from 30-65 PSI
No limitation on speed/duty cycle.

Results Explained

2. Duty Cycle Considerations

Duty cycle is the length of time the tip is pulsing to apply the required rate. Each second solenoid pulses every tenth of a second. The duty cycle is how long the solenoid stays open. If a duty cycle exceeds 100%, underapplication (volume) will occur.

If a sprayer is travelling 15 MPH @ 45 PSI with the **MR 110-04**, the duty cycle would be 15 MPH / 23.8 MPH (100% duty cycle @ 45 PSI) = **63% duty cycle**

Explained

3. Qualifying by Droplet Size & Considerations

Each chemical application has its maximum efficacy at a specific range of droplet sizes. These droplet sizes may vary because of chemical composition, contact/systemic use, environmental sensitivity, etc. The larger the droplets, naturally, the less drift you will experience. Driftable droplets are generally composed of droplets smaller than 150 microns.

3. Qualifying by Droplet Size & Considerations Cont'd

Because of different droplet ranges required by different chemicals, even one set of tips based on each chemical application may not be uncommon to have the best efficacy.

A consideration for some applications (such as Glyphosate) that can be sprayed differently in different conditions; for example, Glyphosate in higher drift sensitive areas like a neighbors field.

Changing Droplet Size @ 15MPH w/o slowing down

COMBO-JET® DR110-03 Part No. 40286-03 Part Colour Blue					COMBO-JET® DR110-025 Part No. 40286-025 Part Colour Purple				
Gage Press. PSI	Speed Range MPH	Drop VMD	% <200	% <600	Gage Press. PSI	Speed Range MPH	Drop VMD	% <200	% <600
20	3.2 - 12.6	531	4	61	20	2.6 - 10.5	484	6	67
25	3.5 - 13.8	508	6	68	25	2.9 - 11.5	461	8	74
30	3.8 - 15.2	484	8	73	30	3.2 - 12.6	438	10	79
35	4.1 - 16.4	463	9	77	35	3.4 - 13.7	418	12	83
40	4.4 - 17.6	446	10	80	40	3.7 - 14.7	401	13	86
45	4.6 - 18.5	433	11	81	45	3.9 - 15.6	386	15	88
50	4.9 - 19.5	419	12	83	49	4.1 - 16.3	374	16	89
55	5.1 - 20.5	407	13	85	50	4.1 - 16.4	372	16	89
60	5.4 - 21.5	395	13	86	55	4.3 - 17.3	360	17	90
62	5.5 - 21.8	391	14	86	60	4.5 - 17.9	351	18	91

Pre-office No. R03 Part No. 40285-03 Screen Mesh/Color: 50/Red Part No. 40250					Pre-office No. R025 Part No. 40285-025 Screen Mesh/Color: 50/Red Part No. 40250				
20	4.2 - 16.8	471	6	73	20	3.2 - 12.6	443	8	77
25	4.5 - 18.0	452	8	78	25	3.5 - 13.8	421	10	82
30	5.0 - 19.9	425	10	83	30	3.8 - 15.2	399	13	86
35	5.4 - 21.6	403	12	86	35	4.1 - 16.4	379	15	88
40	5.8 - 23.2	384	14	89	36	4.2 - 16.7	375	15	89
42	5.9 - 23.8	376	15	89	40	4.4 - 17.6	363	17	90
45	6.1 - 24.3	370	16	90	45	4.6 - 18.5	351	18	91
50	6.4 - 25.8	355	17	91	50	4.9 - 19.5	338	20	92
55	6.8 - 27.1	341	18	93	55	5.1 - 20.5	326	21	93
60	7.0 - 28.1	331	19	93	60	5.4 - 21.5	315	22	94

COMBO-JET® MR110-04 Part No. 40291-04 Part Colour Red					COMBO-JET® MR110-03 Part No. 40291-03 Part Colour Blue				
Gage Press. PSI	Speed Range MPH	Drop VMD	% <200	% <600	Gage Press. PSI	Speed Range MPH	Drop VMD	% <200	% <600
20	4.2 - 16.8	471	6	73	20	3.2 - 12.6	443	8	77
25	4.5 - 18.0	452	8	78	25	3.5 - 13.8	421	10	82
30	5.0 - 19.9	425	10	83	30	3.8 - 15.2	399	13	86
35	5.4 - 21.6	403	12	86	35	4.1 - 16.4	379	15	88
40	5.8 - 23.2	384	14	89	36	4.2 - 16.7	375	15	89
42	5.9 - 23.8	376	15	89	40	4.4 - 17.6	363	17	90
45	6.1 - 24.3	370	16	90	45	4.6 - 18.5	351	18	91
50	6.4 - 25.8	355	17	91	50	4.9 - 19.5	338	20	92
55	6.8 - 27.1	341	18	93	55	5.1 - 20.5	326	21	93
60	7.0 - 28.1	331	19	93	60	5.4 - 21.5	315	22	94

Pre-office No. R04 Part No. 40285-04 Screen Mesh/Color: 50/Red Part No. 40250					Pre-office No. R03 Part No. 40285-03 Screen Mesh/Color: 50/Red Part No. 40250				
20	4.2 - 16.8	471	6	73	20	3.2 - 12.6	443	8	77
25	4.5 - 18.0	452	8	78	25	3.5 - 13.8	421	10	82
30	5.0 - 19.9	425	10	83	30	3.8 - 15.2	399	13	86
35	5.4 - 21.6	403	12	86	35	4.1 - 16.4	379	15	88
40	5.8 - 23.2	384	14	89	36	4.2 - 16.7	375	15	89
42	5.9 - 23.8	376	15	89	40	4.4 - 17.6	363	17	90
45	6.1 - 24.3	370	16	90	45	4.6 - 18.5	351	18	91
50	6.4 - 25.8	355	17	91	50	4.9 - 19.5	338	20	92
55	6.8 - 27.1	341	18	93	55	5.1 - 20.5	326	21	93
60	7.0 - 28.1	331	19	93	60	5.4 - 21.5	315	22	94

DR 110-03:
For Ideal Conditions
 (i.e. no wind/neighbor's fields)
 VMD @ 60 PSI & 15MPH = 391 microns
 % of vol. made up of <200 microns (Driftable) = 14%

For Drift Sensitive Conditions
 (i.e. high wind/inversion/neighbors fields)
 VMD @ 30 PSI & 15MPH = 484 microns
 % of vol. made up of <200 microns (Driftable) = 8%

Able to get ~6% less Drift by adjusting pressure

MR 110-03:
For Ideal Conditions
 (i.e. no wind/neighbor's fields)
 VMD @ 45 PSI & 15MPH = 351 microns
 % of vol. made up of <200 microns (Driftable) = 18%

For Drift Sensitive Conditions
 (i.e. high wind/inversion/neighbors fields)
 VMD @ 30 PSI & 15MPH = 399 microns
 % of vol. made up of <200 microns (Driftable) = 13%

Able to get ~5% less Drift by adjusting pressure

MR 110-04:
For Ideal Conditions
 (i.e. no wind/neighbor's fields)
 VMD @ 45 PSI & 15MPH = 370 microns
 % of vol. made up of <200 microns (Driftable) = 16%

For Drift Sensitive Conditions
 (i.e. high wind/inversion/neighbors fields)
 VMD @ 25 PSI & 15MPH = 386 microns
 % of vol. made up of <200 microns (Driftable) = 8%

Able to get ~8% less Drift by adjusting pressure @ 15 MPH

Note on % < 600 on contact applications
 The column % of Volume made up of droplets < 600 microns is a check against sacrificing too much of your 'smaller useful droplets' to reduce drift.

If:
DR 110-03 @ 30 PSI **MR 110-04 @ 25 PSI**
 %<200 = 8%; %<200 = 10%;
 %<600 = 73% %<600 = 78%

Even though the **DR 110-03** has 'less drift', the 2% (10%-8%) less drift comes at the cost of 5% (78%-73%) of the 'smaller droplets' for (contact) glyphosate application.

Ranking tips on 375 microns @ 15 MPH
MR 110-04 (BEST)
DR 110-03 (2nd)
MR 110-03 (3rd)
DR 110-025 (4th)

The tip choice is always at the end of the day the end user's decision. Spraying conditions change based on the surroundings, wind conditions, etc; so it is important to adjust your tip/droplet size for those changing conditions.

Results Explained

The **DR 110-03** gives good flexibility to increase the droplet size, but doesn't give much ability to go faster at lower pressures. Droplets might get too big at lower pressures, sacrificing coverage.

The **DR 110-025** is not very flexible in speed/pressure, so it is not the best choice for this application.

The **MR 110-04** gives the greatest flexibility in droplet size (both finer and coarser droplets) given the speed range.

The **MR 110-03** gives good droplets, but less flexibility in speeding up than the **MR110-04**.

Standard Spray Systems (Auto-rate controlled) - Search for Spray Tips

PICKING TIPS BASED ON APPLICATION - Example: Glyphosate at 5 US Gal/Acre

1. Target Application Rate or US Gal/Acre

2. Target Average Sprayer Speed or MPH

3. Nozzle Spacing or Inches

4. Spray Tip Angle Degrees

5. Target Droplet Size or VMD (Leave blank)

1. Target Application Rate

Using 5 US Gal/Acre as an example. Actual volume can vary as per chemical label.

2. Target Average Sprayer Speed

The average sprayer speed will determine what pressure the auto-rate controller will use to fix the application rate.

3. Nozzle Spacing

Generally 20" spacing.

4. Spray Tip Angle

110° tips used by most newer sprayers.

5. Target Droplet Size

Based on drift sensitive areas in crop, using a droplet size of 375 microns as the VMD. Talk to your chemical rep for the best VMD for your farm.

Understanding & Sorting Tip Results - Example: Glyphosate at 5 US Gal/Acre

COMBO-JET® DR110-02 Part No. 40280-02 Part Colour Yellow						COMBO-JET® DR110-025 Part No. 40286-025 Part Colour Purple					
	Speed MPH	Press. PSI	Drop VMD	% <200	% <600		Speed MPH	Press. PSI	Drop VMD	% <200	% <600
Min	8.4	20	486	5	73	Min	10.5	20	484	6	67
	9.4	25	456	8	79		11.7	25	456	8	75
	10.3	30	431	10	82		12.8	30	434	10	80
	11.1	35	410	12	85		13.9	35	414	12	83
	11.9	40	392	14	87		14.8	40	398	14	86
	12.6	45	376	15	89	Target	15.0	41	395	14	86
	13.3	50	361	16	90		15.7	45	383	15	88
	13.9	55	348	18	91		16.6	50	370	16	89
	14.5	60	336	19	92		17.4	55	358	17	91
Target	15.0	64	328	20	92		18.1	60	349	18	92
	15.1	65	328	20	92		18.9	65	337	19	92
	15.7	70	317	21	93		19.6	70	328	20	93
	16.2	75	308	22	93		20.3	75	319	21	94
	16.8	80	299	22	94		21.0	80	311	21	94
	17.3	85	290	23	94		21.6	85	304	22	95
	17.8	90	282	24	94		22.2	90	298	23	95
	18.3	95	274	25	95		22.8	95	291	23	95
Max	18.8	100	267	25	95	Max	23.4	100	285	24	96
COMBO-JET® MR110-03 Part No. 40291-03 Part Colour Blue											
	Speed MPH	Press. PSI	Drop VMD	% <200	% <600						
Min	12.7	20	443	8	77						
	14.2	25	416	11	83						
Target	15.0	28	403	12	85						
	15.5	30	394	13	86						
	16.8	35	376	15	89						
	17.9	40	360	17	91						
	19.0	45	346	19	92						
	20.0	50	333	20	93						
	21.0	55	319	22	94						
	22.0	60	309	23	94						
	22.9	65	299	24	95						
	23.7	70	291	25	95						
	24.5	75	282	26	96						

1. Qualify by Pressure and Speed

The easiest way to sort out tips is to verify them based on your speed and pressure to ensure they are viable for your spraying conditions and preferences.

Results Explained

DR 110-02: At 15MPH, the auto-rate would be adjusting the pressure to **64 PSI**.

DR 110-025: At 15MPH, the auto-rate would be adjusting the pressure to **41 PSI**.

MR 110-03: At 15MPH, the auto-rate would be adjusting the pressure to **28 PSI**.

2. Ability to slow down/pressure drop.

With Auto-rate controllers, as the speed increases the pressure increases resulting in smaller droplets and more drift. As the speed decreases, the pressure drops resulting in larger droplets and less drift (and less coverage). It is best to pick a tip that allows you to slow down when needed, and does not drop pressure low enough to lose pattern (~25+PSI recommended for good pattern)

Explained

If a sprayer is wanting to slow down around a corner while running a **DR 110-02**, you would be able to slow down to ~9.4 MPH before you would start to lose pattern due to pressure drop. This also means that you would be able to adjust your droplet size by slowing down along side fences or other drift sensitive areas.

3. Qualifying by Droplet Size & Considerations Cont'd

Because of different droplet ranges required by different chemicals, even one set of tips based on each chemical application may not be uncommon to have the best efficacy.

A consideration for some applications (such as Glyphosate) that can be sprayed differently in different conditions; for example, Glyphosate in higher drift sensitive areas like a neighbors field.

COMBO-JET® DR110-02 Part No. 40280-02 Part Colour Yellow						COMBO-JET® DR110-025 Part No. 40286-025 Part Colour Purple					
	Speed MPH	Press. PSI	Drop VMD	% <200	% <600		Speed MPH	Press. PSI	Drop VMD	% <200	% <600
Min	8.4	20	486	5	73	Min	10.5	20	484	6	67
	9.4	25	456	8	79		11.7	25	456	8	75
	10.3	30	431	10	82		12.8	30	434	10	80
	11.1	35	410	12	85		13.9	35	414	12	83
	11.9	40	392	14	87		14.8	40	398	14	86
	12.6	45	376	15	89	Target	15.0	41	395	14	86
	13.3	50	361	16	90		15.7	45	383	15	88
	13.9	55	348	18	91		16.6	50	370	16	89
	14.5	60	336	19	92		17.4	55	358	17	91
Target	15.0	64	328	20	92		18.1	60	349	18	92
	15.1	65	328	20	92		18.9	65	337	19	92
	15.7	70	317	21	93		19.6	70	328	20	93
	16.2	75	308	22	93		20.3	75	319	21	94
	16.8	80	299	22	94		21.0	80	311	21	94
	17.3	85	290	23	94		21.6	85	304	22	95
	17.8	90	282	24	94		22.2	90	298	23	95
	18.3	95	274	25	95		22.8	95	291	23	95
Max	18.8	100	267	25	95	Max	23.4	100	285	24	96

COMBO-JET® MR110-03 Part No. 40291-03 Part Colour Blue					
	Speed MPH	Press. PSI	Drop VMD	% <200	% <600
Min	12.7	20	443	8	77
	14.2	25	416	11	83
Target	15.0	28	403	12	85
	15.5	30	394	13	86
	16.8	35	376	15	89
	17.9	40	360	17	91
	19.0	45	346	19	92
	20.0	50	333	20	93
	21.0	55	319	22	94
	22.0	60	309	23	94
	22.9	65	299	24	95
	23.7	70	291	25	95
	24.5	75	282	26	96

DR 110-02:
For Ideal Conditions
 (i.e. no wind/neighbor's fields)
 VMD @ 64 PSI & 15MPH = 328 microns
 % of vol. made up of <200 microns (Driftable) = 20%

For Drift Sensitive Conditions
 (i.e. high wind/inversion/neighbors fields)
 VMD @ 30 PSI & 10.3MPH = 431 microns
 % of vol. made up of <200 microns (Driftable) = 10%
Able to get ~10% less Drift by adjusting pressure & speed

DR 110-025:
For Ideal Conditions
 (i.e. no wind/neighbor's fields)
 VMD @ 41 PSI & 15MPH = 395 microns
 % of vol. made up of <200 microns (Driftable) = 14%

For Drift Sensitive Conditions
 (i.e. high wind/inversion/neighbors fields)
 VMD @ 30 PSI & 12.8MPH = 434 microns
 % of vol. made up of <200 microns (Driftable) = 10%
Able to get ~4% less Drift by adjusting pressure & speed

MR 110-03:
For Ideal Conditions
 (i.e. no wind/neighbor's fields)
 VMD @ 28 PSI & 15MPH = 403 microns
 % of vol. made up of <200 microns (Driftable) = 12%

For Drift Sensitive Conditions
 (i.e. high wind/inversion/neighbors fields)
 VMD @ 25 PSI & 12.4MPH = 416 microns
 % of vol. made up of <200 microns (Driftable) = 11%
Able to get ~1% less Drift by adjusting pressure & speed

Note on % < 600 on contact applications
 The column % of Volume made up of droplets < 600 microns is a check against sacrificing too much of your 'smaller useful droplets' to reduce drift.

If:
DR 110-025 @ 30 PSI **DR 110-02 @ 30 PSI**
 %<200 = 10%; %<200 = 10%;
 %<600 = 80% %<600 = 82%

Even though both tips have the same amount of drift, one has 2% more volume in 'smaller' (<600) droplets which would give better coverage.

Ranking tips on ~375 microns @ 15 MPH
DR 110-02 (BEST)
DR 110-025 (2nd)
MR 110-03 (3rd)

The tip choice is always at the end of the day the end user's decision. Spraying conditions change based on the surroundings, wind conditions, etc; so it is important to adjust your tip/droplet size for those changing conditions.

Results Explained

The **DR 110-02** gives good flexibility to increase the droplet size while able to slow down, but doesn't give too much ability for higher pressure at higher speeds.

The **DR 110-025** lacks flexibility in speed/pressure, as slowing down will impact spray pattern and coverage.

The **MR 110-03** relies to pressures that are too low and do not allow any slowing down without losing spray pattern and coverage.