# Staying On Target: Nozzles, PSI, Spray Volume, Speed & Boom Height

IFCA Annual Conference & Trade Show

Jan. 16, 2018

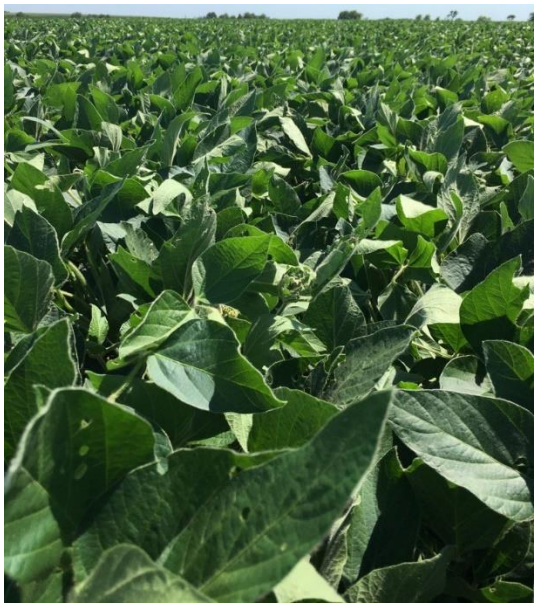
Peoria, IL

Bob Wolf

Follow on Twitter @spraydrift

# EPA's Dicamba Use Rules in 2018

Protect Endangered Species!



# Goal

## Kill Resistant Weeds while Mitigating Spray Drift!

# RESTRICTED USE PESTICIDE

For Retail Sale To and Use Only by Certified Applicators or persons under their direct supervision, and only for those uses covered by Certified Applicators certification.

This label supersedes any previously issued labeling, including previously issued supplemental labeling.

This EPA registration expires December 20, 2018 unless the US EPA determines before that date that off-site incidents are not occurring at unacceptable frequencies or levels. **DO NOT** use or distribute this product after December 20, 2018, unless you visit www.EngeniaQuestions.com and can verify that the EPA has amended this expiration date.

BASF

We create chemistry

**Group 4 Herbicide**

# Engenia®

## Herbicide

ACCEPTED
10/12/2017
Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 7969-345

**For weed control in Dicamba-tolerant (DT) cotton†; Dicamba-tolerant (DT) soybean†; asparagus; conservation reserve programs (CRP); corn; cotton; fallow cropland; farmstead turf (noncropland) and sod farms; grass grown for seed; pasture, hay, rangeland, and farmstead (noncropland); proso millet; small grain; sorghum; soybean; and sugarcane**

†Only for use in states listed as US EPA approved in the **Dicamba-tolerant (DT) Crops** section of this label.

| **Active Ingredient*:** | |
|---|---|
| Dicamba: N,N-Bis-(3-aminopropyl)methylamine salt of 3,6-dichloro-o-anisic acid | 60.8% |
| **Other Ingredients:** | 39.2% |
| **Total:** | 100.0% |

*Contains 48.38% dicamba (5 pounds acid equivalent per gallon or 600 grams per liter)

**EPA Reg. No. 7969-345** **EPA Est. No.**

**MASTER LABEL FOR EPA REG. NO. 524-617**

# RESTRICTED USE PESTICIDE

For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification

This labeling expires on 11/09/2018, unless the U.S. EPA determines before that date that off-site incidents are not occurring at unacceptable frequencies or levels. Do not use or distribute this product after 11/09/2018, unless you visit www.xtendimaxapplicationrequirements.com and can verify that EPA has amended this expiration date.

**ACCEPTED**
10/12/2017
Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 524-617

Primary Brand Name:
**M1768 Herbicide**

Alternate Brand Name:
**Xtendimax® With VaporGrip® Technology**

| GROUP | 4 | HERBICIDE |
|---|---|---|

**ACTIVE INGREDIENT:**

| | |
|---|---|
| Diglycolamine salt of dicamba (3,6-dichloro-*o*-anisic acid)* | 42.8% |
| OTHER INGREDIENTS: | 57.2% |
| **TOTAL:** | 100.0% |

* contains 29.0%, 3,6-dichloro-*o*-anisic acid (2.9 pounds acid equivalent per U.S. gallon or 350 grams per liter).

# RESTRICTED USE PESTICIDE

For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

**This labeling expires on 11/09/2018, unless the U.S. EPA determines before that date that off-site incidents are not occurring at unacceptable frequencies or levels. Do not use or distribute this product after 11/09/2018, unless you visit www.fexapanapplicationrequirements.dupont.com and can verify that EPA has amended this expiration date.**

# DuPont™ FeXapan™ herbicide Plus VaporGrip® Technology

| GROUP | 4 | HERBICIDE |
|---|---|---|

**For weed control in conservation reserve programs, corn, cotton, fallow croplands, general farmstead (noncropland), sorghum, grass grown for seed, hay, proso millet, pasture, rangeland, small grains, soybean, sugarcane, cotton with XtendFlex Technology, and Roundup Ready 2 Xtend Soybean.**

**This label supersedes any previously issued labeling for this product , including previously issued supplemental labeling.**

**DuPont™ FeXapan™ herbicide Plus VaporGrip® Technology is approved by U.S. EPA for all uses specified on this label in the following states, subject to county restriction as noted: Alabama, Arkansas, Arizona, Colorado, Delaware, Florida (excluding Palm Beach County), Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Ohio, Pennsylvania, South Carolina, South Dakota, Tennessee (excluding Wilson County), Texas, Virginia, West Virginia, Wisconsin.**

**Check the registration status of each product in each state before using.**

| **Active Ingredient** | **By Weight** |
|---|---|
| Diglycolamine salt of dicamba (3,6-dichloro-o-anisic acid)* | 42.8% |
| **Other Ingredients** | 57.2% |
| TOTAL | 100.0% |

* contains 29.0%, 3,6-dichloro-o-anisic acid (2.9 pounds acid equivalent per U.S. gallon or 350 grams per liter).

EPA Reg. No. 352-913 EPA Est. No. _____

# Specimen Label

Dow AgroSciences

**Enlist Duo™**

**Herbicide**

WITH COLEX-D TECHNOLOGY

®™Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

| Group | 4 | 9 | HERBICIDE |
|---|---|---|---|

Active Ingredient(s):

| | |
|---|---|
| glyphosate: N-(phosphonomethyl)glycine, dimethylammonium salt | 22.1% |
| 2,4-Dichlorophenoxyacetic acid, choline salt | 24.4% |
| Other Ingredients | 53.5% |
| Total | 100.0% |

2,4-dichlorophenoxyacetic acid equivalent – 16.62% - 1.6 lb/gal
glyphosate acid equivalent – 17.48% - 1.7 lb/gal

# Specimen Label

Dow AgroSciences

**Enlist One™**

WITH COLEX-D TECHNOLOGY

**HERBICIDE**

®™Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

| Group | 4 | HERBICIDE |
|---|---|---|

Active Ingredient(s):

| | |
|---|---|
| 2,4-Dichlorophenoxyacetic acid, choline salt | 55.7% |
| Other Ingredients | 44.3% |
| Total | 100.0% |

2,4-dichlorophenoxyacetic acid equivalent – 38% - 3.8 lb/gal

# XtendiMax and FeXapan

### 9.1.1 Sprayer Setup

The following sprayer setup requirements for drift management must be followed:

- **Nozzle type.** The applicator must use an approved nozzle within a specified pressure range as found at www.xtendimaxapplicationrequirements.com when applying XtendiMax® With VaporGrip® Technology. Do not use any other nozzle and pressure combination not specifically listed on this website.

- **Spray Volume.** The applicator must apply this product in a **minimum of 15 gallons of spray solution per acre**. See Section 8.0 for information on approved tank mix products.

- **Equipment Ground Speed.** Do not exceed a **ground speed of 15 miles per hour.** Select a ground speed that will deliver the desired spray volume while maintaining the desired spray pressure, but slower speeds generally result in better spray coverage and deposition on the target area. Provided the applicator can maintain the required nozzle pressure, it is recommended that tractor speed is reduced to 5 miles per hour at field edges.

- **Spray boom Height.** Do not exceed a **boom height of 24 inches** above target pest or crop canopy. Excessive boom height will increase the drift potential.

- **Wind Speed.** Do not apply when wind speeds are **less than 3 MPH or greater than 10 MPH**. Only apply when wind speed at boom height is between 3 and 10 mph.

# Label requirement challenges: Following the application parameters.

- Nozzles
- Pressure
- Spray volume
- Speed
- Boom height

## Spray Boom Height:

Spray pattern uniformity is dependent on nozzle overlap…..

which is influenced by nozzle angle and boom height!

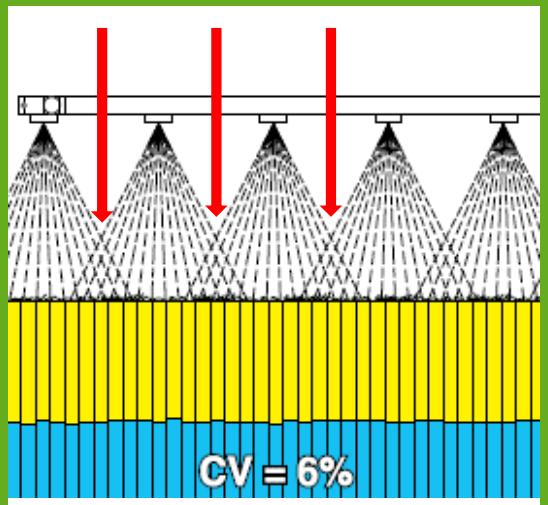
Oh…..and PSI!

Oh…..and DRA'S!

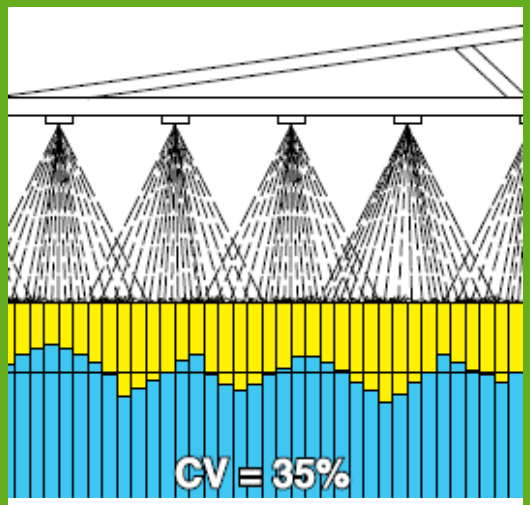
# Characterizing the Nozzle

Uniform applications across the boom:

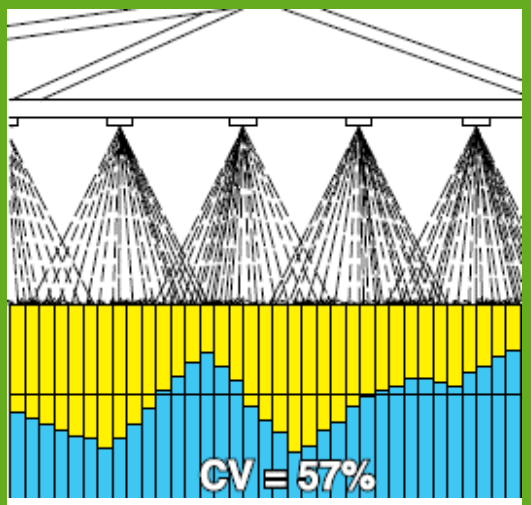
- How is pattern uniformity measured?
- We use coefficient of variation (C.V.)




Good quality tips




Worn tips

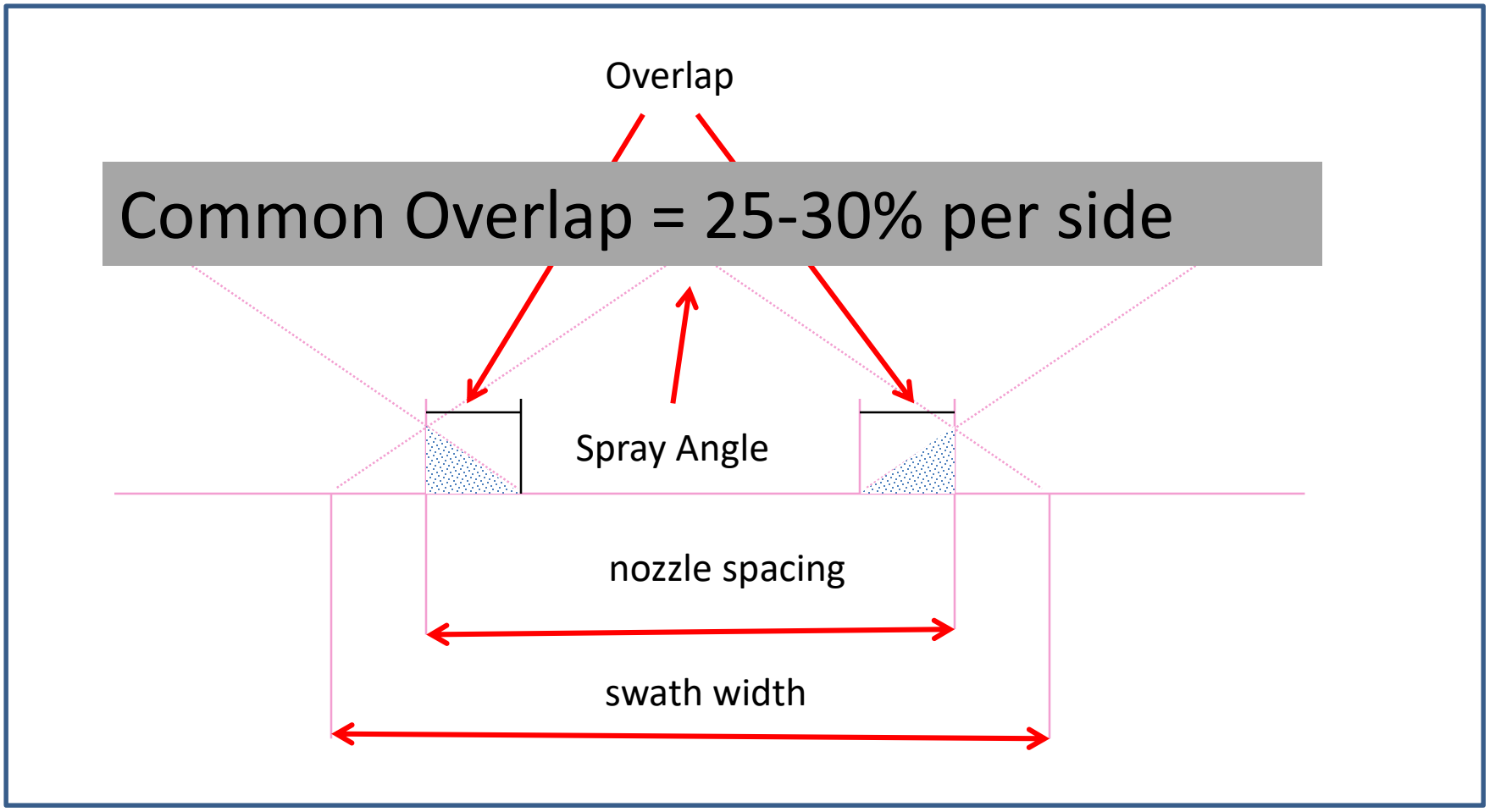



Damaged tips

What can go wrong if the boom is not at the proper height?

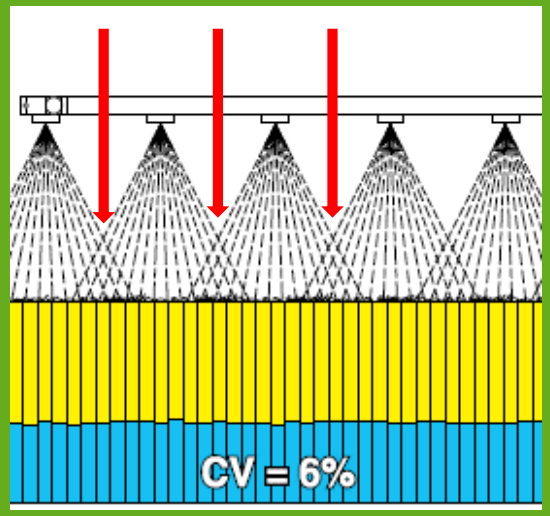
# Ratio = 1:1

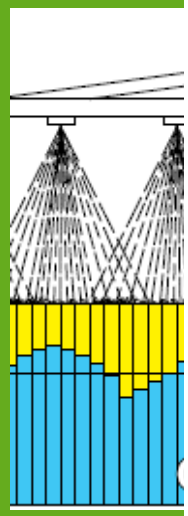
## Boom height above target to nozzle spacing

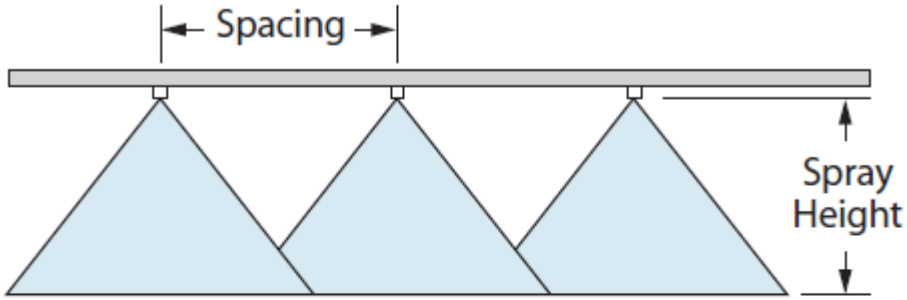


### 9.1.1 Sprayer Setup

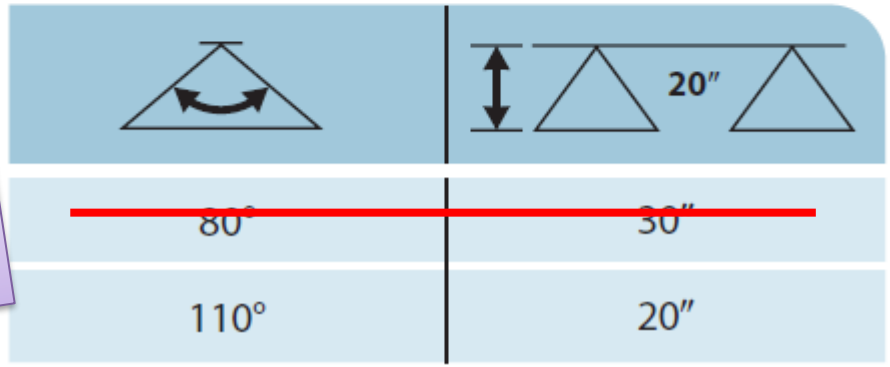
The following sprayer setup requirements for drift management must be followed:






**Optimum Spray Height**




- Spray boom Hei… …op

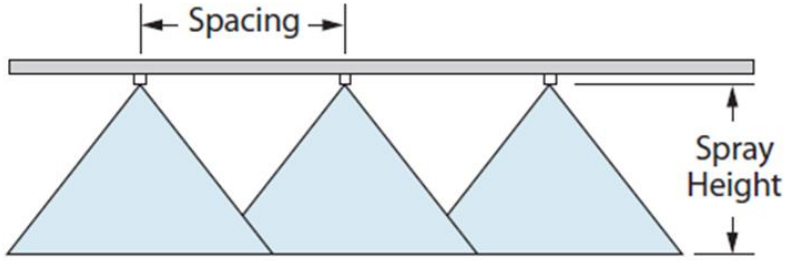
**GOAL: 24”**

**Lowering the BOOM on spray drift**

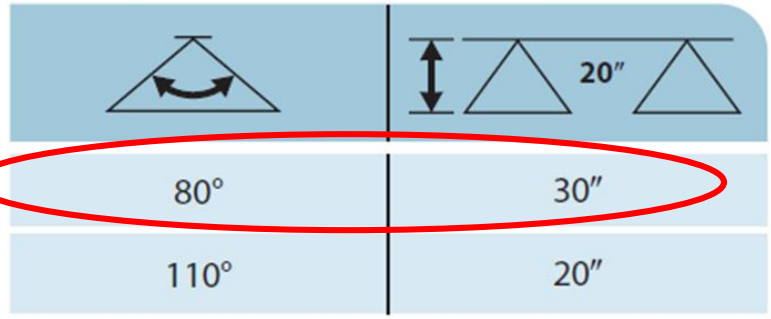
XtendiMax with VaporGrip™

# XtendiMax and FeXapan

| Manufacturer | Nozzle Type | Part Number | Operating Pressure (psi) 10 | 20 | 30 | 40 | 50 | 60 | 70 |
|---|---|---|---|---|---|---|---|---|---|
| Greenle Technolog | TADF03-D | TADF03-D | | Min 20 | | Max 40 | | | |
| | TADF0[illegible] | | | Min 20 | | | Max 50 | | |
| | | | | Min 20 | | Max 40 | | | |
| | | | | Min 20 | | | Max 50 | | |
| | | | | Min 20 | | | | Max 60 | |
| | | | | Min 20 | | | | Max 60 | |
| Hypro | | | | Min 20 | | Max 40 | | | |
| | | | | Min 20 | | Max 40 | | | |
| John Deere | | | | Min 20 | | Max 40 | | | |
| | | | | Min 20 | | Max 40 | | | |
| Lechler | | [illegible]-03 / ID 110-03C | | | Min 30 | Max 40 | | | |
| | ID 110-04 | ID 110-04 / ID 110-04C | | | Min 30 | Max 40 | | | |
| | ID 110-05 | ID 110-05 / ID 110-05C | | | Min 30 | Max 40 | | | |
| | ID 80-04 | ID 80-04 / ID 80-04C | | | Min 30 | Max 40 | | | |
| TeeJet® Technologies | AI11003 | AI11003-VS / AIC1103-VS | | | Min 30 | Max 40 | | | |
| | AI8003 | AI8003-VS / AIC8003-VS | | | Min 30 | Max 40 | | | |
| | AI8005 | AI8005-VS / AIC8005-VS | | | Min 30 | Max 40 | | | |
| | TTI11003 | TTI11003-VP | | Min 20 | | | | Max 60 | |
| | TTI11004 | TTI11004-VP | | Min 20 | | | | Max 63 | |
| | TTI11005 | TTI11005-VP | | Min 20 | | | | Max 60 | |
| | TTI11006 | TTI11006-VP | | Min 20 | | | Max 50 | | |
| Wilger | DR110-10 | 40286-10 | | | Min 30 | Max 40 | | | |
| | UR110-05 | 40292-05 | | | Min 30 | | Max 50 | | |
| | UR110-06 | 40292-06 | | | Min 30 | | | Max 60 | |
| | UR110-08 | 40292-08 | | | Min 30 | | | | Max 70 |
| | UR110-10 | 40292-10 | | | Min 30 | | | | Max 70 |




## Optimum Spray Height



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- **Equipment Ground Speed.** Do not exceed a **ground speed of 15 miles per hour**. Select a ground speed that will deliver the desired spray volume while maintaining the desired spray pressure, but slower speeds generally result in better spray coverage and deposition on the target area. Provided the applicator can maintain the required nozzle pressure, it is recommended that tractor speed is reduced to 5 miles per hour at field edges.

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- **Wind Speed.** Do not apply when wind speeds are **less than 3 MPH or greater than 10 MPH**. Only apply when wind speed at boom height is between 3 and 10 mph.

# EPA's Basis for Approving the Labels Application Perspective

- Low particle drift!
- Protect endangered species!

- No concern for efficacy!

# Low Speed Wind Tunnel Testing

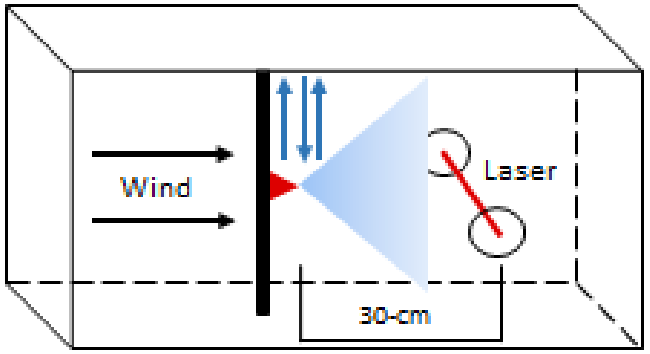
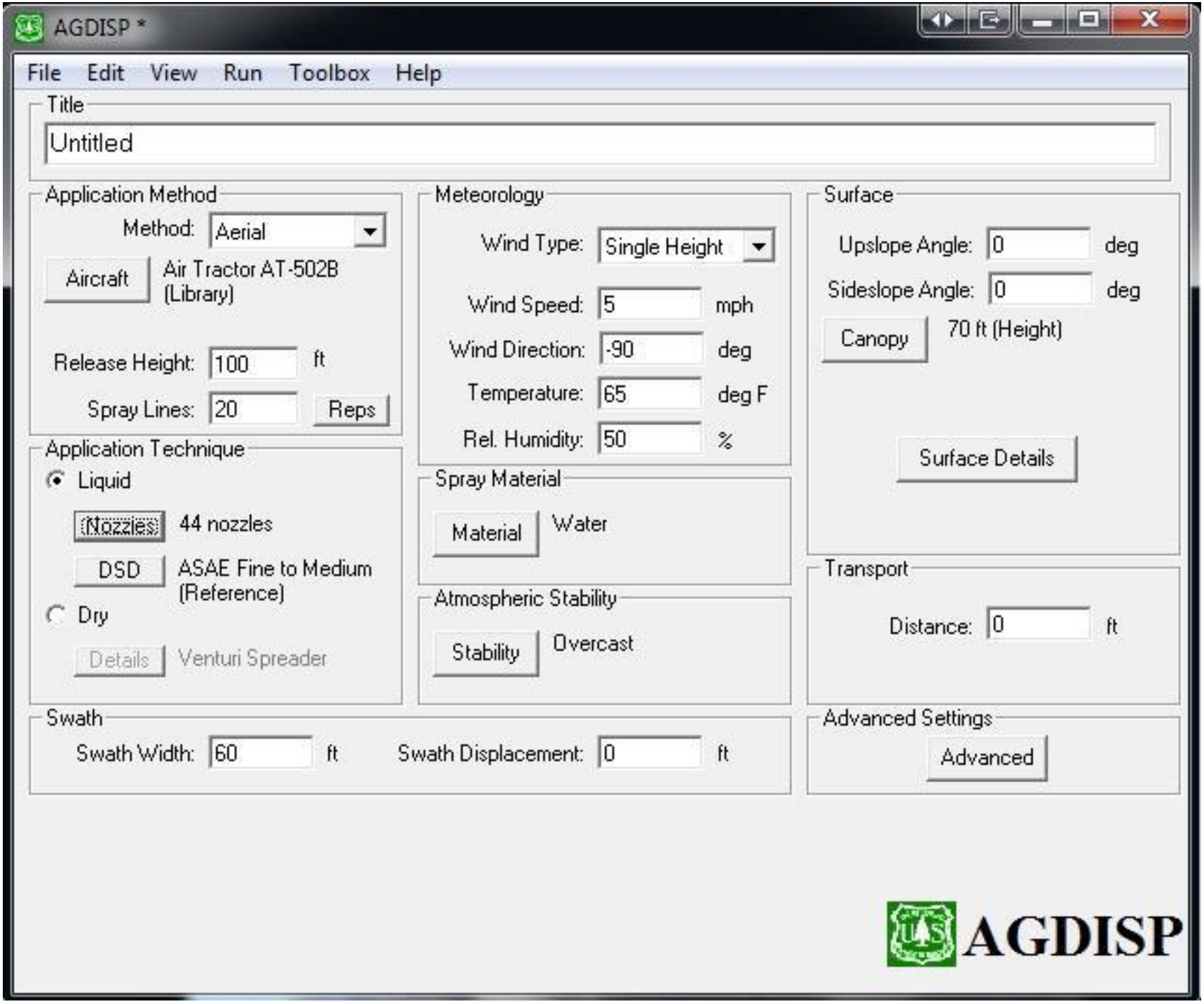



**Figure 2.** Illustration of the low-speed wind tunnel and laser diffraction system used for droplet spectrum analysis.


AGDISP *
File Edit View Run Toolbox Help
Title
Untitled
Application Method
Method: Aerial
Aircraft
Air Tractor AT-502B (Library)
Release Height: 100 ft
Spray Lines: 20
Reps
Application Technique
Liquid
Nozzles
44 nozzles
DSD
ASAE Fine to Medium (Reference)
Dry
Details
Venturi Spreader
Meteorology
Wind Type: Single Height
Wind Speed: 5 mph
Wind Direction: -90 deg
Temperature: 65 deg F
Rel. Humidity: 50 %
Spray Material
Material
Water
Atmospheric Stability
Stability
Overcast
Surface
Upslope Angle: 0 deg
Sideslope Angle: 0 deg
Canopy
70 ft (Height)
Surface Details
Transport
Distance: 0 ft
Swath
Swath Width: 60 ft
Swath Displacement: 0 ft
Advanced Settings
Advanced
AGDISP

# The Process

- Monsanto and BASF submitted nozzle and chemistry for wind tunnel testing – U of NE, North Platte, NE.
- All test were completed using the TTI at 63 PSI.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TTI11004 (50) | 15 | UC | 0.24 | 31 | 17.8 | 14.3 | 11.9 | 8.9 | 7.1 | 5.9 | 4.8 | 3.6 |
| | 20 | UC | 0.28 | 36 | 21 | 16.6 | 13.9 | 10.4 | 8.3 | 6.9 | 5.5 | 4.2 |
| | 30 | UC | 0.35 | 45 | 26 | 21 | 17.3 | 13.0 | 10.4 | 8.7 | 6.9 | 5.2 |
| | 40 | UC | 0.40 | 51 | 30 | 24 | 19.8 | 14.9 | 11.9 | 9.9 | 7.9 | 5.9 |
| | 50 | UC | 0.45 | 58 | 33 | 27 | 22 | 16.7 | 13.4 | 11.1 | 8.9 | 6.7 |
| | 60 | UC | 0.49 | 63 | 36 | 29 | 24 | 18.2 | 14.6 | 12.1 | 9.7 | 7.3 |
| | 70 | XC | 0.53 | 68 | 39 | 31 | 26 | 19.7 | 15.7 | 13.1 | 10.5 | 7.9 |
| | 80 | XC | 0.57 | 73 | 42 | 34 | 28 | 21 | 16.9 | 14.1 | 11.3 | 8.5 |
| | 90 | XC | 0.60 | 77 | 45 | 36 | 30 | 22 | 17.8 | 14.9 | 11.9 | 8.9 |
| | 100 | XC | 0.63 | 81 | 47 | 37 | 31 | 23 | 18.7 | 15.6 | 12.5 | 9.4 |
| TTI11005 (50) | 15 | UC | 0.31 | 40 | 23 | 18.4 | 15.3 | 11.5 | 9.2 | 7.7 | 6.1 | 4.6 |
| | 20 | UC | 0.35 | 45 | 26 | 21 | 17.3 | 13.0 | 10.4 | 8.7 | 6.9 | 5.2 |
| | 30 | UC | 0.43 | 55 | 32 | 26 | 21 | 16.0 | 12.8 | 10.6 | 8.5 | 6.4 |
| | 40 | UC | 0.50 | 64 | 37 | 30 | 25 | 18.6 | 14.9 | 12.4 | 9.9 | 7.4 |
| | 50 | UC | 0.56 | 72 | 42 | 33 | 28 | 21 | 16.6 | 13.9 | 11.1 | 8.3 |
| | 60 | UC | 0.61 | 78 | 45 | 36 | 30 | 23 | 18.1 | 15.1 | 12.1 | 9.1 |
| | 70 | XC | 0.66 | 84 | 49 | 39 | 33 | 25 | 19.6 | 16.3 | 13.1 | 9.8 |
| | 80 | XC | 0.71 | 91 | 53 | 42 | 35 | 26 | 21 | 17.6 | 14.1 | 10.5 |
| | 90 | XC | 0.75 | 96 | 56 | 45 | 37 | 28 | 22 | 18.6 | 14.9 | 11.1 |
| | 100 | XC | 0.79 | 101 | 59 | 47 | 39 | 29 | 23 | 19.6 | 15.6 | 11.7 |

# The Process

- Monsanto and BASF submitted nozzle and chemistry for wind tunnel testing – U of NE, North Platte, NE.
- All test were completed using the TTI at 63 PSI.
- Test data collected via EPA protocol.
- All the droplet statistics were recorded.
- Manufacturers submitted droplet data to the EPA.
- The EPA evaluated the droplet data and used AGDISP software to create a drift profile…..????0.75%???
- EPA approves the Xtendimax and Engenia labels.
- Next step: Tank mixes of chemicals, adjuvants, DRA's, and other nozzles were tested with same protocol.
- All test are compared with the TTI at 63 PSI with Xtendimax and Engenia.
- If drift profile ≤  - allowed to be placed on the "LIST".

# Nozzles

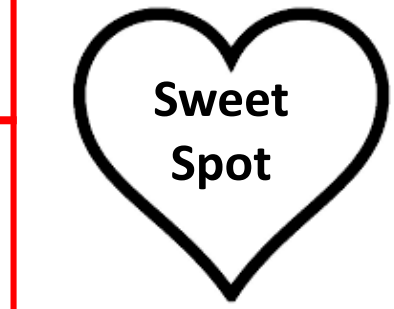
XtendiMax and FeXapan

| Manufacturer | Nozzle Type | Part Number | Operating Pressure (psi) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| Greenleaf Technologies | TADF03-D | TADF03-D | | Min 20 | | Max 40 | | | |
| | TADF06-D | TADF06-D | | Min 20 | | | Max 50 | | |
| | TDXL 11003-D | TDXL 11003-D | | Min 20 | | Max 40 | | | |
| | TDXL 11004-D | TDXL 11004-D | | Min 20 | | | Max 50 | | |
| | TDXL 11005-D | TDXL 11005-D | | Min 20 | | | | Max 60 | |
| | TDXL 11006-D | TDXL 11006-D | | Min 20 | | | | Max 60 | |
| Hypro | ULD120-04 | ULD120-04 / FC-ULD120-04 | | Min 20 | | Max 40 | | | |
| | ULD120-05 | ULD120-05 / FC-ULD120-05 | | Min 20 | | Max 40 | | | |
| John Deere | ULD120-04 | PSULD2004 / PSULDQ2004 | | Min 20 | | Max 40 | | | |
| | ULD120-05 | PSULD2005 / PSULDQ2005 | | Min 20 | | Max 40 | | | |
| Lechler | ID 110-03 | ID 110-03 / ID 110-03C | | | Min 30 | Max 40 | | | |
| | ID 110-04 | ID 110-04 / ID 110-04C | | | Min 30 | Max 40 | | | |
| | ID 110-05 | ID 110-05 / ID 110-05C | | | | | | | |
| | ID 80-04 | ID 80-04 / ID 80-04C | | | Min 30 | Max 40 | | | |
| TeeJet® Technologies | AI11003 | AI11003-VS / AIC1103-VS | | | Min 30 | Max 40 | | | |
| | AI8003 | AI8003-VS / AIC8003-VS | | | Min 30 | Max 40 | | | |
| | AI8005 | AI8005-VS / AIC8005-VS | | | Min 30 | Max 40 | | | |
| | TTI11003 | TTI11003-VP | | Min 20 | | | | Max 60 | |
| | TTI11004 | TTI11004-VP | | Min 20 | | | | Max 63 | |
| | TTI11005 | TTI11005-VP | | Min 20 | | | | Max 60 | |
| | TTI11006 | TTI11006-VP | | Min 20 | | | Max 50 | | |
| Wilger | DR110-10 | 40286-10 | | | Min 30 | Max 40 | | | |
| | UR110-05 | 40292-05 | | | Min 30 | | Max 50 | | |
| | UR110-06 | 40292-06 | | | Min 30 | | | Max 60 | |
| | UR110-08 | 40292-08 | | | Min 30 | | | | Max 70 |
| | UR110-10 | 40292-10 | | | Min 30 | | | | Max 70 |

Are these pressures to low?

| | | | Operating Pressure (psi) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Manufacturer | Nozzle Type | Part Number | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| Greenleaf Technologies | TADF03-D | TADF03-D | | Min 20 | | Max 40 | | | |
| | TADF06-D | TADF06-D | | Min 20 | | | Max 50 | | |
| | TDXL 11003-D | TDXL 11003-D | | Min 20 | | Max 40 | | | |
| | TDXL 11004-D | TDXL 11004-D | | Min 20 | | | Max 50 | | |
| | TDXL 11005-D | TDXL 11005-D | | Min 20 | | | | Max 60 | |
| | TDXL 11006-D | TDXL 11006-D | | Min 20 | | | | Max 60 | |
| Hypro | ULD120-04 | ULD120-04 / FC-ULD120-04 | | Min 20 | | Max 40 | | | |
| | ULD120-05 | ULD120-05 / FC-ULD120-05 | | Min 20 | | Max 40 | | | |
| John Deere | ULD120-04 | PSULD2004 / PSULDQ2004 | | Min 20 | | Max 40 | | | |
| | ULD120-05 | PSULD2005 / PSULDQ2005 | | Min 20 | | Max 40 | | | |
| Lechler | ID 110-03 | ID 110-03 / ID 110-03C | | | Min 30 | Max 40 | | | |
| | ID 110-04 | ID 110-04 / ID 110-04C | | | Min 30 | Max 40 | | | |
| | ID 110-05 | ID 110-05 / ID 110-05C | | | Min 30 | Max 40 | | | |
| | ID 80-04 | ID 80-04 / ID 80-04C | | | Min 30 | Max 40 | | | |
| TeeJet® Technologies | AI11003 | AI11003-VS / AIC1103-VS | | | Min 30 | Max 40 | | | |
| | AI8003 | AI8003-VS / AIC8003-VS | | | Min 30 | Max 40 | | | |
| | AI8005 | AI8005-VS / AIC8005-VS | | | Min 30 | Max 40 | | | |
| | TTI11003 | TTI11003-VP | | Min 20 | | | | Max 60 | |
| | TTI11004 | TTI11004-VP | | Min 20 | | | | Max 63 | |
| | TTI11005 | TTI11005-VP | | Min 20 | | | | Max 60 | |
| | TTI11006 | TTI11006-VP | | Min 20 | | | Max 50 | | |
| Wilger | DR110-10 | 40286-10 | | | Min 30 | Max 40 | | | |
| | UR110-05 | 40292-05 | | | Min 30 | | Max 50 | | |
| | UR110-06 | 40292-06 | | | Min 30 | | | Max 60 | |
| | UR110-08 | 40292-08 | | | Min 30 | | | | Max 70 |
| | UR110-10 | 40292-10 | | | Min 30 | | | | Max 70 |

XtendiMax and FeXapan



# Engenia® Herbicide Tank Mix

Any person seeking a tank mix product must perform a ... and must certify those results to EPA in accordance with the terms and ...

The EPA conditions of registration for Engenia® He...

The EPA conditions of registration do not require testin... ion makes no warranties regarding crop tolerance or physical compa...

**The following list includes products that are EPA a...**

Print

**Use all products according to product label.**

*** Glyphosate maximum use rate per acre per applic...**

[1] **Must use a DRA on approved list**
[2] **Must be used with a glyphosate on approved list**
[3] **Only for post-direct application**

Last Updated November 17, 2017

## Adjuvants

- Absorb 100®
- AccuDrop™[1]
- Activate Plus ™
- Activator® 90
- Adept™
- Ad-Max 90™
- AG13064[1]
- AG16098®
- AgWet 41
- Airtight™
- Anchor™
- Anchor Pro™
- Antifoam (Rosen's)
- AP 910

## Herbicides

- Extreme®
- Optill®WG
- Outlook®
- Prowl® 3...
- Prowl® H...
- Pursuit®[2]
- Raptor®[1]
- Sharpen®
- Varisto™[2]
- Zidua® Pr...
- Zidua® W...
- Authority®
- Acumen®
- Antares

## Other

- Ascend® SL[2]
- Avenger™
- Bold S3™[1,2]
- CHS Unlocked[2]
- Pentia™[2]
- Priaxor®[2]
- Radiate®[2]
- Toggle™
- Triad™[2]

## Nozzle Type

- TDXL-D11003 (max psi 50)
- TTI11003
- TTI11004
- TTI11005
- ULD120-04 (max psi 40)
- ULD120-05 (max psi 40)
- DR110-10
- UR110-05
- UR110-06
- UR110-08
- UR110-10
- 1/4TTJ08 Turf Jet[3]
- 1/4TTJ04 Turf Jet[3]


## Nozzle Type

- TDXL-D11003 (max psi 50)
- TTI11003
- TTI11004
- TTI11005
- ULD120-04 (max psi 40)
- ULD120-05 (max psi 40)
- DR110-10
- UR110-05
- UR110-06
- UR110-08
- UR110-10
- 1/4TTJ08 Turf Jet[3]
- 1/4TTJ04 Turf Jet[3]

# Allowable Nozzles for Enlist Duo™ Herbicide

- The label specifies nozzles and pressures that are allowable for use when applying Enlist Duo® herbicide.

## ALLOWABLE NOZZLES AND OPERATING PRESSURE (PSI)

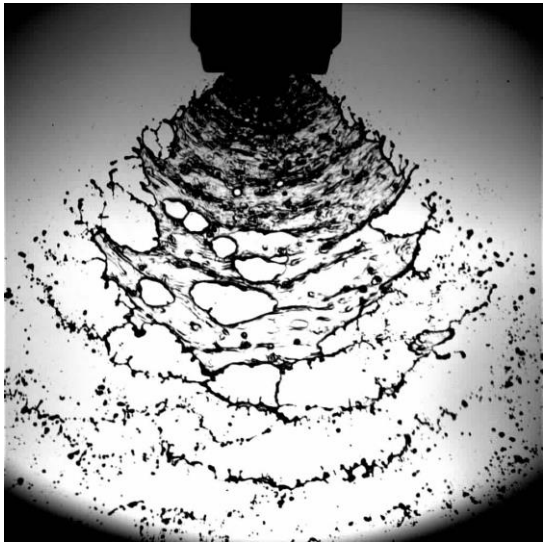
| MANUFACTURER | MODEL | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABJ AGRI | ABJ11004 | | | | | MIN 30 MAX 40 | | | | | | |
| | ABJ11006 | | | | | MAX 30 | | | | | | |
| GREENLEAF | TDXL11003 | | | MIN 20 | | MAX 40 | | | | | | |
| | TDXL11004 | | | MIN 20 | | MAX 45 | | | | | | |
| | TDXL11006 | | | MIN 20 | | | | | MAX 75 | | | |
| | TDXL11003-D | | | | MIN 30 | | | | | | | |
| | TDXL11004-D | | | | MIN 30 | | | | | | | |
| | TDXL11006-D | | | | MIN 30 | | | | | | | MAX 100 |
| | TDXL11008-D | | | | MIN 30 | | | | | | | |
| HYPRO JOHN DEERE | ULD12004 | | MIN 15 | | | | | | | | | |
| | ULD12006 | | MIN 15 | | | | MAX 50 | | | | | |
| LECHLER | ID11004 | | | | MIN 30 | MIN 40 | | | | | | |
| | ID11005 | | | | MIN 30 | | | MAX 60 | | | | |
| TEEJET | AI11004 | | | | MIN 30 | | | MAX 60 | | | | |
| | AI11006 | | | | MIN 30 | | | MAX 60 | | | | |
| | AI11008 | | | | MIN 30 | | | | M | | | |
| | AITTJ60-11006 | | | MIN 20 | | MAX 40 | | | | | | |
| | AIXR11003 | | MIN 15 | | MAX 30 | | | | | | | |
| | AIXR11004 | | MIN 15 | | | MAX 40 | | | | | | |
| | AIXR11006 | | MIN 15 | | | MAX 40 | | | | | | |
| | TTI11004 | | MIN 15 | | | | | | | | | |
| WILGER | MR11006 | | | | MIN 25 | | | MAX 60 | | | | |
| | MR11008 | | | | MIN 25 | | | MAX 60 | | | | |

# Nozzle Demonstration

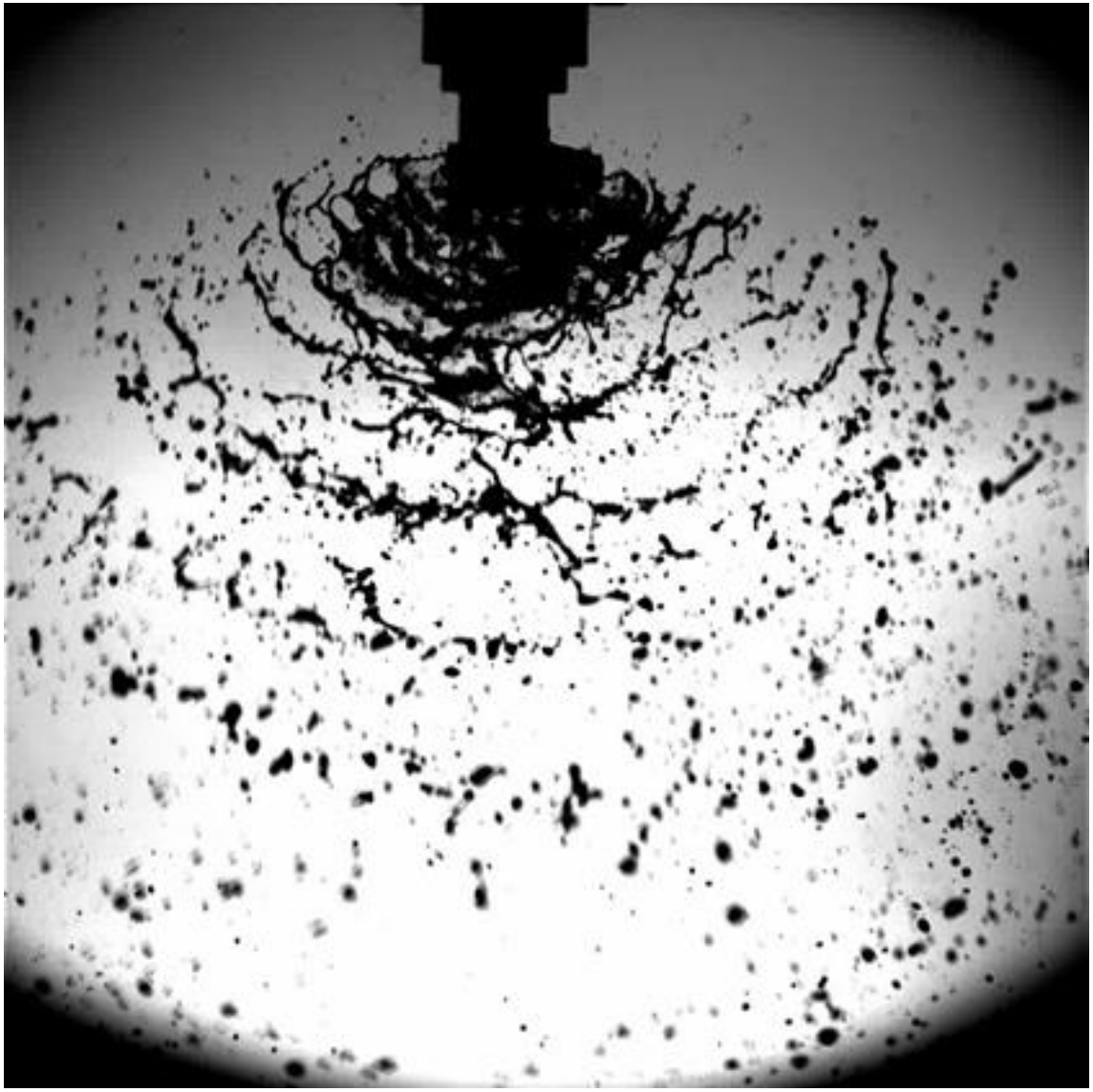

TTI 11004-60 psi

TDXL11004-60 psi


ULD120-04-60 psi



# TTI 11004-60 psi



### 9.1.1 Sprayer Setup

The following sprayer setup requirements for drift management must be followed:

- **Nozzle type.** The applicator must use an approved nozzle within a specified pressure range as found at www.xtendimaxapplicationrequirements.com when applying XtendiMax® With VaporGrip® Technology. Do not use any other nozzle and pressure combination not specifically listed on this website.

- **Spray Volume.** The applicator must apply this product in a **minimum of 15 gallons of spray solution per acre**. See Section 8.0 for information on approved tank mix products.

- **Equipment Ground Speed.** Do not exceed a **ground speed of 15 miles per hour**. Select a ground speed that will deliver the desired spray volume while maintaining the desired spray pressure, but slower speeds generally result in better spray coverage and deposition on the target area. Provided the applicator can maintain the required nozzle pressure, it is recommended that tractor speed is reduced to 5 miles per hour at field edges.

- **Spray boom Height.** Do not exceed a **boom height of 24 inches** above target pest or crop canopy. Excessive boom height will increase the drift potential.

- **Wind Speed.** Do not apply when wind speeds are **less than 3 MPH or greater than 10 MPH**. Only apply when wind speed at boom height is between 3 and 10 mph.

# GPM Example Solution:


$$GPM = \frac{15 \quad x \quad 15 \quad x \quad 20}{5940}$$

**Answer** **.76 gpm**

# Selecting The Proper Nozzle

- Calculate GPM (formula)
- Look under GPM column
- Choose the size needed
- Match pressure(psi) and Droplet Classification
- Operate at given pressure and speed used in formula to achieve GPA and the desired droplet size

**0.76 GPM**

**15 GPA & 15 MPH**

| | | | |
|---|---|---|---|
| TTI11004 (50) | 15 | UC | 0.24 |
| | 20 | UC | 0.28 |
| | 30 | UC | 0.35 |
| | 40 | UC | 0.40 |
| | 50 | UC | 0.45 |
| | 60 | UC | 0.49 |
| | 70 | XC | 0.53 |
| | 80 | XC | 0.57 |
| | 90 | XC | 0.60 |
| | 100 | XC | 0.63 |
| TTI11005 (50) | 15 | UC | 0.31 |
| | 20 | UC | 0.35 |
| | 30 | UC | 0.43 |
| | 40 | UC | 0.50 |
| | 50 | UC | 0.56 |
| | 60 | UC | 0.61 |
| | 70 | XC | 0.66 |
| | 80 | XC | 0.71 |
| | 90 | XC | 0.75 |
| | 100 | XC | 0.79 |
| TTI11006 (50) | 15 | UC | 0.37 |
| | 20 | UC | 0.42 |
| | 30 | UC | 0.52 |
| | 40 | UC | 0.60 |
| | 50 | UC | 0.67 |
| | 60 | UC | 0.73 |
| | 70 | XC | 0.79 |
| | 80 | XC | 0.85 |
| | 90 | XC | 0.90 |
| | 100 | XC | 0.95 |

TeeJet catalog #51A

page 11

## Chart 4: Calculations are for a 20-inch nozzle spacing and 06 orifice sizes – Not PWM

Prepared by Robert E. Wolf, Nov. 2017

| What are the speed and pressure options/limitations when using the recommended GPA and MPH options with an 06 orifice maintaining a PSI range of 40-65[1] – Not using PWM | | | | |
|---|---|---|---|---|
| GPA[2] | MPH[3] | Calculated GPM[4] | Calculated PSI[5] | Use – Yes or NO[6] |
| 10 | 5 | .17 | 3.21 | NO |
| There are no options for using this orifice size below this MPH and GPA | | | | |
| 12 | 14 | .57 | 36.1 | NO |
| 12 | 15 | .61 | 41.3 | YES |
| 13 | 10 | .44 | 21.5 | NO |
| 13 | 13 | .57 | 36.1 | NO |
| 13 | 14 | .61 | 41.3 | YES |
| 13 | 15 | .66 | 48.4 | YES |
| 14 | 11 | .52 | 30.4 | NO |
| 14 | 12 | .57 | 36.1 | NO |
| 14 | 13 | .61 | 41.3 | YES |
| 14 | 14 | .66 | 48.4 | YES |
| 14 | 15 | .71 | 56.0 | YES |
| 15 | 11 | .56 | 34.8 | NO |
| 15 | 12 | .61 | 41.3 | YES |
| 15 | 13 | .66 | 48.4 | YES |
| 15 | 14 | .71 | 56.0 | YES |
| 15 | 15 | .76 | 64.2 | YES (Engenia) |
| 16 | 10 | .54 | 32.4 | NO |
| 16 | 11 | .59 | 38.7 | NO |
| 16 | 12 | .65 | 46.9 | YES |
| 16 | 13 | .70 | 54.4 | YES |
| 16 | 14 | .75 | 62.5 | YES |
| 16 | 15 | .81 | 72.9 | NO |
| 17 | 10 | .57 | 36.1 | NO |
| 17 | 11 | .63 | 44.1 | YES |
| 17 | 12 | .69 | 52.9 | YES |
| 17 | 13 | .74 | 60.8 | YES |
| 17 | 14 | .80 | 71.1 | NO |

# Sprayer Calibration Calculator

University of Illinois Extension - July 22, 2014

Tools

Installed

This app is compatible with your device.

# Sprayer Calibration Calculator

| | | | Operating Pressure (psi) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Manufacturer | Nozzle Type | Part Number | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| Greenleaf Technologies | TADF03-D | TADF03-D | | Min 20 | | Max 40 | | | |
| | TADF06-D | TADF06-D | | Min 20 | | | Max 50 | | |
| | TDXL 11003-D | TDXL 11003-D | | Min 20 | | Max 40 | | | |
| | TDXL 11004-D | TDXL 11004-D | | Min 20 | | | Max 50 | | |
| | TDXL 11005-D | TDXL 11005-D | | Min 20 | | | | Max 60 | |
| | TDXL 11006-D | TDXL 11006-D | | Min 20 | | | | Max 60 | |
| Hypro | ULD120-04 | ULD120-04 / FC-ULD120-04 | | Min 20 | | Max 40 | | | |
| | ULD120-05 | ULD120-05 / FC-ULD120-05 | | Min 20 | | Max 40 | | | |
| John Deere | ULD120-04 | PSULD2004 / PSULDQ2004 | | Min 20 | | Max 40 | | | |
| | ULD120-05 | PSULD2005 / PSULDQ2005 | | Min 20 | | Max 40 | | | |
| Lechler | ID 110-03 | ID 110-03 / ID 110-03C | | | Min 30 | Max 40 | | | |
| | ID 110-04 | ID 110-04 / ID 110-04C | | | Min 30 | Max 40 | | | |
| | ID 110-05 | ID 110-05 / ID 110-05C | | | Min 30 | Max 40 | | | |
| | ID 80-04 | ID 80-04 / ID 80-04C | | | Min 30 | Max 40 | | | |
| TeeJet® Technologies | AI11003 | AI11003-VS / AIC1103-VS | | | Min 30 | Max 40 | | | |
| | AI8003 | AI8003-VS / AIC8003-VS | | | Min 30 | Max 40 | | | |
| | AI8005 | AI8005-VS / AIC8005-VS | | | Min 30 | Max 40 | | | |
| | TTI11003 | TTI11003-VP | | Min 20 | | | | Max 60 | |
| | TTI11004 | TTI11004-VP | | Min 20 | | | | Max 60 | |
| | TTI11005 | TTI11005-VP | | Min 20 | | | | Max 60 | |
| | TTI11006 | TTI11006-VP | | Min 20 | | | Max 50 | | |
| Wilger | DR110-10 | 40286-10 | | | Min 30 | Max 40 | | | |
| | UR110-05 | 40292-05 | | | Min 30 | | Max 50 | | |
| | UR110-06 | 40292-06 | | | Min 30 | | | Max 60 | |
| | UR110-08 | 40292-08 | | | Min 30 | | | | Max 70 |
| | UR110-10 | 40292-10 | | | Min 30 | | | | Max 70 |

XtendiMax and FeXapan

## Chart 4: Calculations are for a 20-inch nozzle spacing and 06 orifice sizes – Not PWM

Prepared by Robert E. Wolf, Nov. 2017

What are the speed and pressure options/limitations when using the recommended GPA and MPH options with an 06 orifice maintaining a PSI range of 40-65[1] – Not using PWM

| GPA[2] | MPH[3] | Calculated GPM[4] | Calculated PSI[5] | Use – Yes or NO[6] |
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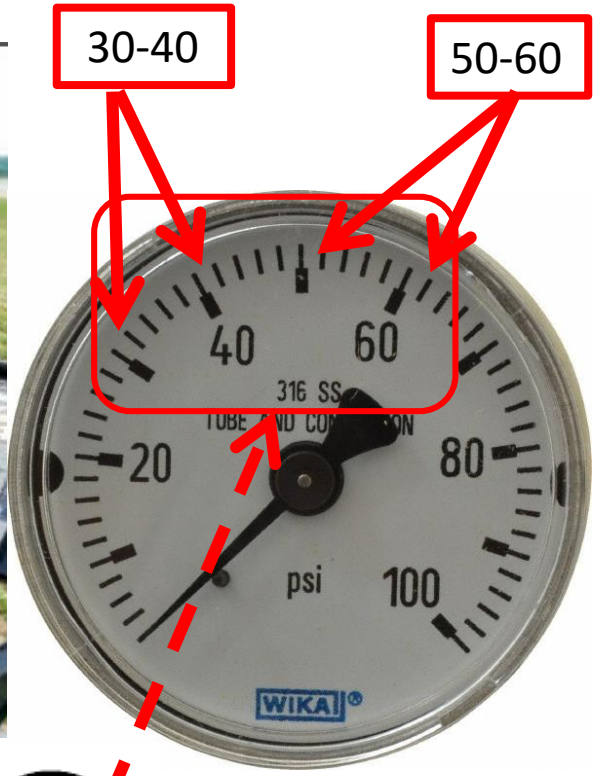
| 12 | 15 | .61 | 41.3 | YES |
| 13 | 10 | .44 | 21.5 | NO |
| 13 | 13 | .57 | 36.1 | NO |
| 13 | 14 | .61 | 41.3 | YES |
| 13 | 15 | .66 | 48.4 | YES |
| 14 | 11 | .52 | 30.4 | NO |
| 14 | 12 | .57 | 36.1 | NO |
| 14 | 13 | .61 | 41.3 | YES |
| 14 | 14 | .66 | 48.4 | YES |
| 14 | 15 | .71 | 56.0 | YES |
| 15 | 11 | .56 | 34.8 | NO |
| 15 | 12 | .61 | 41.3 | YES |
| 15 | 13 | .66 | 48.4 | YES |
| 15 | 14 | .71 | 56.0 | YES |
| 15 | 15 | .76 | 64.2 | YES (Engenia) |
| 16 | 10 | .54 | 32.4 | NO |
| 16 | 11 | .59 | 38.7 | NO |
| 16 | 12 | .65 | 46.9 | YES |
| 16 | 13 | .70 | 54.4 | YES |
| 16 | [illegible] | [illegible] | [illegible] | YES |
| 16 | [illegible] | [illegible] | [illegible] | NO |
| 17 | [illegible] | [illegible] | [illegible] | NO |
| 17 | [illegible] | .63 | 44.1 | YES |
| 17 | 12 | .69 | 52.9 | YES |
| 17 | 13 | .74 | 60.8 | YES |
| 17 | 14 | .80 | 71.1 | NO |

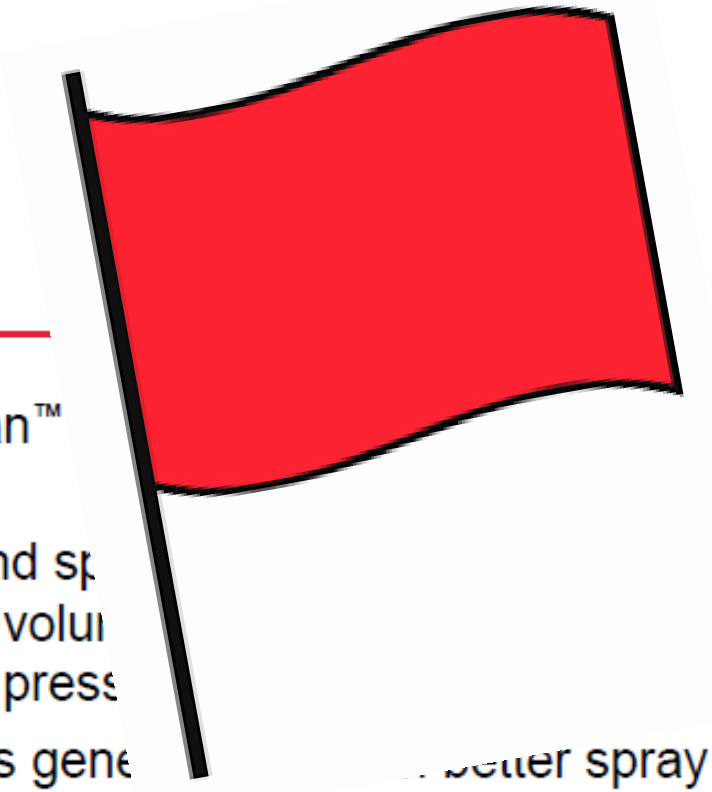
http://www.rewolfconsulting.com/

# Pressure Gauge as your Speedometer




**Sweet Spot**

# Equipment Ground Speeds




*Do not apply by air*

- Apply FeXapan™ or less**
- Select a ground sp desired spray volu desired spray press
- Slower speeds gene better spray coverage and deposition on the target area.
- Provided the applicator can maintain the required nozzle pressure, it is **recommended** that sprayer speed be reduced to 5 miles per hour at field edges.

## Chart 4: Calculations are for a 20-inch nozzle spacing and 06 orifice sizes – Not PWM

Prepared by Robert E. Wolf, Nov. 2017

| What are the speed and pressure options/limitations when using the recommended GPA and MPH options with an 06 orifice maintaining a PSI range of 40-65[1] – Not using PWM | | | | |
|---|---|---|---|---|
| GPA[2] | MPH[3] | Calculated GPM[4] | Calculated PSI[5] | Use – Yes or NO[6] |
| 10 | 5 | .17 | 3.21 | NO |
| There are no options for using this orifice size below this MPH and GPA | | | | |
| 12 | 14 | .57 | 36.1 | NO |
| 12 | 15 | .61 | 41.3 | YES |
| 13 | 10 | .44 | 21.5 | |
| 13 | 13 | .57 | | |
| 13 | 14 | | | |
| 13 | 15 | | | YES |
| 14 | | | 30.4 | NO |
| 14 | | .57 | 36.1 | NO |
| 14 | | .61 | 41.3 | YES |
| 14 | 14 | .66 | 48.4 | YES |
| 14 | 15 | .71 | 56.0 | YES |
| 15 | 11 | .56 | 34.8 | NO |
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| 17 | 11 | .63 | 44.1 | YES |
| 17 | 12 | .69 | 52.9 | YES |
| 17 | 13 | .74 | 60.8 | YES |
| 17 | 14 | .80 | 71.1 | NO |

15 GPA @ 5MPH = 0.25 GPM = 7.0 psi


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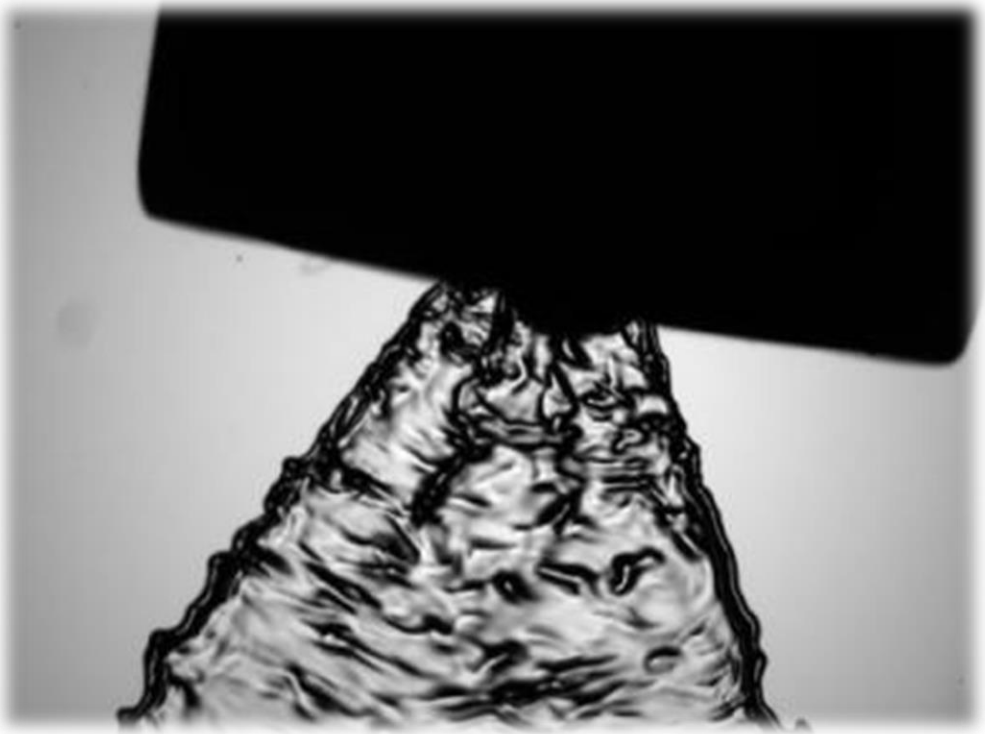
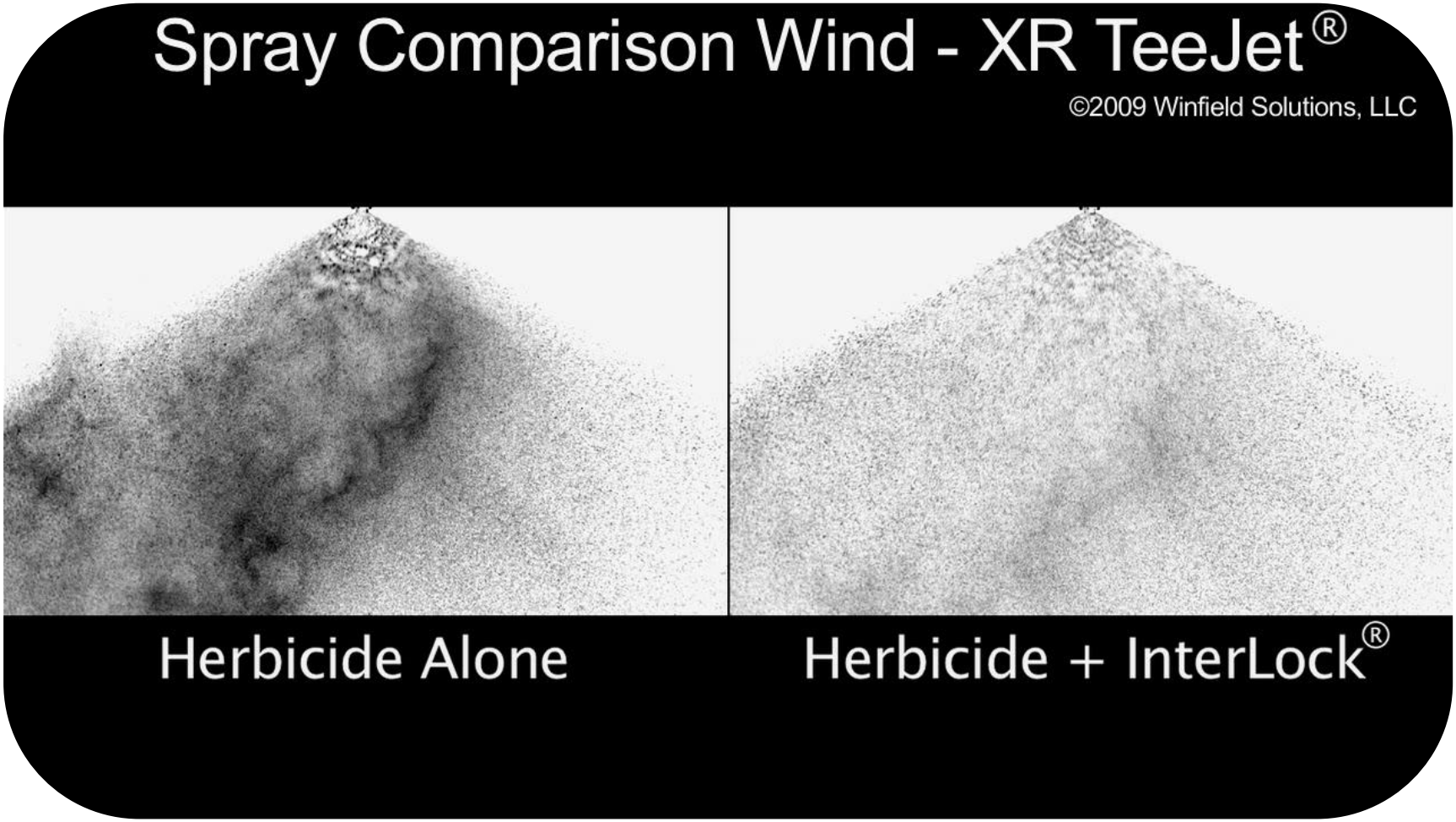
Helping Applicators to Understand Application Technology
Search
Doing the Math to Meet the XtendiMax, FeXapan, and Engenia Label Application MPH, GPA and PSI Requirements
Submitted by bob on Sun, 01/29/2017 - 11:49
Application Record Keeping: A Protocol for Documenting the Weather
Submitted by bob on Wed, 11/01/2017 - 20:56
http://www.rewolfconsulting.com/

# Solution Factor:

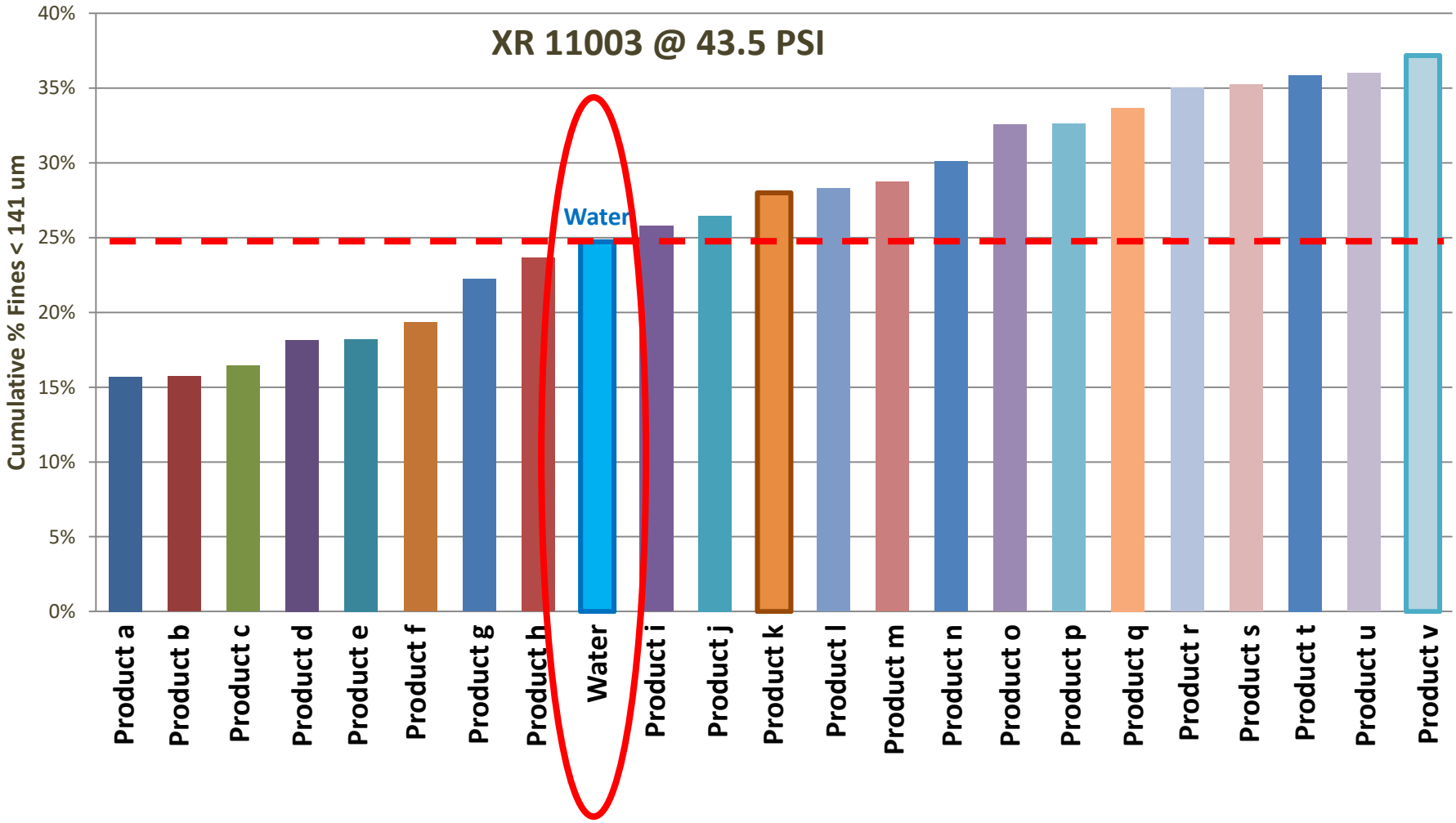
- Does it change the flow rate ????
- Changes the droplet spectra !!!!



# Influencing droplet size - Adjuvants

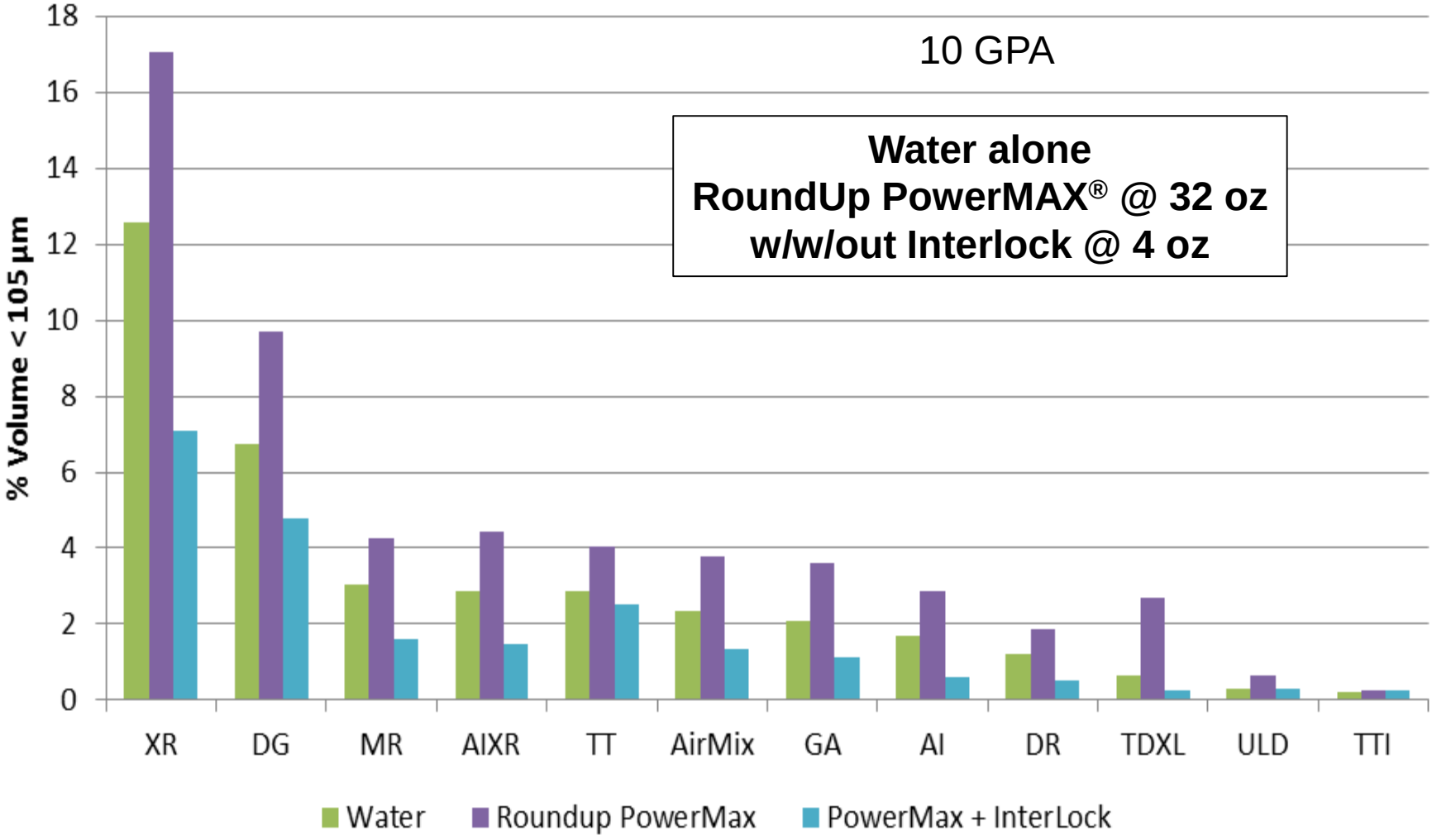


# Influencing Droplet size – Tank-mixes




Without drift reducing adjuvants--other adjuvants indicated by ‘mix’

# Volume % Driftable Fines
# 110°/120° - 04 Nozzles @ 40 psi



Tank Mix Products

APPLICATION REQUIREMENTS | TANK MIX | NOZZLES

# XtendiMax® With VaporGrip® Technology



RESTRICTED USE PESTICIDE: For retail sale to and use
persons under their direct supervision
Applicator's certifi

for XtendiMax® With VaporGrip® Technology, including for
Ready 2 Xtend® soybeans and cotton with XtendFlex® technology, according to the product labeling and the terms and conditions of the registration for XtendiMax® With VaporGrip® Technology.

Please ensure that you keep all applications records required by the XtendiMax® With VaporGrip® Technology product labeling and relevant state and federal law.

ALWAYS READ AND FOLLOW PESTICIDE PRODUCT LABELING. It is a violation of Federal and state law to use any pesticide product in a manner inconsistent with its labeling.

and observe all precautions, limitations and all other information on the product label.

## Herbicides

**Glyphosate products limited

XtendiMax® With VaporGrip®

- Abundit® Edge
  THE REQUIRED
- Authority® First
- Authority® MAX
- Authority® MTZ
- Authority® XL
- Avatar AND ON
- Bull
- Rate®
- Flexstar AND O
- Gatlin AND ONE
- Glory®
- Honcho® K6™
  THE REQUIRED
- Intensity® AND
- Intensity One®

## Adjuvants

- Ascender HC
- Activate Plus AND ONE OF THE REQUIRED DRAs SPECIFIED ABOVE
- Activator 90 AND ONE OF THE REQUIRED DRAs SPECIFIED ABOVE
- Ad-Max 90™
- AG16098
- AP Blend Pro AND ONE OF THE REQUIRED DRAs SPECIFIED ABOVE
- ANTIFOAM (Rosen's) AND ONE OF THE REQUIRED DRAs SPECIFIED ABOVE
- AP 910 AND ONE OF THE REQUIRED DRAs SPECIFIED ABOVE
- AP Simmer AND ONE OF THE REQUIRED DRAs
- AP Span
- Astonish™
- Astu

Nozzle selection is one of the most important parameters for drift control. Not all drift reduction additives are compatible with every nozzle type and pesticide/adjuvant combination. Check with the additive manufacture to ensure that the drift additive will work properly with the spray nozzle, spray pressure and specific spray solution. Read carefully and observe all precautions, limitations and all other information on the product label.

- DRAs SPECIFIED ABOVE
- THE REQUIRED DRAs SPECIFIED ABOVE
- OF THE REQUIRED DRAs SPECIFIED ABOVE
- CERIUM™ ELITE AND ONE OF THE REQUIRED DRAs SPECIFIED ABOVE
- Chempro A-10 AND ONE OF THE REQUIRED DRAs SPECIFIED ABOVE
- Chempro CP-60 AND ONE OF THE REQUIRED DRAs SPECIFIED ABOVE
- Chempro S-820 AND ONE OF THE REQUIRED DRAs SPECIFIED ABOVE
- Chempro US-90
- Chemsurf™ 90
- Chem-Trol
- Choice® Trio
- Cide Winder® AND ONE OF THE REQUIRED DRAs SPECIFIED ABOVE
- Clasp®
- ClassAct® Ridion®

# Intact

## Drift Control & Foliar Retention Agent And Deposition Aid


INTACT is a stand-alone drift reduction and deposition aid technology. INTACT can be used alone or in combination with water conditioning agents and other adjuvants to maximize on-target performance.

Polysaccharide

## Features & Benefits

- ✔ Advanced spray droplet management technology
- ✔ Maximizes large-droplet retention, coverage and drift control for better herbicide uptake
- ✔ Complements a wide range of nozzles to maximize drift control

ADJUVANT

DRIFT AND DEPOSITION AGENT
WITH SURFACTANT

# ON TARGET

Polysaccharide

## Drift and deposition aid for new dicamba herbicide technologies

### New Adjuvant System

AG16098 adjuvant is a patent-pending technology specifically designed for ultra and extra coarse nozzles, for use with the new dicamba herbicide chemistries. This adjuvant system has been formulated to reduce driftable fines with dicamba up to 50%, and improves the efficacy of dicamba herbicides by enhancing droplet spreading and canopy penetration.

### Formulated for Ultra and Extra Coarse Nozzles

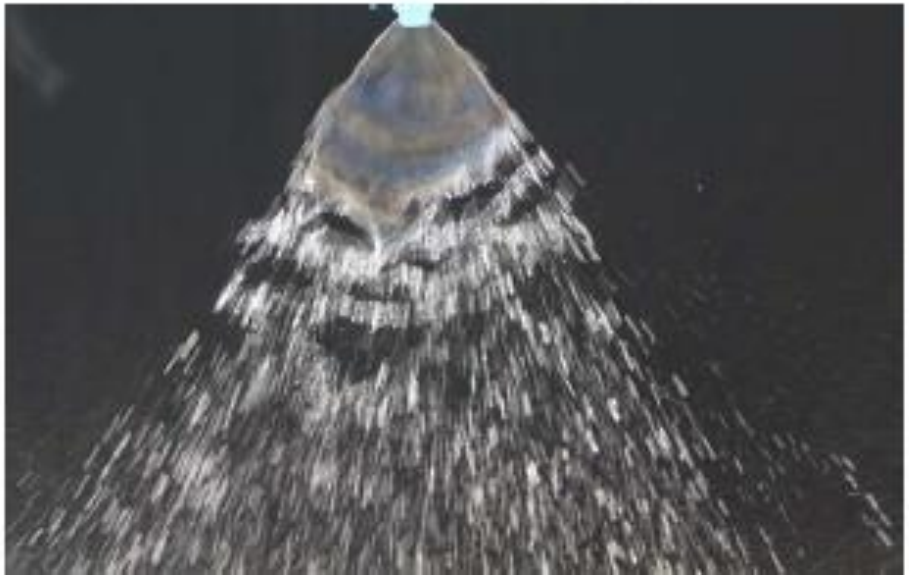
Ultra and extra coarse nozzles generate large droplets, which help reduce fines but generally provide less leaf surface coverage. Along with further reducing drift, AG16098 adjuvant is designed to aid with droplet spreading and canopy deposition for improved herbicide efficacy.

WINFIELD® UNITED

WINFIELD UNITED

# An Evaluation of Nozzle Performance with AG16098

Example of an unacceptable spray pattern

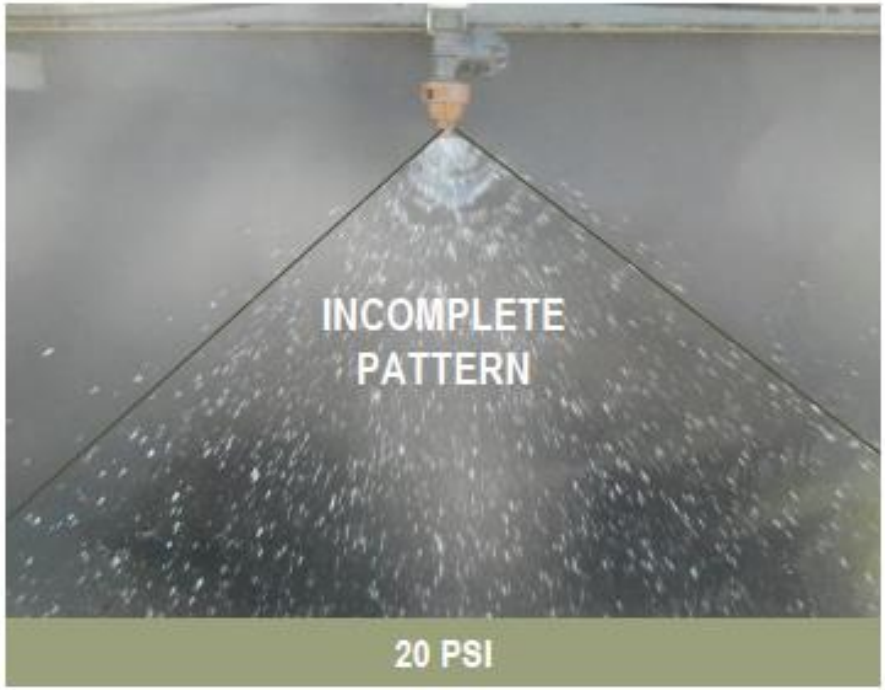


Example of an acceptable spray pattern

## Nozzle Recommendation Chart with AG16098

= **Recommended** – Pattern was acceptable
= **Nozzle may provide adequate coverage** – Evaluate spray pattern before application
= **Not Recommended** – Due to pattern collapse or pattern reduction
= **Not Labeled for Use**

| Manufacturer | Nozzle Type | 20 PSI | 30 PSI | 40 PSI | 50 PSI | 60 PSI | 70 PSI |
|---|---|---|---|---|---|---|---|
| Greenleaf Technologies | TADF-D11003 | | | | | | |
| | TADF-D11006 | | | | | | |
| | TDXL-D11003 | | | | | | |
| | TDXL-D11004 | | | | | | |
| | TDXL-D11005 | | | | | | |
| | TDXL-D11006 | | | | | | |
| Hypro | ULD12004 | | | | | | |
| | ULD12005 | | | | | | |
| John Deere | ULD12004 | | | | | | |
| | ULD12005 | | | | | | |
| Lechler | ID11003 | | | | | | |
| | ID11004 | | | | | | |
| | ID11005 | | Not Tested | | | | |
| | ID8004 | | | | | | |
| TeeJet® Technologies | AI11003 | | | | | | |
| | AI8003 | | | | | | |
| | AI8005 | | | | | | |
| | TTI11003 | | | | | | |
| | TTI11004 | | | | | | |
| | TTI11005 | | | | | | |
| | TTI11006 | | | | | | |
| Wilger | DR11010 | | | | | | |
| | UR11005 | | | | | | |
| | UR11006 | | | | | | |
| | UR11008 | | | | | | |
| | UR11010 | | | | | | |




20 PSI


60 PSI

# Application Recordkeeping:
## Focus on Environmental Conditions

**Bob Wolf:** Professor Emeritus, Kansas State University, Wolf Consulting and Research LLC.
**Dennis Gardisser:** Professor Emeritus, University of Arkansas, WRK of Arkansas LLC.

When applying crop protection products, a good steward is one who can identify and record the environmental factors that may negatively impact making an application; particularly, the possibility of spray drift. New label language states: *"Avoiding spray drift at the application site is the responsibility of the applicator."* A wise sprayer operator must possess the ability to assess the environmental conditions at the field location to determine how best to spray the field, or maybe decide it would be best not to spray that field, or part of that field, at that time. Instruments that assess environmental conditions are available to assist applicators in making good decisions. Making the correct measurement is the critical first step. Record the information measured to document the application conditions. Quality records help mitigate against any misapplication allegations, such as a drift complaint. Many of the items listed below are based on past legal experiences with applications involving spray drift litigation.

The following guidelines should help you measure and accurately record environmental conditions at the application site.

1. Document any instrument used by recording the manufacturer and model number. Accurate portable weather instruments are recommended. Portable weather instruments are available that log and store data, and aid in auditing and recordkeeping. Some will have Bluetooth/wireless capabilities.
2. Environmental measurements include wind speed and direction, temperature, and relative humidity.
3. At a minimum, record data at the start and finish of the job. Consider more often as conditions change or for a job that lasts over a longer period. For example, make observations when tank refilling for larger fields. Time stamp all observations with a.m., p.m., or military time.

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**Application Technology**

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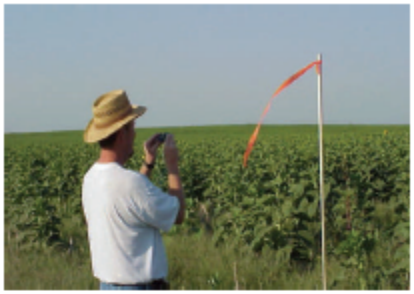
4. Take meteorological readings as close to the application site as possible. Be advised that the weather data received via a smart phone or local weather station may not be accurate for the location being sprayed.
5. Note the specific location where the measurement was made, such as GPS coordinates, field entry point, field location, etc. Check the label to see if it requires a specific observation location in relation to the treatment area.
6. Make all measurements as close as possible to the nozzle release height (boom height) and in an area not protected from the wind by the spray machine or your body. For aerial applications, six feet is suggested when using a hand held instrument.
7. Record wind speed averaged over a 1 to 2 minute time span. Note the time the observation was recorded. Most instruments give an average over a period of time. Make sure the instrument's anemometer is facing directly into the wind.
8. Do not record winds as variable or with a range i.e. 4 to 8 mph – an average gives a better indication of the transport energy. Light and variable winds, where directions may change several times over a short period, can be more problematic than higher speed winds in a sustained direction. Observe any label restrictions on wind speed.
9. Wind direction requires a similar averaged measurement. Record direction in degrees magnetic from a compass (0-360°). The use of alphabetic characters, i.e., N, S, NW, to indicate wind direction is discouraged. The key for determining direction is to have an accurate assessment method: trees moving, dust, smoke, a ribbon on a short stake, etc. Face directly into the wind and record the direction from which the wind is coming. A ribbon on a stake with the ribbon blowing directly at your body is a simple fail safe approach. Movement of smoke, particularly from moving aircraft, or dust may help determine direction.



10. Record temperature and humidity since they can be helpful in determining temperature inversion potential. It may be advisable to record both temperature and humidity well before and after the application for this purpose. In fact, recording a morning low and an afternoon high would be useful regarding determining the potential for an inversion. Take temperature measurements with the instrument out of direct sunlight. Shade the instrument with your body or spray equipment. This is especially critical if you are trying to assess temperature differentials for determining if an inversion is in place.
11. Be alert to field level temperature inversion conditions which typically occur from late afternoon, can be sustained through the night, and into the next morning. Beware, inversions can start mid-afternoon. Observe conditions such as the presence of ground fog, smoke layers hanging parallel to the ground, dust hanging over the field/gravel road, heavy dew, frost, or intense odors (i.e., smells from manure or stagnant water from ponds are held close to the surface when inversion conditions exist). Inversions commonly occur with low (less than 3 mph) to no wind speeds. Spraying in calm air is not advised. If a mechanical smoker is used, note wind direction and smoke dissipation with a time stamp.
12. Note any variances due to terrain or vegetation differences, tree lines, buildings, etc.
13. Initial or sign all recordings to indicate who made the observation(s).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Doing the Math to Meet the XtendiMax, FeXapan, and Engenia Label Application MPH, GPA and PSI Requirements
Submitted by bob on Sun, 01/29/2017 - 11:49
Application Record Keeping: A Protocol for Documenting the Weather
Submitted by bob on Wed, 11/01/2017 - 20:56
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