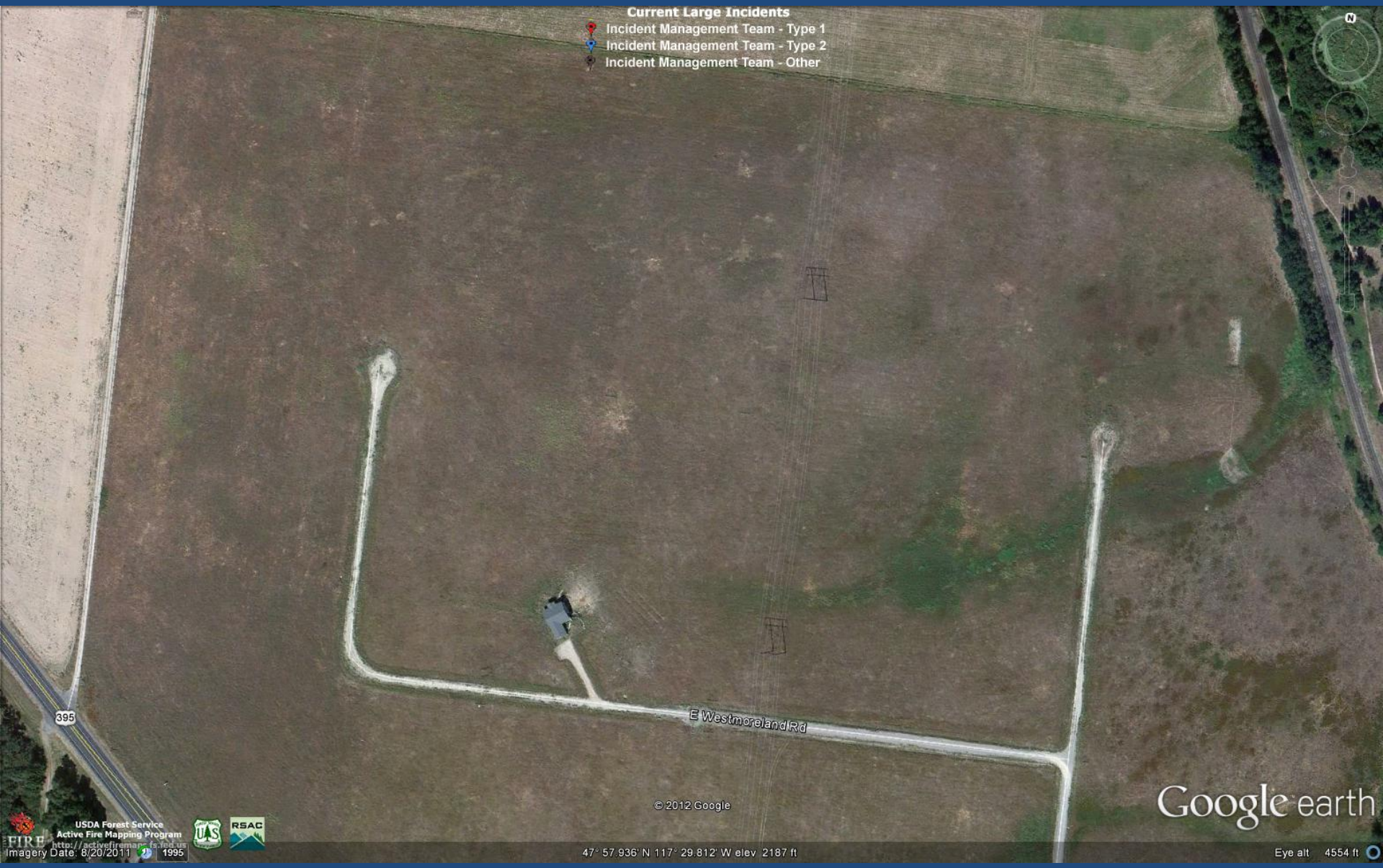
Droplet Size, Pressure, Nozzles, Equipment and Drift

Aaron Brown

WSDA


Current Large Incidents
Incident Management Team - Type 1
Incident Management Team - Type 2
Incident Management Team - Other
E Westmoreland Rd
395
© 2012 Google
Google earth
USDA Forest Service
Active Fire Mapping Program
http://activefiremaps.fs.fed.us
Imagery Date: 8/20/2011
1995
RSAC
47° 57.936' N 117° 29.812' W elev 2187 ft
Eye alt 4554 ft

N Arlington Ln
E Westmoreland Rd
W Fawn Ct
395
N Short Rd
N Park Rd
N North Ave
N Park Ave
Northwest Ave
© 2013 Google
Google earth
Imagery Date: 8/20/2011
1995
lat 47.964824° lon -117.495580° elev 2168 ft
Eye alt 9552 ft

REMEMBER
LABEL IS THE LAW

MANDATORY VS. ADVISORY STATEMENTS

Mandatory Statements are Directives or Commands

- **Require or prohibit certain actions by user.**
- **Often (but not always) use imperative verbs:**

  must, shall or shall not, do not, etc.

"Mechanically incorporate this product within 24 hours after application."

Mandatory Statement Examples

"Keep out of reach of children."

"Apply 1 pound of this product per acre in sufficient water for thorough coverage".

"Do not apply directly to water."

"All food surface areas must be covered prior to application."

Advisory Statements are Suggestions or Recommendations

- **They do not direct or order user to take actions.**

- **Use words such as “suggested”, “recommended”, “should” or “may”.**

“This product should be mechanically incorporated within 24 hours after application.”

Advisory Statements Are Not Enforceable, But…

Ignore them at your own risk…

Advisory statements are on the label to

- **Promote effectiveness**
- **Prevent damage**
- **Increase safety**
- **Limit liability**

When can you go off label?

- Rates below the amounts on the label, but never over the amount
- Applications for a pest not on the label (<u>The site must always be on the label</u>)
- Applying a greater dilution
- Making fewer applications
- Changing the method of application
- Tank mixing of two or more pesticides
- Adding Fertilizer

DROPLET SIZE AND PRESSURE

Droplet Size and Drift

- The smaller the droplet the greater the odds of particle drift
- At a given application volume, using fewer larger droplets is LESS likely to result in drift
- Larger droplets are:
  - Harder to move off target (heavier)
  - Slower to evaporate/ volatilize (low surface: volume ratio)

- Less affected by wind

Droplet size Management

- Small droplets often result from:
  - High spray pressures
  - Small nozzle tips/orifices
  - Wind shear across the nozzle

- Nozzle design also affects droplet size

- Technology has changed drastically over the years
- Technology has improved nozzle output using higher pressure
- Higher pressure- larger droplets

Droplet and Pressure

- Spray drop size is the single most important factors affecting drift
- Some labels now have droplet and pressure requirements
- Size measured in microns
- American Society of Agricultural and Biological Engineers (ASABE) has developed a standard for tips and drop size using colors and categories
- 8 categories: Extremely Fine, Very fine, Fine, Medium, Coarse, Very Coarse, Extremely Coarse, Ultra Coarse

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Origin Of Standardized Spray Droplet Size Categories

- 1985 -- British Crop Protection Council (BCPC)
  - Droplet size classifications, primarily designed to enhance efficacy.
  - Uses the term SPRAY QUALITY for droplet size categories.

  2000 -- ASAE Standard S572
  - Droplet size classifications, primarily designed to control spray drift.
  - Uses the term DROPLET SPECTRA CLASSIFICATION for droplet size categories.

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Why are we here

- Started in the 90's with EPA wanting drift language
- Language was thought to be too vague
- Committee formed to develop language
- Main reason to protect kids, wildlife, water and other off target groups
- 2000- ASABE Standard 572 (S572)
  - Droplet size classifications, primarily designed to control spray drift.
  - Uses the term DROPLET SPECTRA CLASSIFICATION for droplet size categories.
- In 2010, recommendations from committee submitted for review
- 2013, no final rule as of yet still discussing language

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- Pesticide registrants have started adding label language and droplet size in an effort to get ahead of the rule
- Sometimes EPA will adopt language that the industry has used
- Stay tuned for more developments
- Stricter rules and language may be developed

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2. SPRAY DRIFT MANAGEMENT

A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, relative humidity) and method of application (e.g., ground, aerial, airblast, chemigation) can influence pesticide drift. The applicator must evaluate all factors and make appropriate adjustments when applying this product.

Droplet Size. When applying sprays that contain 2,4-D as the sole active ingredient, or when applying sprays that contain 2,4-D mixed with active ingredients that require a Coarse or coarser spray, apply only as a Coarse or coarser spray (ASAE standard 572) or a volume mean diameter of 385 microns or greater for spinning atomizer nozzles. When applying sprays that contain 2,4-D mixed with other active ingredients that require a Medium or more fine spray, apply only as a Medium or coarser spray (ASAE standard 572) or a volume mean diameter of 300 microns or greater for spinning atomizer nozzles.

Wind Speed. Do not apply at wind speeds greater than 15 mph. Only apply this product if the wind direction favors on-target deposition and there are not sensitive areas (including, but not limited to, bodies of water, known habitat for nontarget species, nontarget crops) within 250 feet downwind. If applying a Medium spray, leave one swath unsprayed

This is the current language on labels

the applicator must determine if: a) conditions of temperature inversion exist, or b) stable atmospheric conditions exist at of below nozzle height. Do not make applications into areas of temperature inversions or stable atmospheric conditions.

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State Rules
Use Restricted Herbicides

- There are currently rules in place for pressure within Eastern Washington (WAC 16-230-655)
  - Ground equipment pressure not to exceed 25 psi at nozzle
  - 50 psi at nozzle for equipment with handguns
  - Up to 90 psi for invert systems
  - Using LP 8002 instead of regular 8004 or equivalent maximum pressure 15psi at nozzle

State Rules

- County rules also have pressure requirements

WSDA Application Permit

- Permit issued by WSDA
- Purpose: Allows use of newer technology and equipment to achieve rule intent of mitigating herbicide drift
- Applicator have in possession during application documentation showing droplets are Coarse, Very Coarse or larger
- Documentation must match equipment being used (nozzle tips, angle) and equipment operating within pressure range described by manufacturer

WSDA Application Permit

- Documentation made available immediately upon request
- Other statewide and county rules relating to Use Restricted Herbicides.
- Permit does not cover any “invert” systems

DROPLET SIZE CATEGORIES

Category	Symbol	Color Code	Approximate VMD Range
Extremely Fine	EF	Purple	
Very Fine	VF	Red	<145
Fine	F	ORANGE	145-225
Medium	M	YELLOW	226-325
Coarse	C	BLUE	326-400
Very Coarse	VC	GREEN	401-500
Extremely Coarse	XC	WHITE	>500
Ultra Coarse	UC	Black	

Droplet Size Comparison

SYMBOL	Color Code	VMD RANGE	COMPARATIVE SIZE	
VF	Red	<145	Human Hair (100μ)	
F	ORANGE	145-225	Sewing Thread (150μ)	
M	YELLOW	226-325	Drizzle	
C	BLUE	326-400	Light Raindrops	
VC	GREEN	401-500	Staple (420μ)	
XC	WHITE	>500	Heavy Raindrops	

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Tip Spray Selection by Drop Size

Very Fine	Fine	Medium	Coarse	Very Coarse

Turbo TeeJet Flat-fan

	Pressure in psi								
	15	20	30	40	45	50	60	75	90
Tip No.	Flow Rate in GPM								
TT11001	0.06	0.07	0.09	0.10	0.11	0.11	0.12	0.14	0.15
TT110015	0.09	0.11	0.13	0.15	0.16	0.17	0.18	0.21	0.23
TT11002	0.12	0.14	0.17	0.20	0.21	0.22	0.24	0.27	0.30
TT11003	0.18	0.21	0.26	0.30	0.32	0.34	0.37	0.41	0.45
TT11004	0.24	0.28	0.35	0.40	0.42	0.45	0.49	0.55	0.60
TT11005	0.31	0.35	0.43	0.50	0.53	0.56	0.61	0.68	0.75

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XR TeeJet® Extended Range Flat Spray Tips

Typical Applications:

See selection guide on page 2 for recommended typical applications for XR TeeJet tips.

Features:

- Excellent spray distribution over a wide range of pressures—15–60 PSI (1–4 bar).
- Ideal for rigs equipped with sprayer controllers.
- Reduces drift at lower pressures, better coverage at higher pressures.
- Available in stainless steel, ceramic and polymer in 80° and 110° spray angles with VisiFlo® color-coding.
- Ceramic is available with corrosive-resistant polypropylene VisiFlo color-coded tip holder in 80° capacities 03–08 and 110° capacities 02–08.
- XR110025 only available in VK.
- Brass available in 110° only.
- Automatic spray alignment with 25612-*-NYR Quick TeeJet® cap and gasket. Reference page 57 for more information.
- Automatic spray alignment for sizes 10 and 15 with 25610-*-NYR Quick TeeJet cap and gasket. Reference page 57 for more information.

At 15 PSI (1 bar) Pressure — At 60 PSI (4 bar) Pressure

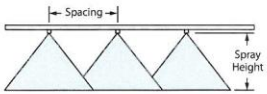
	PSI	DROP SIZE 80°	DROP SIZE 110°	CAPACITY ONE NOZZLE IN GPM	CAPACITY ONE NOZZLE IN OZ./MIN.	20° GPA 4 MPH	5 MPH	6 MPH	8 MPH	10 MPH	12 MPH	15 MPH	20 MPH	GALLONS PER 1000 SQ. FT. 2 MPH	3 MPH	4 MPH	5 MPH
XR8001 XR11001 (100)	15	M	F	0.061	7.8	4.5	3.6	3.0	2.3	1.8	1.5	1.2	0.91	0.21	0.14	0.10	0.08
	20	F	F	0.071	9.1	5.3	4.2	3.5	2.6	2.1	1.8	1.4	1.1	0.24	0.16	0.12	0.10
	30	F	F	0.087	11	6.5	5.2	4.3	3.2	2.6	2.2	1.7	1.3	0.30	0.20	0.15	0.12
	40	F	F	0.10	13	7.4	5.9	5.0	3.7	3.0	2.5	2.0	1.5	0.34	0.23	0.17	0.14
	50	F	VF	0.11	14	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.37	0.25	0.19	0.15
	60	F	VF	0.12	15	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
XR80015 XR110015 (100)	15	M	F	0.092	12	6.8	5.5	4.6	3.4	2.7	2.3	1.8	1.4	0.31	0.21	0.16	0.13
	20	M	F	0.11	14	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.37	0.25	0.19	0.15
	30	F	F	0.13	17	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.29	0.22	0.16
	40	F	F	0.15	19	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	50	F	F	0.17	22	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	60	F	F	0.18	23	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.24
XR8002 XR11002 (50)	15	M	M	0.12	15	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	20	M	F	0.14	18	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.48	0.32	0.24	0.19
	30	M	F	0.17	22	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	40	F	F	0.20	26	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	50	F	F	0.22	28	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.37	0.30
	60	F	F	0.24	31	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.54	0.41	0.33
XR110025 (50)	15		M	0.15	19	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	20		M	0.18	23	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.24
	30		F	0.22	28	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.37	0.30
	40		F	0.25	32	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
	50		F	0.28	36	21	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.63	0.48	0.38
	60		F	0.31	40	23	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.1	0.70	0.53	0.42
XR8003 XR11003 (50)	15	M	M	0.18	23	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.24
	20	M	M	0.21	27	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.71	0.48	0.36	0.29
	30	M	F	0.26	33	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.88	0.59	0.44	0.35
	40	M	F	0.30	38	22	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.0	0.68	0.51	0.41
	50	M	F	0.34	44	25	20	16.8	12.6	10.1	8.4	6.7	5.0	1.2	0.77	0.58	0.46
	60	F	F	0.37	47	27	22	18.3	13.7	11.0	9.2	7.3	5.5	1.3	0.84	0.63	0.50
XR8004 XR11004 (50)	15	C	M	0.24	31	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.54	0.41	0.33
	20	C	M	0.28	36	21	16.6	13.9	10.4	8.3	6.9	5.5	4.2	1.0	0.63	0.48	0.38
	30	M	M	0.35	45	26	21	17.3	13.0	10.4	8.7	6.9	5.2	1.2	0.79	0.60	0.48
	40	M	M	0.40	51	30	24	19.8	14.9	11.9	9.9	7.9	5.9	1.4	0.91	0.68	0.54
	50	M	F	0.45	58	33	27	22	16.7	13.4	11.1	8.9	6.7	1.5	1.0	0.77	0.61
	60	M	F	0.49	63	36	29	24	18.2	14.6	12.1	9.7	7.3	1.7	1.1	0.83	0.67
XR8005 XR11005 (50)	15	C	M	0.31	40	23	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.1	0.70	0.53	0.42
	20	C	M	0.35	45	26	21	17.3	13.0	10.4	8.7	6.9	5.2	1.2	0.79	0.60	0.48
	30	C	M	0.43	55	32	26	21	16.0	12.8	10.6	8.5	6.4	1.5	0.97	0.73	0.58
	40	M	M	0.50	64	37	30	25	18.6	14.9	12.4	9.9	7.4	1.7	1.1	0.85	0.68
	50	M	M	0.56	72	42	33	28	21	16.6	13.9	11.1	8.3	1.9	1.3	0.95	0.76
	60	M	F	0.61	78	45	36	30	23	18.1	15.1	12.1	9.1	2.1	1.4	1.0	0.83
XR8006 XR11006 (50)	15	C	C	0.37	47	27	22	18.3	13.7	11.0	9.2	7.3	5.5	1.3	0.84	0.63	0.50
	20	C	C	0.42	54	31	25	21	15.6	12.5	10.4	8.3	6.2	1.4	1.0	0.71	0.57
	30	C	M	0.52	67	39	31	26	19.3	15.4	12.9	10.3	7.7	1.6	1.2	0.88	0.71
	40	C	M	0.60	77	45	36	30	22	17.8	14.9	11.9	8.9	2.0	1.4	1.0	0.82
	50	C	M	0.67	86	50	40	33	25	19.9	16.6	13.3	9.9	2.3	1.5	1.1	0.91
	60	C	M	0.73	93	54	43	36	27	22	18.1	14.5	10.8	2.5	1.7	1.2	0.99
XR8008 XR11008 (50)	15	VC	C	0.49	63	36	29	24	18.2	14.6	12.1	9.7	7.3	1.7	1.1	0.83	0.67
	20	VC	C	0.57	73	42	34	28	21	16.9	14.1	11.3	8.5	1.9	1.3	0.97	0.78
	30	C	C	0.69	88	51	41	34	26	20	17.1	13.7	10.2	2.3	1.6	1.2	0.94
	40	C	C	0.80	102	59	48	40	30	24	19.8	15.8	11.9	2.7	1.8	1.4	1.1
	50	C	M	0.89	114	66	53	44	33	26	22	17.6	13.2	3.0	2.0	1.5	1.2
	60	C	M	0.98	125	73	58	49	36	29	24	19.4	14.6	3.3	2.2	1.7	1.3
XR8010† XR11010†	15		VC	0.61	78	45	36	30	23	18.1	15.1	12.1	9.1	2.1	1.4	1.0	0.83
	20		VC	0.71	91	53	42	35	26	21	17.6	14.1	10.5	2.4	1.6	1.2	0.97
	30		C	0.87	111	65	52	43	32	26	22	17.2	12.9	3.0	2.0	1.5	1.2
	40		C	1.00	128	74	59	50	37	30	25	19.8	14.9	3.4	2.3	1.7	1.4
	50		C	1.12	143	83	67	55	42	33	28	22	16.6	3.8	2.5	1.9	1.5
	60		M	1.22	156	91	72	60	45	36	30	24	18.1	4.1	2.8	2.1	1.7
XR8015† XR11015†	15		XC	0.92	118	68	55	46	34	27	23	18.2	13.7	3.1	2.1	1.6	1.3
	20		XC	1.06	136	79	63	52	39	31	26	21	15.7	3.6	2.4	1.8	1.4
	30		VC	1.30	166	97	77	64	48	39	32	26	19.3	4.4	2.9	2.2	1.8
	40		C	1.50	192	111	89	74	56	45	37	30	22	5.1	3.4	2.6	2.0
	50		C	1.68	215	125	100	83	62	50	42	33	25	5.7	3.8	2.9	2.3
	60		C	1.84	236	137	109	91	68	55	46	36	27	6.3	4.2	3.1	2.5

Note: Always double check your application rates. Tabulations are based on spraying water at 70°F (21°C).
See pages 124–140 for drop size classification, useful formulas and other information.

†Available in all stainless steel only.

CONTACT PRODUCT	SYSTEMIC PRODUCT	DRIFT MANAGEMENT
EXCELLENT	GOOD	GOOD
GOOD*	VERY GOOD*	VERY GOOD*

*At pressures below 30 PSI (2.0 bar)



Optimum Spray Height

	20°
80°	30"
110°	20"

How to order:

Specify tip number.

Examples:

- XR8004VS – Stainless Steel with VisiFlo color-coding
- XR11004-VP – Polymer with VisiFlo color-coding (110° only)
- XR11004-VK – Ceramic with polypropylene VisiFlo color-coding
- XR8010SS – Stainless Steel
- XR11004VB – Brass with VisiFlo color-coding (110° only)

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	PSI	DROP SIZE		CAPACITY ONE NOZZLE IN GPM	CAPACITY ONE NOZZLE IN OZ./MIN.	20″											
						GPA								GALLONS PER 1000 SQ. FT.			
		80°	110°			4 MPH	5 MPH	6 MPH	8 MPH	10 MPH	12 MPH	15 MPH	20 MPH	2 MPH	3 MPH	4 MPH	5 MPH
XR8006 XR11006 (50)	15	C	C	0.37	47	27	22	18.3	13.7	11.0	9.2	7.3	5.5	1.3	0.84	0.63	0.50
	20	C	C	0.42	54	31	25	21	15.6	12.5	10.4	8.3	6.2	1.4	1.0	0.71	0.57
	30	C	M	0.52	67	39	31	26	19.3	15.4	12.9	10.3	7.7	1.8	1.2	0.88	0.71
	40	C	M	0.60	77	45	36	30	22	17.8	14.9	11.9	8.9	2.0	1.4	1.0	0.82
	50	C	M	0.67	86	50	40	33	25	19.9	16.6	13.3	9.9	2.3	1.5	1.1	0.91
	60	C	M	0.73	93	54	43	36	27	22	18.1	14.5	10.8	2.5	1.7	1.2	0.99
XR8008 XR11008 (50)	15	VC	C	0.49	63	36	29	24	18.2	14.6	12.1	9.7	7.3	1.7	1.1	0.83	0.67
	20	VC	C	0.57	73	42	34	28	21	16.9	14.1	11.3	8.5	1.9	1.3	0.97	0.78
	30	C	C	0.69	88	51	41	34	26	20	17.1	13.7	10.2	2.3	1.6	1.2	0.94
	40	C	C	0.80	102	59	48	40	30	24	19.8	15.8	11.9	2.7	1.8	1.4	1.1
	50	C	M	0.89	114	66	53	44	33	26	22	17.6	13.2	3.0	2.0	1.5	1.2
	60	C	M	0.98	125	73	58	49	36	29	24	19.4	14.6	3.3	2.2	1.7	1.3
XR8010† XR11010†	15		VC	0.61	78	45	36	30	23	18.1	15.1	12.1	9.1	2.1	1.4	1.0	0.83
	20		VC	0.71	91	53	42	35	26	21	17.6	14.1	10.5	2.4	1.6	1.2	0.97
	30		C	0.87	111	65	52	43	32	26	22	17.2	12.9	3.0	2.0	1.5	1.2
	40		C	1.00	128	74	59	50	37	30	25	19.8	14.9	3.4	2.3	1.7	1.4
	50		C	1.12	143	83	67	55	42	33	28	22	16.6	3.8	2.5	1.9	1.5
	60		M	1.22	156	91	72	60	45	36	30	24	18.1	4.1	2.8	2.1	1.7
XR8015† XR11015†	15		XC	0.92	118	68	55	46	34	27	23	18.2	13.7	3.1	2.1	1.6	1.3
	20		XC	1.06	136	79	63	52	39	31	26	21	15.7	3.6	2.4	1.8	1.4
	30		VC	1.30	166	97	77	64	48	39	32	26	19.3	4.4	2.9	2.2	1.8
	40		C	1.50	192	111	89	74	56	45	37	30	22	5.1	3.4	2.6	2.0
	50		C	1.68	215	125	100	83	62	50	42	33	25	5.7	3.8	2.9	2.3
	60		C	1.84	236	137	109	91	68	55	46	36	27	6.3	4.2	3.1	2.5

"W"

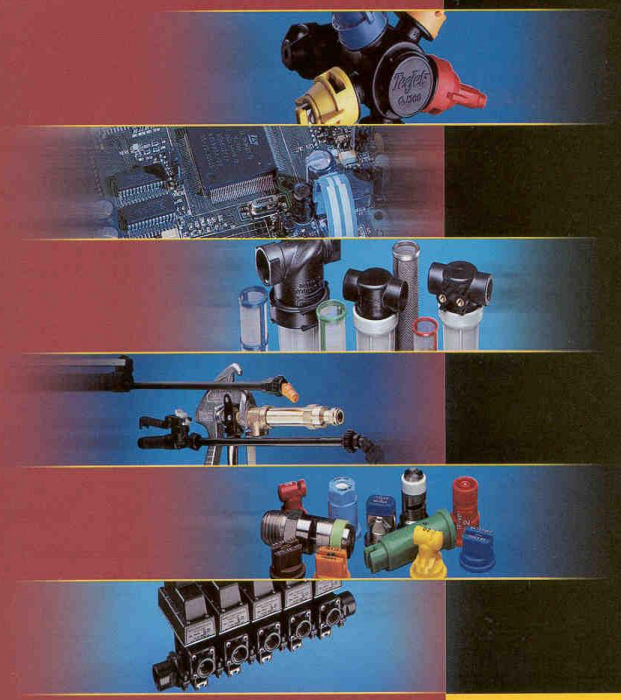
"R", "L"	PSI	DROP SIZE	CAPACITY TWO NOZZLE IN GPM	SPRAY WIDTH "W" (FEET) 24" HEIGHT	SPRAY WIDTH "W" (FEET) 36" HEIGHT	NOZZLE SPACING "X" = 0–3" 24" GPA FOR TWO NOZZLES 4 MPH	6 MPH	8 MPH	10 MPH	15 MPH	20 MPH	GALLONS PER 1000 SQ. FT. 2 MPH	3 MPH	4 MPH	5 MPH	NOZZLE SPACING "X" = 0–3" 36" GPA FOR TWO NOZZLES 4 MPH	6 MPH	8 MPH	10 MPH	15 MPH	20 MPH	GALLONS PER 1 2 MPH	3 MPH
(B)1/4XP10R (B)1/4XP10L	20	XC	1.42	17.0	20.0	10.3	6.9	5.2	4.1	2.8	2.1	0.47	0.32	0.24	0.19	8.8	5.9	4.4	3.5	2.3	1.8	0.40	0.27
	30	XC	1.74	20.0	22.0	10.8	7.2	5.4	4.3	2.9	2.2	0.49	0.33	0.25	0.20	9.8	6.5	4.9	3.9	2.6	2.0	0.45	0.30
	40	XC	2.00	22.0	25.0	11.3	7.5	5.6	4.5	3.0	2.3	0.52	0.34	0.26	0.21	9.9	6.6	5.0	4.0	2.6	2.0	0.45	0.30
	50	XC	2.24	25.0	27.0	11.1	7.4	5.5	4.4	3.0	2.2	0.51	0.34	0.25	0.20	10.3	6.8	5.1	4.1	2.7	2.1	0.47	0.31
	60	XC	2.44	26.0	29.0	11.6	7.7	5.8	4.6	3.1	2.3	0.53	0.35	0.27	0.21	10.4	6.9	5.2	4.2	2.8	2.1	0.48	0.32
(B)1/4XP20R (B)1/4XP20L	20	XC	2.84	18.0	22.0	19.5	13.0	9.8	7.8	5.2	3.9	0.89	0.60	0.45	0.36	16.0	10.7	8.0	6.4	4.3	3.2	0.73	0.49
	30	XC	3.50	23.0	24.0	18.8	12.6	9.4	7.5	5.0	3.8	0.86	0.57	0.43	0.34	18.0	12.0	9.0	7.2	4.8	3.6	0.83	0.55
	40	XC	4.00	27.0	28.0	18.3	12.2	9.2	7.3	4.9	3.7	0.84	0.56	0.42	0.34	17.7	11.8	8.8	7.1	4.7	3.5	0.81	0.54
	50	XC	4.50	29.0	30.0	19.2	12.8	9.6	7.7	5.1	3.8	0.88	0.59	0.44	0.35	18.6	12.4	9.3	7.4	5.0	3.7	0.85	0.57
	60	XC	5.00	30.0	32.0	21	13.8	10.3	8.3	5.5	4.1	0.94	0.63	0.47	0.38	19.3	12.9	9.7	7.7	5.2	3.9	0.89	0.59
(B)1/4XP25R (B)1/4XP25L	20	XC	3.48	21.0	22.0	21	13.7	10.3	8.2	5.5	4.1	0.94	0.63	0.47	0.38	19.6	13.1	9.8	7.8	5.2	3.9	0.90	0.60
	30	XC	4.26	24.0	27.0	22	14.6	11.0	8.8	5.9	4.4	1.0	0.67	0.50	0.40	19.5	13.0	9.8	7.8	5.2	3.9	0.89	0.60
	40	XC	5.00	27.0	29.0	23	15.3	11.5	9.2	6.1	4.6	1.0	0.70	0.52	0.42	21	14.2	10.7	8.5	5.7	4.3	0.98	0.65
	50	XC	5.50	29.0	30.0	23	15.6	11.7	9.4	6.3	4.7	1.1	0.72	0.54	0.43	23	15.1	11.3	9.1	6.1	4.5	1.0	0.69
	60	XC	6.00	30.0	32.0	25	16.5	12.4	9.9	6.6	5.0	1.1	0.76	0.57	0.45	23	15.5	11.6	9.3	6.2	4.6	1.1	0.71
(B)1/2XP40R (B)1/2XP40L	20	XC	5.74	22.0	24.0	32	22	16.1	12.9	8.6	6.5	1.5	0.99	0.74	0.59	30	19.7	14.8	11.8	7.9	5.9	1.4	0.90
	30	XC	7.06	26.0	29.0	34	22	16.8	13.4	9.0	6.7	1.5	1.0	0.77	0.62	30	20	15.1	12.1	8.0	6.0	1.4	0.92
	40	XC	8.00	28.0	31.0	35	24	17.7	14.1	9.4	7.1	1.6	1.1	0.81	0.65	32	21	16.0	12.8	8.5	6.4	1.5	0.97
	50	XC	9.10	30.0	32.0	38	25	18.8	15.0	10.0	7.5	1.7	1.1	0.86	0.69	35	23	17.6	14.1	9.4	7.0	1.6	1.1
	60	XC	10.0	32.0	35.0	39	26	19.3	15.5	10.3	7.7	1.8	1.2	0.89	0.71	35	24	17.7	14.1	9.4	7.1	1.6	1.1
(B)1/2XP80R (B)1/2XP80L	20	XC	11.2	26.0	31.0	53	36	27	21	14.2	10.7	2.4	1.6	1.2	0.98	45	30	22	17.9	11.9	8.9	2.0	1.4
	30	XC	13.7	30.0	33.0	57	38	28	23	15.1	11.3	2.6	1.7	1.3	1.0	51	34	26	21	13.7	10.3	2.4	1.6
	40	XC	16.0	32.0	35.0	62	41	31	25	16.5	12.4	2.8	1.9	1.4	1.1	57	38	28	23	15.1	11.3	2.6	1.7
	50	XC	17.5	33.0	36.0	66	44	33	26	17.5	13.1	3.0	2.0	1.5	1.2	60	40	30	24	16.0	12.0	2.8	1.8
	60	XC	19.2	35.0	37.0	68	45	34	27	18.1	13.6	3.1	2.1	1.6	1.2	64	43	32	26	17.1	12.8	2.9	2.0

Note: Always double check your application rates.
Tabulations are based on spraying water at 70°F (21°C).
See pages 173–187 for drop size classification, useful formulas and information.

WSDA
100 YEARS

TeeJet®

ISO 9001
Certified by BVQI



TeeJet Spray Products

Buyer's Guide 201

Spraying Systems Co.®

www.teejet.com

TeeJet® Drop Size

Nozzle selection is often based upon droplet size. The droplet size from a nozzle becomes very important when the efficacy of a particular crop chemical is dependent on coverage, or the prevention of spray leaving the target area is a priority.

The majority of the nozzles used in agriculture can be classified as producing either fine, medium or coarse droplets. Nozzles which produce fine droplets are usually recommended for post-emergence applications which require excellent coverage on leaf surfaces. The most common nozzles used in agriculture are those which produce medium-sized droplets. Nozzles producing medium-sized droplets can be used for contact and systemic herbicides, pre-emergence surface applied herbicides, insecticides and fungicides.

An important point to remember when choosing a spray nozzle which produces a droplet size in one of the six categories, is that one nozzle can produce different droplet size classifications at different pressures. A nozzle might produce medium droplets at low pressures, while producing fine droplets as pressure is increased.

Droplet size classes are shown in the following tables to assist in choosing an appropriate spray tip.

Driftable Droplets*

Nozzle Type (.50 GPM Flow)	Approximate Percent of Spray Volume Less Than 200 Microns	
	15 PSI	40 PSI
XR TeeJet® 110°	14%	22%
XR TeeJet 80°	6%	12%
DG TeeJet® 110°	N/A	11%
DG TeeJet 80°	N/A	7%
TT – Turbo TeeJet®	<1%	<6%
TF – Turbo FloodJet®	<1%	<1%
AI TeeJet® 110°	N/A	<1%

Data obtained by spraying water at room temperature under laboratory conditions.

VF	Very Fine
F	Fine
M	Medium
C	Coarse
VC	Very Coarse
XC	Extremely Coarse

Droplet size classifications are based on BCPC specifications and in accordance with ASAE Standard S-572 at the date of printing. Classifications are subject to change.

Turbo TeeJet® (TT)

	PSI										
	15	22	29	36	44	51	58	65	73	80	87
TT11001	C	M	M	M	M	F	F	F	F	F	F
TT110015	C	C	M	M	M	M	M	M	F	F	F
TT11002	VC	C	C	C	M	M	M	M	M	M	F
TT11003	VC	C	C	C	C	M	M	M	M	M	M
TT11004	XC	VC	C	C	C	C	C	C	M	M	M
TT11005	XC	XC	VC	C	C	C	C	C	C	C	C

AI TeeJet® (AI)

	PSI											
	29	36	44	51	58	65	73	80	87	94	102	116
AI110015	VC	VC	VC	VC	VC	C	C	C	C	M	M	M
AI11002	XC	VC	VC	VC	VC	VC	C	C	C	C	M	M
AI110025	XC	XC	VC	VC	VC	VC	VC	C	C	C	C	M
AI11003	XC	XC	XC	XC	VC	VC	VC	C	C	C	C	M
AI11004	XC	XC	XC	XC	VC	VC	VC	C	C	C	C	C
AI11005	XC	XC	XC	XC	XC	VC	VC	VC	C	C	C	C

XR TeeJet® (XR)

	PSI						
	15	22	29	36	44	51	58
XR8001	M	F	F	F	F	F	F
XR80015	M	M	M	F	F	F	F
XR8002	M	M	M	M	M	F	F
XR8003	M	M	M	M	M	M	M
XR8004	C	C	C	M	M	M	M
XR8005	C	C	C	C	C	M	M
XR8006	C	C	C	C	C	C	C
XR8008	VC	C	C	C	C	C	C
XR11001	F	F	F	VF	VF	VF	VF
XR110015	F	F	F	F	F	VF	VF
XR11002	M	F	F	F	F	F	F
XR11003	M	M	M	F	F	F	F
XR11004	M	M	M	M	F	F	F
XR11005	M	M	M	M	M	M	F
XR11006	C	M	M	M	M	M	M
XR11008	C	C	M	M	M	M	M

TeeJet® (TP)

	PSI				
	29	36	44	51	58
TP8001	F	F	F	F	F
TP80015	M	F	F	F	F
TP8002	M	M	M	F	F
TP8003	M	M	M	M	M
TP8004	C	M	M	M	M
TP8005	C	C	C	M	M
TP8006	C	C	C	C	C
TP8008	C	C	C	C	C
TP11001	F	VF	VF	VF	VF
TP110015	F	F	F	VF	VF
TP11002	F	F	F	F	F
TP11003	M	F	F	F	F
TP11004	M	M	F	F	F
TP11005	M	M	M	M	F
TP11006	M	M	M	M	M
TP11008	M	M	M	M	M

TwinJet® (TJ)

	PSI				
	29	36	44	51	58
TJ60-8001	F	VF	VF	VF	VF
TJ60-8002	F	F	F	F	F
TJ60-8003	F	F	F	F	F
TJ60-8004	M	M	M	M	F
TJ60-8006	M	M	M	M	M
TJ60-8008	C	C	M	M	M
TJ60-8010	C	C	C	M	M
TJ60-11002	F	VF	VF	VF	VF
TJ60-11003	F	F	F	F	F
TJ60-11004	M	F	F	F	F
TJ60-11006	M	M	M	F	F
TJ60-11008	M	M	M	M	M
TJ60-11010	M	M	M	M	M

Turbo FloodJet® (TF)

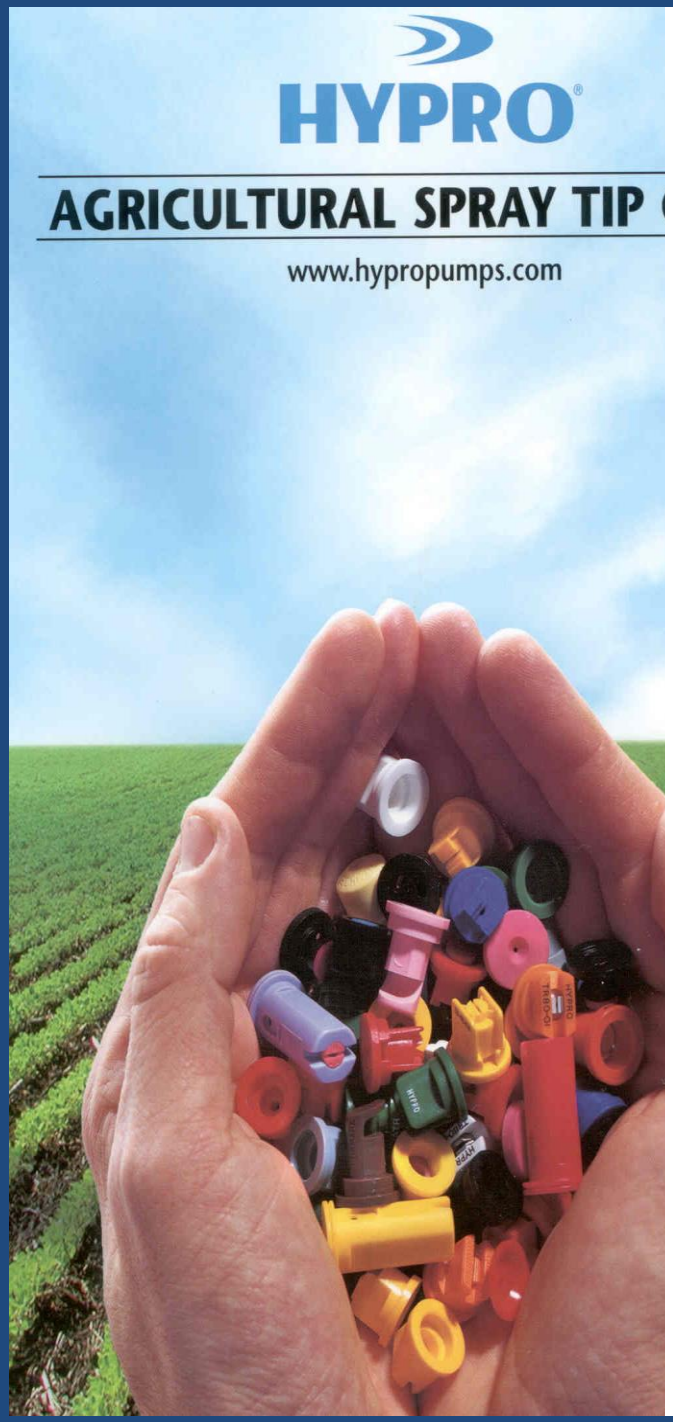
	PSI				
	29	36	44	51	58
TF-2	XC	XC	XC	XC	XC
TF-2.5	XC	XC	XC	XC	XC
TF-3	XC	XC	XC	XC	XC
TF-4	XC	XC	XC	XC	XC
TF-5	XC	XC	XC	XC	XC
TF-7.5	XC	XC	XC	XC	XC
TF-10	XC	XC	XC	XC	XC

DG TeeJet® (DG E)

	PSI				
	29	36	44	51	58
DG95015E	M	M	F	F	F
DG9502E	C	M	M	M	M
DG9503E	C	C	M	M	M
DG9504E	C	C	C	M	M
DG9505E	C	C	C	C	M

DG TeeJet® (DG)

	PSI				
	29	36	44	51	58
DG80015	M	M	M	F	F
DG8002	C	M	M	M	M
DG8003	C	C	M	M	M
DG8004	C	C	C	C	M
DG8005	C	C	C	C	C
DG110015	M	F	F	F	F
DG11002	M	M	M	M	M
DG11003	C	M	M	M	M
DG11004	C	C	M	M	M
DG11005	C	C	C	M	M



Recommended Application

Spray Tips Represented in Chart

Broadcast and Turf Applications Chart

Pressure range at which each tip is recommended

SPRAY TIPS		Droplet Size *
PSI Range	Tip and Strainer	
20-60	ADI-11001	M
30-60	30-01F80	F
30-60	30-01F110	F
15-60	TR80-01	VF
15-60	TR110-01	VF
	(100 M Strainer)	
30-100	AVI-110015	VC
15-115	ULD120-015	C
15-60	LD015F80	M
15-60	LD015F110	M
30-60	ADI-110015	M
15-60	TR80-015	F
15-60	TR110-015	F
15-70	VP80-015	F
15-70	VP110-015	F
20-60	AXI-80015	F
20-60	AXI-110015	F
30-60	30-015F80	F
30-60	30-015F110	F
30-60	API-80015	F
30-60	API-110015	F
	(100 M Strainer)	

		Gallons per acre 20 inch nozzle spacing											GAL/1000 Ft.² 20 inch nozzle spacing			
		MPH											MPH			
PSI	GPM	4	5	6	7	8	10	12	14	16	18	20	2	3	4	5
15	0.06	4.5	3.6	3.0	2.6	2.3	1.8	1.5	1.3	1.1	1.0	0.91	0.21	0.14	0.10	0.08
20	0.07	5.3	4.2	3.5	3.0	2.6	2.1	1.8	1.5	1.3	1.2	1.1	0.24	0.16	0.12	0.10
30	0.09	6.5	5.2	4.3	3.7	3.2	2.6	2.2	1.8	1.6	1.4	1.3	0.30	0.20	0.15	0.12
40	0.10	7.4	5.9	5.0	4.2	3.7	3.0	2.5	2.1	1.9	1.7	1.5	0.34	0.23	0.17	0.14
50	0.11	8.2	6.5	5.4	4.7	4.1	3.3	2.7	2.3	2.0	1.8	1.6	0.37	0.25	0.19	0.15
60	0.12	8.9	7.1	5.9	5.1	4.5	3.6	3.0	2.5	2.2	2.0	1.8	0.41	0.27	0.20	0.16
15	0.09	6.7	5.3	4.5	3.8	3.3	2.7	2.2	1.9	1.7	1.5	1.3	0.31	0.20	0.15	0.12
20	0.11	8.2	6.5	5.4	4.7	4.1	3.3	2.7	2.3	2.0	1.8	1.6	0.37	0.25	0.19	0.15
30	0.13	9.7	7.7	6.4	5.5	4.8	3.9	3.2	2.8	2.4	2.1	1.9	0.44	0.29	0.22	0.18
40	0.15	11.1	8.9	7.4	6.4	5.6	4.5	3.7	3.2	2.8	2.5	2.2	0.51	0.34	0.26	0.20
50	0.17	12.6	10.1	8.4	7.2	6.3	5.0	4.2	3.6	3.2	2.8	2.5	0.58	0.39	0.29	0.23
60	0.18	13.4	10.7	8.9	7.6	6.7	5.3	4.5	3.8	3.3	3.0	2.7	0.61	0.41	0.31	0.24
70	0.20	14.9	11.9	9.9	8.5	7.4	5.9	5.0	4.2	3.7	3.3	3.0	0.68	0.45	0.34	0.27
80	0.21	15.6	12.5	10.4	8.9	7.8	6.2	5.2	4.5	3.9	3.5	3.1	0.71	0.48	0.36	0.29
90	0.23	17.1	13.7	11.4	9.8	8.5	6.8	5.7	4.9	4.3	3.8	3.4	0.78	0.52	0.39	0.31
100	0.24	17.8	14.3	11.9	10.2	8.9	7.1	5.9	5.1	4.5	4.0	3.6	0.82	0.54	0.41	0.33
115	0.25	18.9	15.1	12.6	10.8	9.4	7.5	6.3	5.4	4.7	4.2	3.8	0.86	0.58	0.43	0.35

Tip Filter Mesh Recommendation

Gallons per minute at 40 psi:
015 - 0.15 gallons per minute at 40 psi

ASAE S-572 Droplet Classification at 40 psi

Gallons per acre
Information applies to all tips listed on the left

Gallons per 1000 ft²

Spray tip part number tells you the type of spray tip (organized by droplet size):

ULD - Ultra Lo-Drift
AVI - Air Injected Anti-Drift
TR - Total Range
VP - Variable Pressure
AXI - Wide Range
LD - Lo Drift
ADI - Anti Drift
F - Fan
API - Flat Fan

Spray angle:
120 - 120° spray pattern
110 - 110° spray pattern
80 - 80° spray pattern

Greenleaf AirMix® Nozzle Tabulations

The AirMix® Nozzle is a compact, two piece air injection nozzle that fits in a standard cap, and can be cleaned without tools. The AirMix® utilizes a unique air cleaning system to prevent nozzle plugging. Please target 40 psi when selecting nozzle size, to allow for changes in speed. Higher pressures are recommended for penetrating dense canopies and for coverage critical contact chemicals.

Pressure Range: 15-90 psi - **Suggested spray height:** 16" - 36" (on 20" centers)

NOZZLE PART # (Strainer Size)	LIQUID PRESSURE PSI	DROPLET SIZE ASAE	NOZZLE CAPACITY GPM	GALLONS PER ACRE BASED ON 20" NOZZLE SPACING									
				4 MPH	5 MPH	6 MPH	8 MPH	10 MPH	12 MPH	14 MPH	16 MPH	18 MPH	20 MPH
AM11001 (use 50 mesh)	15	C	0.06	4.5	3.6	3.0	2.3	1.8	1.5	1.3	1.1	1.0	0.9
	20	C	0.07	5.2	4.2	3.5	2.6	2.1	1.7	1.5	1.3	1.2	1.0
	30	M	0.09	6.4	5.1	4.3	3.2	2.6	2.1	1.8	1.6	1.4	1.3
	40	M	0.10	7.4	5.9	4.9	3.7	3.0	2.5	2.1	1.9	1.6	1.5
	50	F	0.11	8.3	6.6	5.5	4.1	3.3	2.8	2.4	2.1	1.8	1.7
	60	F	0.12	9.1	7.3	6.1	4.5	3.6	3.0	2.6	2.3	2.0	1.8
	70	F	0.13	9.8	7.9	6.5	4.9	3.9	3.3	2.8	2.5	2.2	2.0
	80	F	0.14	10.5	8.4	7.0	5.2	4.2	3.5	3.0	2.6	2.3	2.1
	90	F	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.2	2.8	2.5	2.2
AM110015 (use 50 mesh)	15	C	0.09	6.8	5.5	4.5	3.4	2.7	2.3	1.9	1.7	1.5	1.4
	20	C	0.11	7.9	6.3	5.2	3.9	3.1	2.6	2.2	2.0	1.7	1.6
	30	M	0.13	9.6	7.7	6.4	4.8	3.9	3.2	2.8	2.4	2.1	1.9
	40	M	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.2	2.8	2.5	2.2
	50	F	0.17	12.4	10.0	8.3	6.2	5.0	4.1	3.6	3.1	2.8	2.5
	60	F	0.18	13.6	10.9	9.1	6.8	5.5	4.5	3.9	3.4	3.0	2.7
	70	F	0.20	14.7	11.8	9.8	7.4	5.9	4.9	4.2	3.7	3.3	2.9
	80	F	0.21	15.7	12.6	10.5	7.9	6.3	5.2	4.5	3.9	3.5	3.1
	90	F	0.22	16.7	13.4	11.1	8.3	6.7	5.6	4.8	4.2	3.7	3.3
AM11002 (use 50 mesh)	15	C	0.12	9.1	7.3	6.1	4.5	3.6	3.0	2.6	2.3	2.0	1.8
	20	C	0.14	10.5	8.4	7.0	5.2	4.2	3.5	3.0	2.6	2.3	2.1
	30	C	0.17	12.9	10.3	8.6	6.4	5.1	4.3	3.7	3.2	2.9	2.6
	40	M	0.20	14.8	11.9	9.9	7.4	5.9	4.9	4.2	3.7	3.3	3.0
	50	M	0.22	16.6	13.3	11.1	8.3	6.6	5.5	4.7	4.1	3.7	3.3
	60	F	0.24	18.2	14.5	12.1	9.1	7.3	6.1	5.2	4.5	4.0	3.6
	70	F	0.26	19.6	15.7	13.1	9.8	7.9	6.5	5.6	4.9	4.4	3.9
	80	F	0.28	21.0	16.8	14.0	10.5	8.4	7.0	6.0	5.2	4.7	4.2
	90	F	0.30	22.3	17.8	14.8	11.1	8.9	7.4	6.4	5.6	4.9	4.5
AM110025 (use 50 mesh)	15	VC	0.15	11.4	9.1	7.6	5.7	4.5	3.8	3.2	2.8	2.5	2.3
	20	C	0.18	13.1	10.5	8.7	6.6	5.2	4.4	3.7	3.3	2.9	2.6
	30	C	0.22	16.1	12.9	10.7	8.0	6.4	5.4	4.6	4.0	3.6	3.2
	40	C	0.25	18.5	14.8	12.4	9.3	7.4	6.2	5.3	4.6	4.1	3.7
	50	M	0.28	20.7	16.6	13.8	10.4	8.3	6.9	5.9	5.2	4.6	4.1
	60	M	0.31	22.7	18.2	15.1	11.4	9.1	7.6	6.5	5.7	5.0	4.5
	70	M	0.33	24.5	19.6	16.4	12.3	9.8	8.2	7.0	6.1	5.5	4.9
	80	M	0.35	26.2	21.0	17.5	13.1	10.5	8.7	7.5	6.6	5.8	5.2
	90	F	0.37	27.8	22.3	18.5	13.9	11.1	9.3	7.9	7.0	6.2	5.6
AM11003 (use 50 mesh)	15	XC	0.18	13.6	10.9	9.1	6.8	5.5	4.5	3.9	3.4	3.0	2.7
	20	VC	0.21	15.7	12.6	10.5	7.9	6.3	5.2	4.5	3.9	3.5	3.1
	30	VC	0.26	19.3	15.4	12.9	9.6	7.7	6.4	5.5	4.8	4.3	3.9
	40	C	0.30	22.3	17.8	14.8	11.1	8.9	7.4	6.4	5.6	4.9	4.5
	50	C	0.34	24.9	19.9	16.6	12.4	10.0	8.3	7.1	6.2	5.5	5.0
	60	M	0.37	27.3	21.8	18.2	13.6	10.9	9.1	7.8	6.8	6.1	5.5
	70	M	0.40	29.4	23.6	19.6	14.7	11.8	9.8	8.4	7.4	6.5	5.9
	80	M	0.42	31.5	25.2	21.0	15.7	12.6	10.5	9.0	7.9	7.0	6.3
	90	M	0.45	33.4	26.7	22.3	16.7	13.4	11.1	9.5	8.3	7.4	6.7
AM11004 (use 24 mesh)	15	XC	0.24	18.2	14.5	12.1	9.1	7.3	6.1	5.2	4.5	4.0	3.6
	20	VC	0.28	21.0	16.8	14.0	10.5	8.4	7.0	6.0	5.2	4.7	4.2
	30	VC	0.35	25.7	20.6	17.1	12.9	10.3	8.6	7.3	6.4	5.7	5.1
	40	C	0.40	29.7	23.7	19.8	14.8	11.9	9.9	8.5	7.4	6.6	5.9
	50	C	0.45	33.2	26.5	22.1	16.6	13.3	11.1	9.5	8.3	7.4	6.6
	60	M	0.49	36.3	29.1	24.2	18.2	14.5	12.1	10.4	9.1	8.1	7.3
	70	M	0.53	39.3	31.4	26.2	19.6	15.7	13.1	11.2	9.8	8.7	7.9
	80	M	0.57	42.0	33.6	28.0	21.0	16.8	14.0	12.0	10.5	9.3	8.4
	90	M	0.60	44.5	35.6	29.7	22.3	17.8	14.8	12.7	11.1	9.9	8.9
AM11005 (use 24 mesh)	15	XC	0.31	22.7	18.2	15.2	11.4	9.1	7.6	6.5	5.7	5.1	4.5
	20	XC	0.35	26.3	21.0	17.5	13.1	10.5	8.8	7.5	6.6	5.8	5.3
	30	VC	0.43	32.2	25.7	21.4	16.1	12.9	10.7	9.2	8.0	7.1	6.4
	40	C	0.50	37.1	29.7	24.8	18.6	14.9	12.4	10.6	9.3	8.3	7.4
	50	C	0.56	41.5	33.2	27.7	20.8	16.6	13.8	11.9	10.4	9.2	8.3
	60	M	0.61	45.5	36.4	30.3	22.7	18.2	15.2	13.0	11.4	10.1	9.1
	70	M	0.66	49.1	39.3	32.8	24.6	19.7	16.4	14.0	12.3	10.9	9.8
	80	M	0.71	52.5	42.0	35.0	26.3	21.0	17.5	15.0	13.1	11.7	10.5
	90	M	0.75	55.7	44.6	37.1	27.9	22.3	18.6	15.9	13.9	12.4	11.1
AM11006 (use 24 mesh)	15	XC	0.37	27.3	21.8	18.2	13.6	10.9	9.1	7.8	6.8	6.1	5.5
	20	XC	0.42	31.5	25.2	21.0	15.8	12.6	10.5	9.0	7.9	7.0	6.3
	30	VC	0.52	38.6	30.9	25.7	19.3	15.4	12.9	11.0	9.6	8.6	7.7
	40	C	0.60	44.6	35.7	29.7	22.3	17.8	14.9	12.7	11.1	9.9	8.9
	50	C	0.67	49.8	39.9	33.2	24.9	19.9	16.6	14.2	12.5	11.1	10.0
	60	C	0.74	54.6	43.7	36.4	27.3	21.8	18.2	15.6	13.6	12.1	10.9
	70	M	0.79	59.0	47.2	39.3	29.5	23.6	19.7	16.8	14.7	13.1	11.8
	80	M	0.85	63.0	50.4	42.0	31.5	25.2	21.0	18.0	15.8	14.0	12.6
	90	M	0.90	66.8	53.5	44.6	33.4	26.7	22.3	19.1	16.7	14.9	13.4

** Table based on spraying water at 70°F. Flow rates may vary +/- 5%.*

*For alternate nozzle spacings, use the following formula: $\frac{\text{20" spacing}}{\text{New nozzle spacing}}$ X Given GPA rate for 20" spacing = New GPA rate

- It is important for you know the manufacturer and size of the nozzle on your equipment
- Know what pressure rating the nozzle is rated for
- Information is specific to product labels
- The label will specify what category or size is required
- THE LABEL IS THE LAW

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bar
P.S.I.
WIKA
08/10/2012 11:27

08/10/2012 11:27

Backpack sprayers

- Requirements for droplet size and pressure in effect for all sprayers.
- Remember requirements are Label specific
- Need to maintain pressure
- May need to install pressure gauge or purchase a sprayer with a gauge
- You can try to contact the manufacture of the sprayer to obtain any information on the nozzles. Probably will not have any

Jacto Ecovalve

Jacto reserves the right to change its products without prior notice. Reading this leaflet does not exempt the operator from carefully reading the operator's manual. 09/2010

Jacto Ecovalve

The lightest valve in the market
Weighs less than 0.74 ounces

WHAT IS ECOVALVE?

This is new highly sensitive valve that maintains a constant pressure during spraying, ensuring precise, uniform application of the chemical without excess.

REQUIRES 30 % LESS EFFORT

The operator can maintain a constant output Pressure from the valve, resulting in fewers pumps and less effort.

QUALITY SPRAYING

The combined pressure of each spring and its corresponding nozzle provides greater efficiency and reduced drift during application.

Spring \ Nozzle	01	015	02	03	04	05	06	08
15 psi	0.25	0.36	0.37	0.75	0.95	1.2	1.54	1.92
22 psi	0.31	0.45	0.58	0.9	1.2	1.48	1.78	2.3
30 psi	0.37	0.51	0.68	1.05	1.4	1.75	2.01	2.69

USES UP TO 20% LESS CHEMICAL DURING EACH APPLICATION

ECOVALVE assures that the ideal working pressure is maintained during each application, controlling flow rate and droplet-size and minimizing drift. If the pressure drops below the pressure indicated, the spray is automatically shut off preventing chemical leakage.

CAN BE COMPLETELY DISASSEMBLED

To facilitate cleaning and maintenance.

Protect the environment

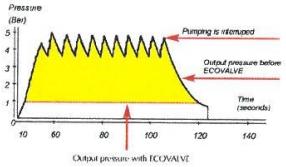
The ECOVALVE kit comprises 3 types of sping designed to work at different pressures (see chart below).

Constant Pressure
1 bar / 15 psi
(Supplied)

Constant Pressure
1.5 bar / 21 psi
(Supplied)

Constant Pressure
2 bar / 30 psi
(Supplied)

The graph below demostrates the ECOVALVE performance. Regardless of the input pressure the output pressure will always remain constant.



Adapter for Solo around sprayers

P/N 685255

Jacto Incorporate, 9650 SW Herman Rd
Tualatin OR 97062, 1-800-522-8610
www.jacto.com

Jacto Ecovalve

- Maintains a constant pressure
- If pressure falls below it shuts off
- Pressure will not go above the setting no matter what the pressure is in the tank
- Three springs set the pressure
  - Green 15 psi
  - Yellow 21 psi
  - Blue 30 psi
- Fits on the end before the nozzle
- Is compatible with other sprayers

Calibration

- Every time you get the sprayer you should personally calibrate it
- Every time nozzles are replaced it should be calibrated
- Calibration will save money on product not wasted

Backpack/ Single Wand Type Sprayer

- Flag an area 18.5 ft X 18.5 ft (This is roughly 1/128th acre)
- Time the number of seconds it takes to spray the plot
  - Do this 3 times and get the average
- Spray into a marked/measuring container for the average time in step above. Maintain constant pressure
- Measure the amount in bucket
  - Number of oz in bucket = Gallons/ acre (GPA)

Amount of Product/ Tank

- Label says 2pt/acre
- 32oz=2pts
- 20 GPA/determined from calibration
- Tank holds 4 gallons
- 4 gal/20 GPA= .2 acres/ load
- 32 oz X .2 = 6.4 oz/ tank

Bottom Line how to Comply

- Read the label
- Ensure that the droplets leaving the nozzle are within the range required from the label
  - Know pressure
  - Type, manufacturer of nozzle
- Have documentation from nozzle manufacturer
- Large droplets reduce drift!!

How to Comply cont'd

- Re-read the label
- Do a site assessement
- Look at weather report
- Is the product you are using a good choice

Other than Nozzles what else can reduce drift

- What is the weather
  - Look to see if any inversions, stagnent air
  - Temperature for the day
- Will a different product do the same thing without moving (volitizing)
- Look at site
  - Any “problem” neighbors” or corps
- a

Resources to help you

- Google Maps, Google Earth
- Ag Weather net, Weather.gov
- CDMS, PICOL,- Find labels, and others
- Nozzle web sites

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Low reservoirs, persistent drought for much of the West, according to WGA and NOAA

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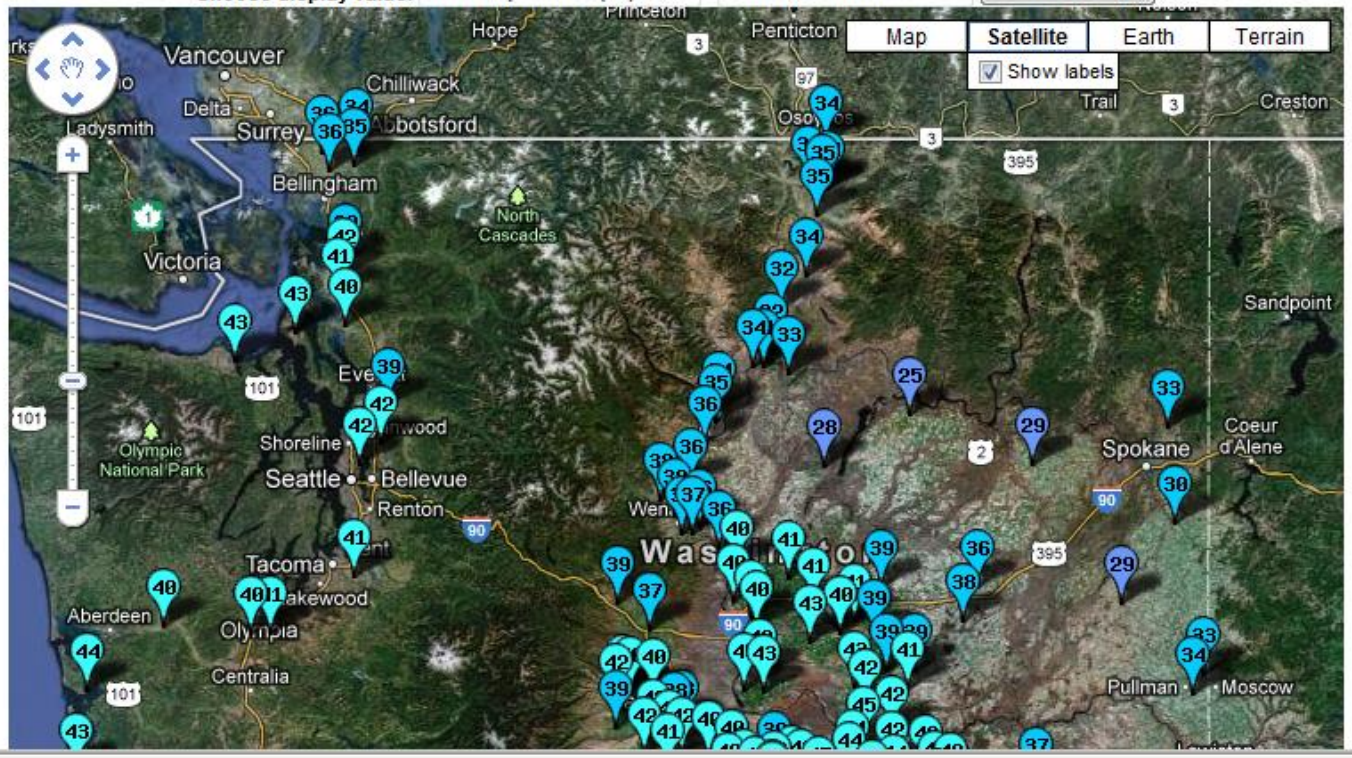

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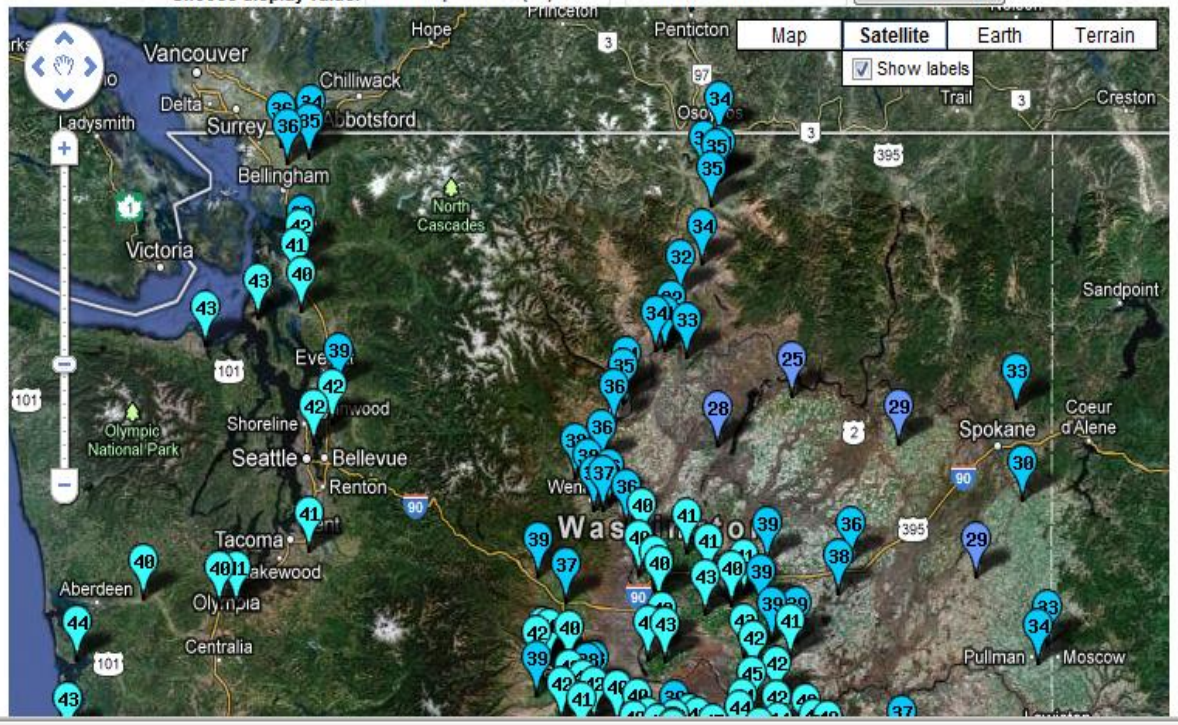

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Acadian Seaplants Limited
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AgraQuest, Inc.
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Agrimar Corporation
Agro Logistic Systems, Inc.
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Miller Chemical & Fertilizer Corp.
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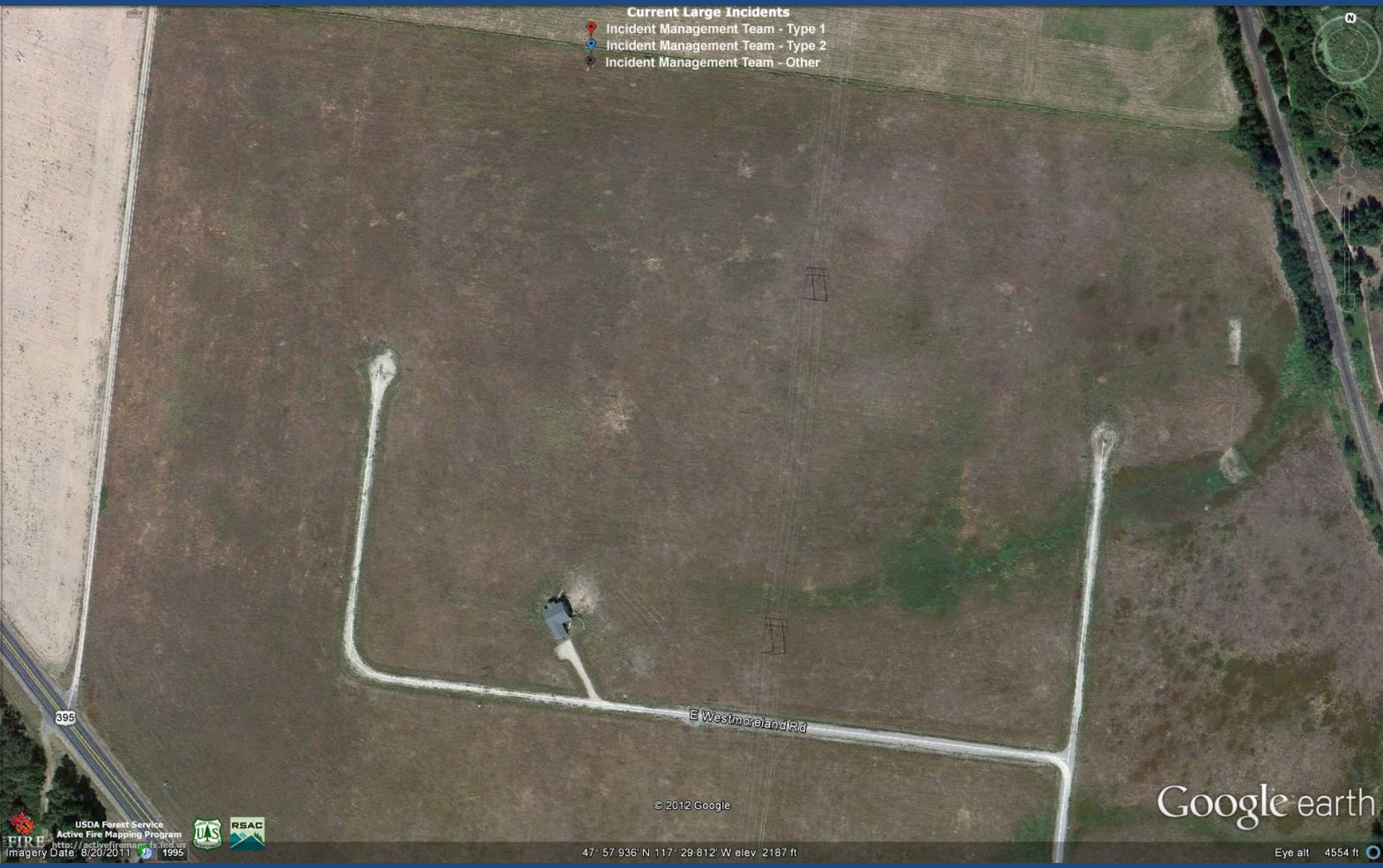
Monterey AgResources


Current Large Incidents
Incident Management Team - Type 1
Incident Management Team - Type 2
Incident Management Team - Other
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395
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USDA Forest Service
Active Fire Mapping Program
http://activefiremaps.fs.fed.us
Imagery Date: 8/20/2011
1995
RSAC
47° 57.936' N 117° 29.812' W elev 2187 ft
Eye alt 4554 ft

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E Westmoreland Rd
W Fawn Ct
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N Park Rd
N North Ave
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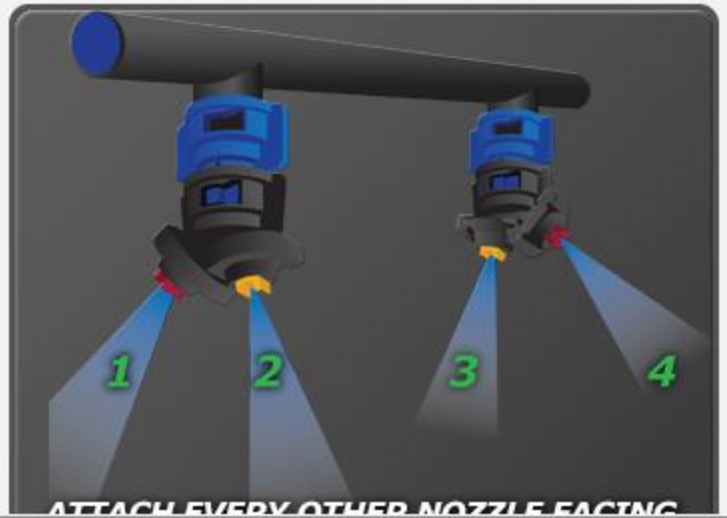
Spray 4 Times In Only 1



ATTACH EVERY OTHER NOZZLE FACING

CREATES A CANOPY

Table 2. Amount liquid herbicide to add to 1 gallon of water. Abbreviations: tsp=teaspoon, fl oz=fluid ounces.

Volume (GPA)	Recommended Herbicide Rate per Acre				
	1 pint	1 quart	2 quarts	3 quarts	4 quarts
20	5 tsp	10 tsp	3.25 fl oz	4.75 fl oz	6.33 fl oz
30	3 tsp	6 tsp	2 fl oz	3.25 fl oz	4.25 fl oz
40	2.33 tsp	4.75 tsp	1.66 fl oz	2.33 fl oz	3.25 fl oz
50	2 tsp	3.75 tsp	1.25 fl oz	2 fl oz	2.5 fl oz
60	1.66 tsp	3.25 tsp	6.33 tsp	1.66 fl oz	2 fl oz
70	1.33 tsp	2.75 tsp	5.5 tsp	1.33 fl oz	1.75 fl oz
80	1.25 tsp	2.33 tsp	4.75 tsp	7.25 tsp	9.5 tsp
90	1 tsp	2 tsp	2.25 tsp	6.33 tsp	8.5 tsp
100	1 tsp	2 tsp	3.75 tsp	5.75 tsp	7.66 tsp

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100 YEARS

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