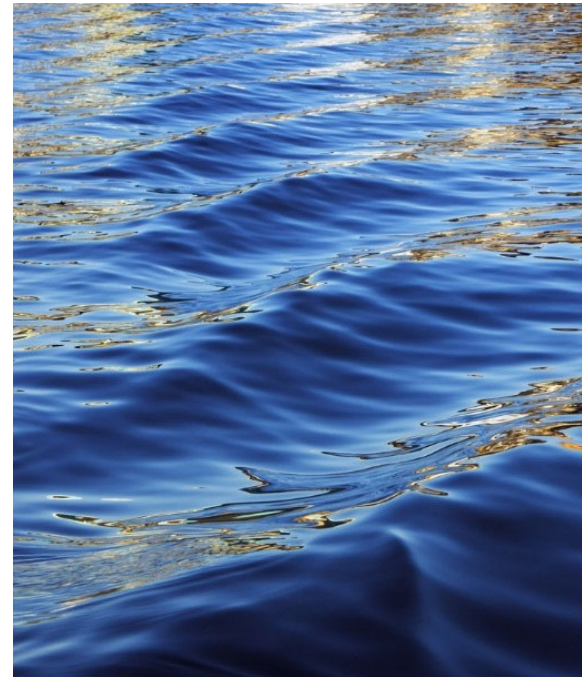


2022 IR-4 Training Webinars

February

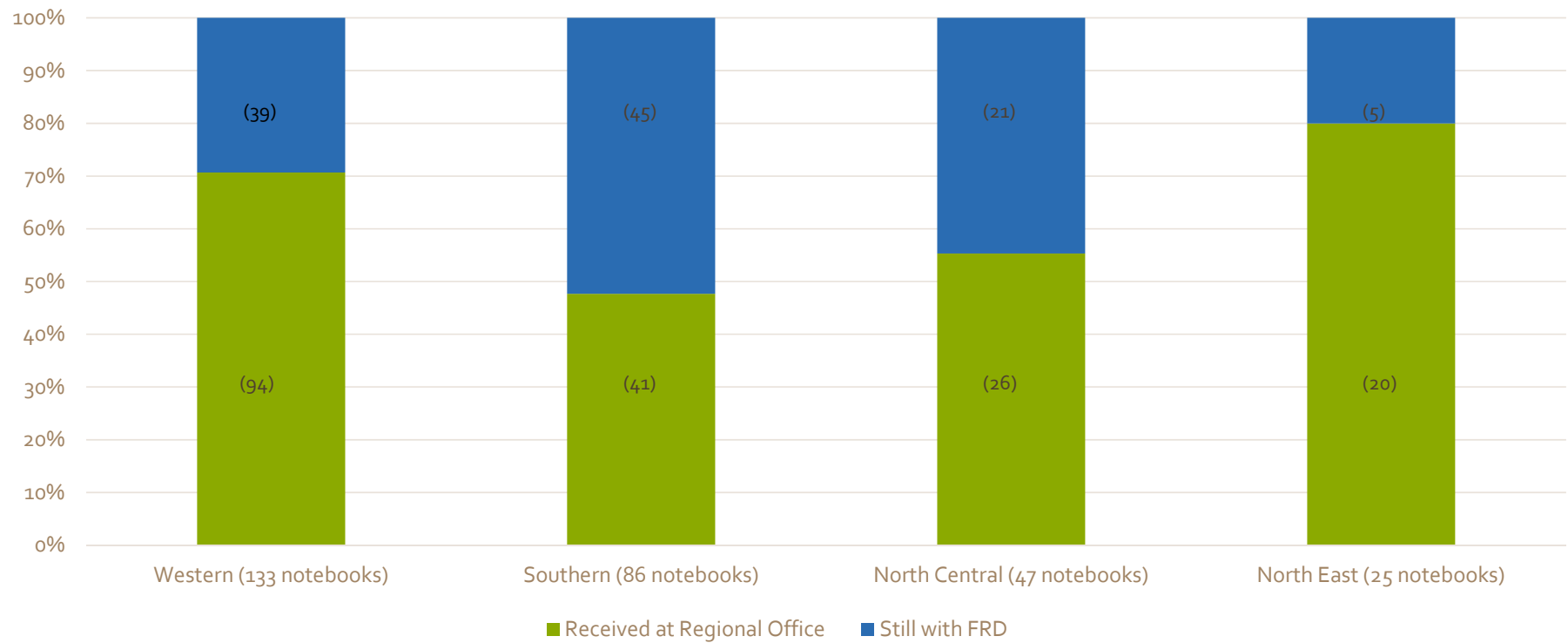


IR-4 Training Webinar: February

- Notebook status (all regions)
- Selecting nozzles for application
- How to choose an adjuvant
- Equipment: GLP compliant or not?
- Changes in 2022 protocols/notebooks
- Test Substance Storage Temperatures
- Safety: Working Alone
Slips, Trips & Falls



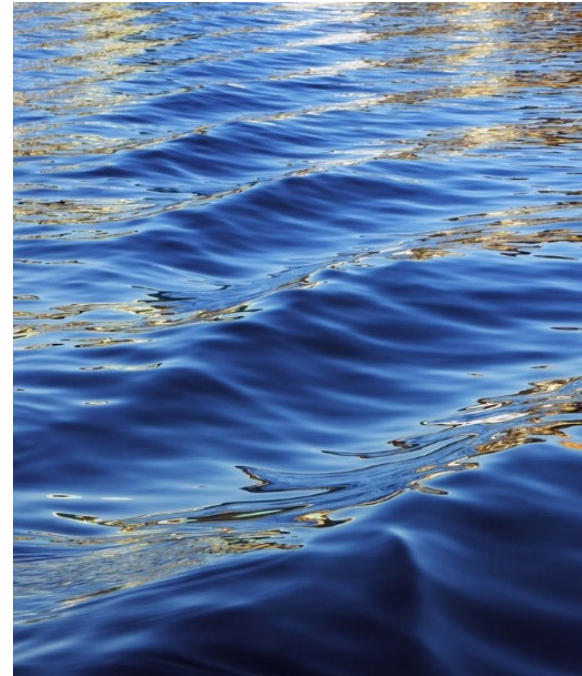
Notebooks received at regional offices as of Jan / Feb 2022



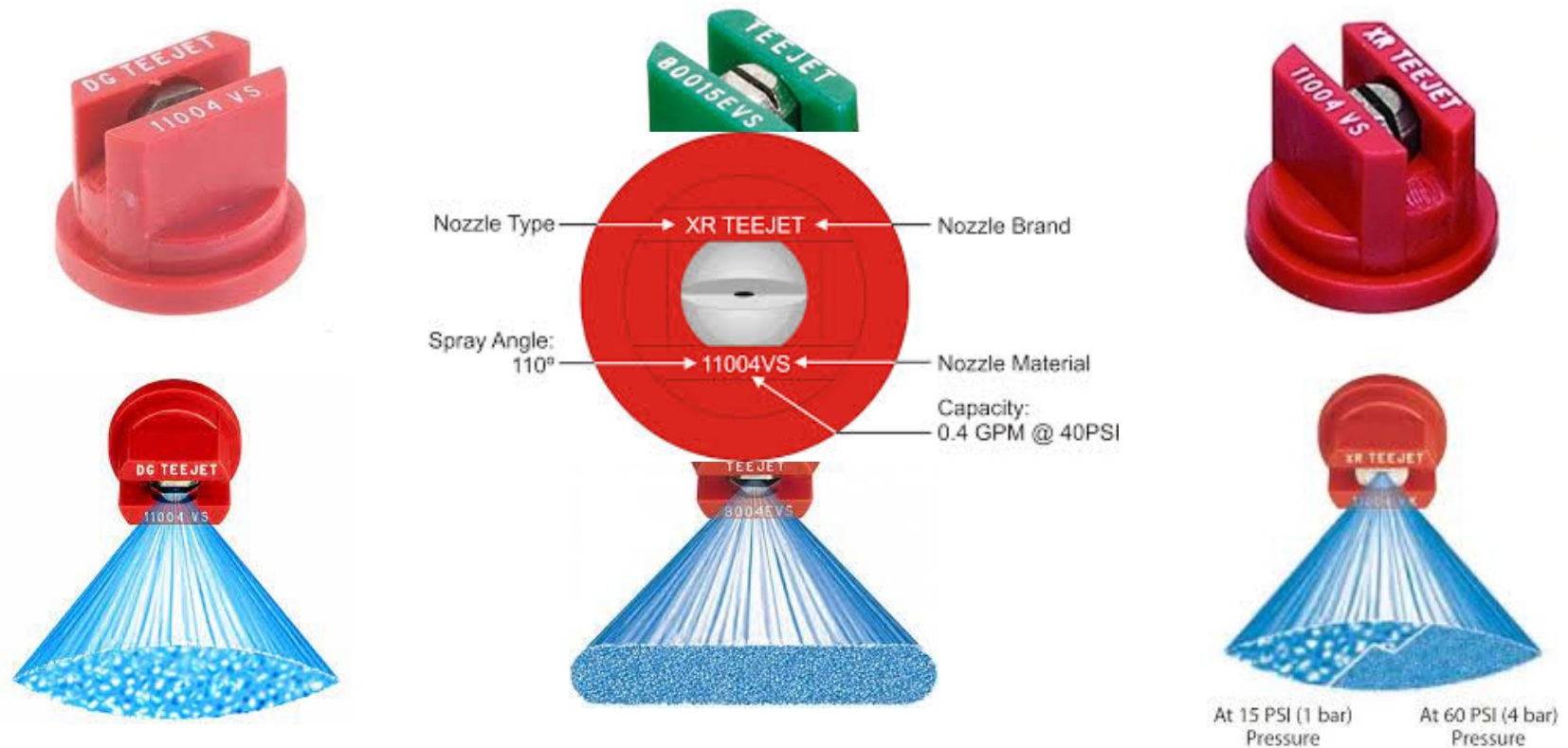


Selecting nozzles for applications (flat fan)

Cristina Marconi



















Spray Nozzles – What can you learn just by looking at it?



Matching nozzle to application type

TeeJet® Broadcast Nozzle Selection Guide

		HERBICIDES		FUNGICIDES		INSECTICIDES		DRIFT MANAGEMENT	PWM NOZZLE CONTROL	
		POST-EMERGENCE								
		SOIL APPLIED	CONTACT	SYSTEMIC	CONTACT	SYSTEMIC	CONTACT	SYSTEMIC		
	Turbo TeeJet® Reference page 7		VERY GOOD	VERY GOOD	VERY GOOD	VERY GOOD	VERY GOOD	VERY GOOD	EXCELLENT	
	Turbo TeeJet® at pressures below 30 PSI (2.0 bar) Reference page 7	GOOD	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	
	Turbo TwinJet® Reference page 16	GOOD	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	
	Turbo TwinJet® at pressures below 30 PSI (2.0 bar) Reference page 16	VERY GOOD	VERY GOOD	EXCELLENT	VERY GOOD	EXCELLENT	VERY GOOD	EXCELLENT	EXCELLENT	
	Turbo TeeJet Induction® Reference page 11	EXCELLENT		EXCELLENT		EXCELLENT		EXCELLENT	EXCELLENT	
	Air Induction TeeJet® Reference page 17	VERY GOOD	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	
	AI3070® Reference page 18		VERY GOOD	VERY GOOD	EXCELLENT	VERY GOOD	EXCELLENT	VERY GOOD	EXCELLENT	
	XR, XRC TeeJet® Reference pages 12-13		EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	
	XR, XRC TeeJet® at pressures below 30 PSI (2.0 bar) Reference pages 12-13	GOOD	GOOD	VERY GOOD	GOOD	VERY GOOD	GOOD	VERY GOOD	EXCELLENT	
	AIXR TeeJet® Reference page 8	VERY GOOD	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	
	AI, AIC TeeJet® Reference pages 9-10	VERY GOOD	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	
	TwinJet® Reference page 21		EXCELLENT		EXCELLENT		EXCELLENT		GOOD	
	DG TwinJet® Reference page 22	VERY GOOD	VERY GOOD	EXCELLENT	VERY GOOD	EXCELLENT	VERY GOOD	EXCELLENT	GOOD	
	Turbo FloodJet® Reference page 23	EXCELLENT		VERY GOOD		VERY GOOD		VERY GOOD	EXCELLENT	
	TurfJet® Reference page 26	EXCELLENT		EXCELLENT		EXCELLENT		EXCELLENT	EXCELLENT	
	CCTF Turbo FloodJet® Reference page 29	EXCELLENT							EXCELLENT	












Note: Consult the chemical manufacturer's product label for specific rate and application recommendations.

4

SELECTION GUIDE

SELECTION GUIDE

TeeJet® Specialty Application Nozzle Selection Guide

		HERBICIDES		FUNGICIDES		INSECTICIDES	
		POST-EMERGENCE					
		PRE-EMERGENCE	CONTACT	SYSTEMIC	CONTACT	SYSTEMIC	SYSTEMIC
BANDING		AI TeeJet® Reference page 33	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT
		TeeJet® Reference page 25	GOOD	VERY GOOD	GOOD	VERY GOOD	GOOD
		TwinJet® Reference page 26		EXCELLENT		EXCELLENT	
DIRECTED SPRAYING		AI TeeJet® Reference page 33	VERY GOOD	GOOD	EXCELLENT	GOOD	EXCELLENT
		TeeJet® Reference page 25	GOOD	GOOD	GOOD	GOOD	GOOD
		TwinJet® Reference page 26		VERY GOOD		VERY GOOD	
		AIUB TeeJet® Reference page 37		GOOD	EXCELLENT	GOOD	EXCELLENT
		AITX ConeJet® Reference page 43		GOOD	EXCELLENT	GOOD	EXCELLENT
		ConeJet® Reference pages 22 & 79		EXCELLENT		EXCELLENT	
AIR BLAST		ConeJet® Reference pages 40-43	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT
		Disc-Cone® Reference page 46	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT

Note: Consult the chemical manufacturer's product label for specific rate and application recommendations.

SELECTION GUIDE

Matching nozzle to application type

AIXR TeeJet® (AIXR)

	15	20	25	30	35	40	50	60	70	75	90
AIXR110015	XC	XC	VC	C	C	C	C	M	M	M	M
AIXR11002	XC	XC	VC	VC	C	C	C	C	C	M	M
AIXR110025	XC	XC	XC	VC	VC	C	C	C	C	C	C
AIXR11003	XC	XC	XC	VC	VC	C	C	C	C	C	C
AIXR11004	UC	XC	XC	XC	XC	VC	VC	C	C	C	C
AIXR11005	UC	XC	XC	XC	XC	VC	VC	C	C	C	C
AIXR11006	UC	XC	XC	XC	XC	VC	VC	C	C	C	C

DG TwinJet® (DGTJ60)

	30	35	40	50	60
DGTJ60-110015	F	F	F	F	F
DGTJ60-11002	M	M	M	F	F
DGTJ60-11003	M	M	M	F	F
DGTJ60-11004	C	C	C	C	C
DGTJ60-11006	C	C	C	C	C
DGTJ60-11008	C	C	C	C	C

DG TeeJet® (DG)

	30	35	40	50	60
DG80015	M	M	M	M	F
DG8002	M	M	M	M	M
DG8003	C	M	M	M	M
DG8004	C	C	C	M	M
DG8005	C	C	C	M	M
DG110015	M	M	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

TeeJet® (TP)

	30	35	40	50	60
TP8001	F	F	F	F	F
TP80015	F	F	F	F	F
TP8002	F	F	F	F	F
TP8003	F	F	F	F	F
TP8004	M	M	M	F	F
TP8005	M	M	M	M	F
TP8006	M	M	M	M	M
TP8008	C	C	M	M	M
TP11001	F	F	F	F	VF
TP110015	F	F	F	F	F
TP11002	F	F	F	F	F
TP11003	F	F	F	F	F
TP11004	M	M	M	F	F
TP11005	M	M	M	F	F
TP11006	M	M	M	M	F
TP11008	C	M	M	M	M

AITX ConeJet® (AITXA & AITXB)

	60	80	100	120	140	160	180	200
AITXA8001	XC	VC	VC	C	C	C	C	C
AITXB8001	XC	VC	VC	C	C	C	C	C
AITXA80015	XC	XC	VC	C	C	C	C	C
AITXB80015	XC	XC	VC	C	C	C	C	C
AITXA8002	XC	XC	XC	VC	VC	VC	VC	C
AITXB8002	XC	XC	XC	VC	VC	VC	VC	C
AITXA80025	UC	XC	XC	XC	XC	VC	VC	VC
AITXB80025	UC	XC	XC	XC	XC	VC	VC	VC
AITXA8003	UC	XC	XC	XC	XC	VC	VC	VC
AITXB8003	UC	XC	XC	XC	XC	VC	VC	VC
AITXA8004	UC	UC	XC	XC	XC	XC	VC	VC
AITXB8004	UC	UC	XC	XC	XC	XC	VC	VC

DG TeeJet® (DG E)

	30	35	40	50	60
DG95015E	M	M	M	F	F
DG9502E	M	M	M	M	M
DG9503E	C	M	M	M	M
DG9504E	C	C	C	M	M
DG9505E	C	C	C	C	M

Turbo FloodJet® (TF)

	10	20	30	40	50
TF-2	UC	XC	XC	VC	VC
TF-2.5	UC	UC	XC	XC	VC
TF-3	UC	XC	XC	XC	VC
TF-4	UC	UC	XC	XC	XC
TF-5	UC	UC	UC	XC	XC
TF-7.5	UC	UC	UC	XC	XC
TF-10	UC	UC	UC	XC	XC

Turbo TeeJet® (TT)

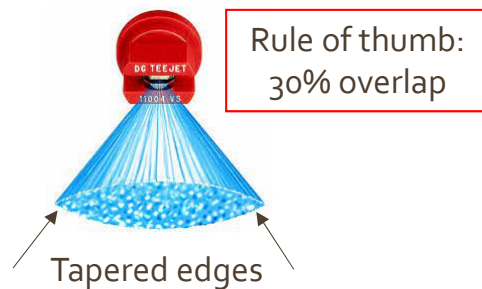
	15	20	25	30	35	40	50	60	70	80	90
TT11001	C	C	M	M	M	M	F	F	F	F	F
TT110015	VC	C	C	M	M	M	F	F	F	F	F
TT11002	VC	VC	C	C	M	M	M	F	F	F	F
TT110025	VC	VC	C	C	M	M	M	F	F	F	F
TT11003	VC	VC	C	C	C	M	M	M	M	M	F
TT11004	XC	VC	VC	VC	C	C	M	M	M	M	M
TT11005	XC	VC	VC	VC	VC	C	C	M	M	M	M
TT11006	XC	VC	VC	VC	VC	C	C	C	M	M	M
TT11008	XC	VC	VC	VC	VC	C	C	C	C	M	M

XR TeeJet® (XR)

	15	20	25	30	40	50	60
XR8001	F	F	F	F	F	F	F
XR80015	M	F	F	F	F	F	F
XR8002	M	M	F	F	F	F	F
XR80025	M	M	F	F	F	F	F
XR8003	M	M	M	F	F	F	F
XR80035	M	M	M	M	M	F	F
XR8004	C	M	M	M	M	F	F
XR8005	C	C	M	M	M	M	F
XR8006	C	C	C	M	M	M	M
XR8008	VC	VC	C	C	M	M	M
XR8010	XC	VC	VC	C	C	C	C
XR8015	XC	XC	VC	VC	VC	C	C
XR11001	F	F	F	F	F	F	VF
XR110015	F	F	F	F	F	F	F
XR11002	M	F	F	F	F	F	F
XR110025	M	M	F	F	F	F	F
XR11003	M	M	M	F	F	F	F
XR11004	M	M	M	M	M	F	F
XR11005	M	M	M	M	M	F	F
XR11006	C	M	M	M	M	M	F
XR11008	C	C	C	C	M	M	M
XR11010	VC	C	C	C	M	M	M
XR11015	VC	VC	VC	VC	C	C	C

Matching nozzle to application type

- Broadcast vs Banded – what's the difference?
 - Broadcast: uniform application of the TS across the plot (foliar or to the ground)
 - Most likely will require a multi-nozzle sprayer with a tapered nozzle.
 - These nozzles are meant to overlap to deliver a uniform coverage.
 - Calculation based on row width.

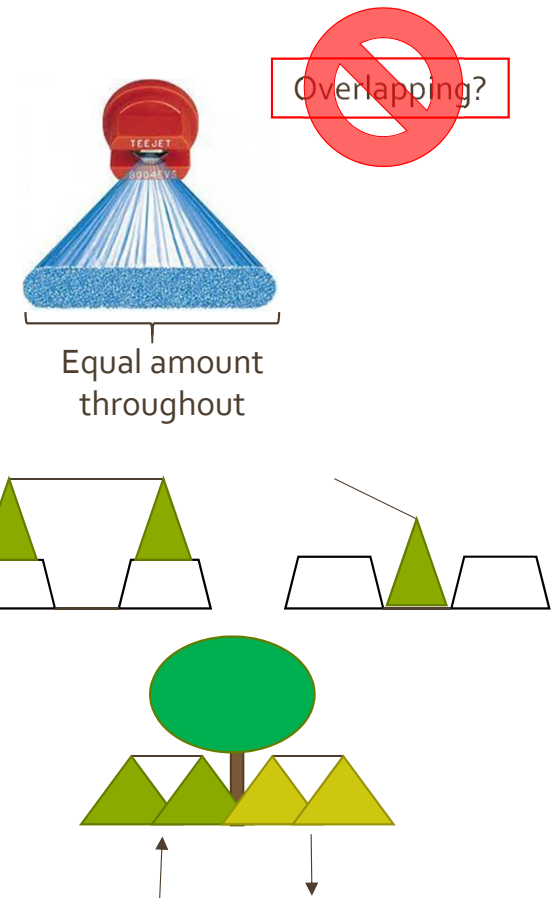


Matching nozzle to application type

- Broadcast vs Banded – what's the difference?
- Banded: application of TS to a section (band) of the plot (e.g. row middle, base of plant/orchard, crop row)
 - Calculation based on band width
 - If band can be covered with 1 nozzle: **even tip nozzle**
 - If a multi-nozzle sprayer is needed to cover the band: **tapered tip nozzle**

WHY???

- Because even tips are NOT meant to overlap, it will deliver 2x the rate on the overlapped section(s).
- While tapered tips are designed to overlap. If you use a even nozzle, how do you guarantee you are keeping your sprayer at the exact height where the spray patterns meet and don't overlap or leave a gap? So a tapered tip with overlapping spray pattern is ideal to avoid concentrating the TS or under applying.



Resources

- **Manufacturers:** teejet.com; delavam.com; greenleaftech.com

- TeeJet Catalog 51A:



- TeeJet SpraySelect Mobile App:

TeeJet SpraySelect Mobile App
Scan QR to Download



Apple*



Android™

- IR-4 Advisory #2004-02 (Dec. 10, 2004) – IR-4 Application Type Definitions
- Your fellow IR-4 researchers and SD

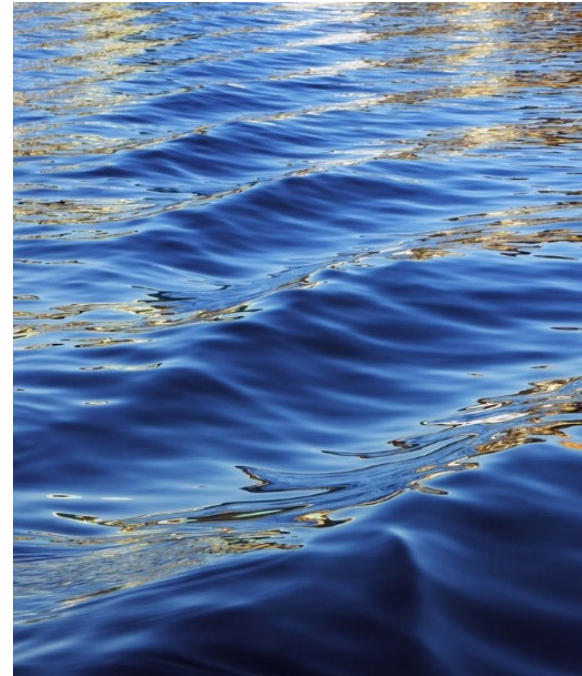
To all of you and to Roger Batts





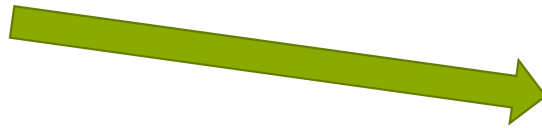
How to Choose an Adjuvant

Stephen Flanagan



Adjuvants 101:

- Lots of them
- Three main types: NIS, COC, Silicone (avoid odd types)
- Labeled rate versus Protocol rate (some protocols specify %v/v, most specify type)
- Clean up issues?



Adjuvants 101:

- Funky rates: e.g. 2.5 pts/100 gal
- Example:



<u>pts</u>	<u>gals</u>	<u>%v/v</u>	<u>mls/L</u>
1	100	0.125%	1.25
2	100	0.25%	2.5
4	100	0.50%	5
8	100	1.00%	

INDUCE® may be applied by Ground, CDA, Aerial, or Aquatic spray equipment. For most applications, use enough **INDUCE®** to allow for uniform wetting and deposition of the spray onto leaf surfaces without undue runoff.

Ground, Aerial, CDA: Use 1-4 pints per 100 gallons of spray or 0.125-0.50% by volume.

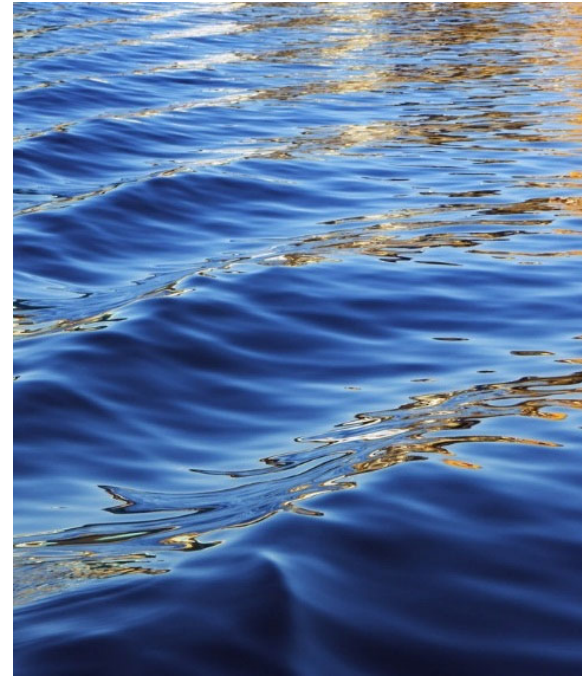
Adjuvant Expiration Dates for Canadian Trials

- If your adjuvant does not have a manufacturer assigned expiration date...
- IR-4 allows up to 5 years from date of purchase
- BUT
- Canadian trials only allow **up to 3 years**



What Determines if Equipment should be GLP Compliant?

Jane Forder



Ask yourself: does the equipment generate data?

No – it does **not** need to be GLP compliant

Yes – then **it does** need to be GLP compliant unless the protocol specifies it need not be.

...BUT you still have to document in GLP Compliance Statement

What equipment **does not** need to be GLP compliant ? (does not generate data)

- Farm equipment – tractors, combines.



What equipment **should be** GLP? (i.e. generates data?)

- Balance used to weigh test substance
- Sprayers, equipment used to make applications
- Environmental monitoring devices, GPS devices



Per Section 160.61 Equipment Design and 160.63 Maintenance and Calibration of Equipment

- Shall be of appropriate design and adequate capacity to function according to the protocol.
- Adequately inspected, cleaned, maintained, tested, calibrated and/or standardized. SOPs will set forth in detail the methods, schedules, written records to be maintained to insure that the above criteria (GLP requirements) are met.

Changes in 2022 Notebooks and Protocols

Notebook Changes

1. Field ID required on all pages (except protocol)
2. Protocol may be removed after notebook is completed
 1. Western Region is piloting removing protocol prior to sending to QA (pending input from QA)
3. Page numbering not considered data (no initials/date required)
4. Part 5E Site and Soil:
If using USDA soil conservation service data and not including in book, entries must be verified
5. Phyto Ratings Page – **CA trials only**
No longer 6K2. CA trials should include after each application

Soil Data in Notebooks

If using Soil Conservation Service data, these are not required

- Print out of Soil Conservation Service data
 - Be consistent in the name of the soil type throughout the notebook (e.g. Hanford fine sandy loam)
- Map showing test site and soil type
- BUT
 - Entries should be verified by someone
 - Original printout should be stored in your facility files

PART 5. TRIAL SITE INFORMATION:

E. SITE AND SOIL INFORMATION CHARACTERISTICS (formerly 5D)

INSTRUCTIONS: Furnish soil description and classification information for the plot area. This information can be transcribed from USDA Soil Conservation Service soil maps or via soil sampling and laboratory analysis of the soil. If USDA Soil Conservation Service data is used, a copy may be stored in your facility file and transcribed data should be verified on this page, or copies may be placed behind this page. If soil analysis is used, place the original or true copy behind this page.

- Soil analysis by lab should still be included in the notebook after Part 5E

Phytotoxicity Ratings Page – CA Trials

- Applies to all trials in CA
Mandatory for CA but not for others
Referenced in protocol Section 15
- Addition to Part 6K – not a replacement
- Special page added to notebook
available on the ir4works.org site under
Resources->FRD Resources
- New page for 2022
- GLP Compliant:
If directions on page
are followed

FIELD ID No: _____
PHYTOTOXICITY RATINGS FOR CALIFORNIA TRIALS

Pesticide/Crop:	Date of Phytotoxicity Assessment:
Date of most recent test substance application:	
Tx 01 Plot Phytotoxicity Rating (check one)	0 1 2 3 4
Tx 02 Plot Phytotoxicity Rating (check one)	0 1 2 3 4
Tx 03 Plot Phytotoxicity Rating (check one)	0 1 2 3 4 NA
Tx 04 Plot Phytotoxicity Rating (check one)	0 1 2 3 4 NA

Describe symptoms of phytotoxicity* and severity seen in plots with a rating of 1 or higher: _____

*The description should indicate the severity of the damage and whether the damage is (for example) chlorosis, necrosis, stunting, growth changes, or lack of emergence. Attach an extra sheet if necessary.

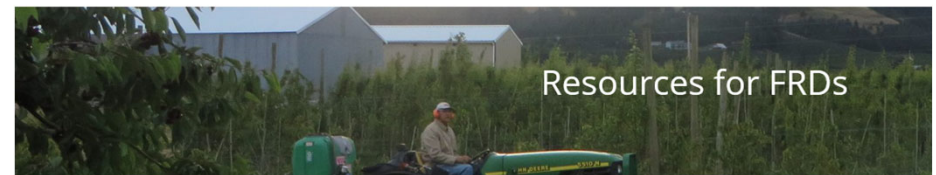
- If phytotoxicity is noted at any time, contact the Study Director.
- Assess phytotoxicity in the plot(s) preferably 7-14 days after each application of the test substance, using the damage scale indicated below. If no application occurred in less than 7 days, then the assessment may be done at the next application date. The untreated plot should be assessed on each date that any treated plot is assessed.
- If the crop is to be harvested/sampled within 14 days of the last application, then make the assessment on the day of harvest.
- The rating is an assessment of the damage throughout the entire plot.
- If a rating of 1 or higher is given to a plot, a follow up rating is needed 7-14 days after that, even if there is no additional test substance application in the interim, unless this rating is given to the crop at harvest.
- If these instructions are followed, then this data may be considered GLP. Otherwise it should be noted in the Compliance Statement as non-GLP.

Scale:
0 = no damage seen in the plot
1 = damage in 1-10% of the plot
2 = damage in 11-33% of the plot
3 = damage in 34-66% of the plot
4 = damage in 67-100% of the plot

ABOVE DATA ENTERED BY: _____ DATE: _____
Trial Year 2022



HOME FRDs ▾ PROJECTS ▾ SLRs ▾ TRAINING ▾ RESOURCES ▾



Phytotoxicity Ratings for CA Trials

2022 [phytotoxicity rating sheet](#) (use for 2022 notebooks)

2021 [phyto rating sheet](#) for California trials (use for 2021 notebooks)

Changes in 2022 Notebooks and Protocols

Protocol changes

1. Phyto ratings for CA

In all field trials conducted in the state of California, phytotoxicity data must be collected at 7-14 days after each application using a 0-4 scale and entered into Field Data Book 6P (available on the IR-4 website). If an application interval is less than 7 days, then the assessment may be done at the next application date. If the crop is harvested within 14 days of the last application, then the assessment should be made on the day of harvest. If a rating of 1 or higher is given to a plot, then a follow-up rating is needed 7-14 days after that, even if there is no additional test substance application in the interim, unless this rating is given to the crop at harvest.

2. Shipment notifications to lab

For express shipments (overnight carriers such as Federal Express or Airborne), contact the designated person (noted below) from the analytical laboratory prior to sample shipment for any specific shipping instructions. For shipments via freezer truck (ACDS), it is acceptable to contact the laboratory prior to shipment or on the day of shipment, or on the day after the samples have been loaded on the truck. Shipment of frozen samples will be by freezer truck or express shipment, unless the samples are brought to the analytical laboratory.

Changes in 2022 Notebooks and Protocols

Protocol changes

3. As a default, samples can be stored in ziplock bags without a protocol amendment or permission from the study director

BUT

Some chemistries may restrict this use

Some protocols may require use of plastic bags (not just an option)
Usually to retain juice leakage of fruit



Test Substance Storage Temperatures

- Follow requirements on Certificate of Analysis or container label.
 - Storage temperatures based on registrant's data.
- Storage temperature fluctuations outside the range?
 - **Contact Study Director**, who will contact registrant to see if they have data to back up different storage temperatures.
- **IT IS NOT A PROTOCOL DEVIATION IF TEMPERATURES ARE TOO HIGH OR LOW**
 - The protocol only requires monitoring the temperatures beginning within two days of receipt.

Helpful Hint:
Put a sticky note on front of the field data book with the storage temperature requirements to remind you to double-check.

Test Substance Container Labels

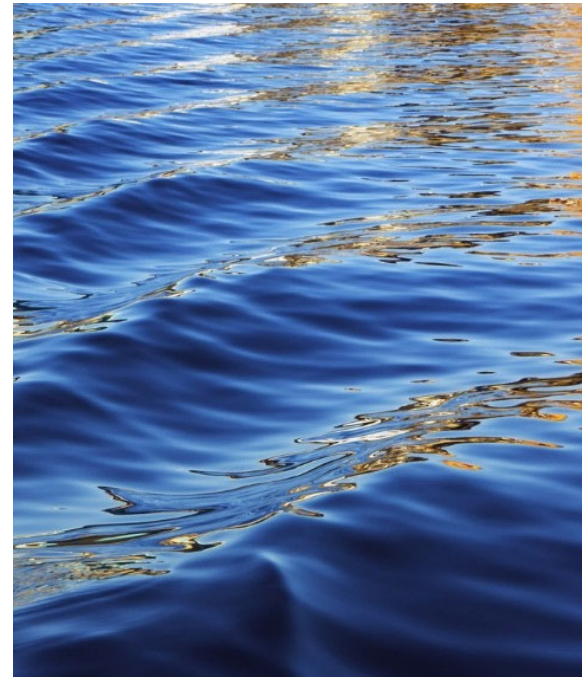
- Name
- Batch/Lot #
- Storage conditions
- Expiration date

DUAL MAGNUM (EC)		GLP Store at Ambient	
Batch ID:	616050	NET QTY:	200 ml
Design Code:	A9793D	ORDER #:	ARS-355764
Lot:	OMH0L07051	DESC.:	
HEALTH	2	EXP. DATE:	31.MAR.2014
FLAMMABILITY	1	MFG DATE:	12/10
REACTIVITY	0	Physical Hazard: Normally stable. No unusual fire or explosion risk.	
		Target Organs: respiratory system, liver, kidney, eye, blood, skin, CNS	
In event of poisoning consult a physician immediately.			
Syngenta Crop Protection, Inc., 410 Shawnee Road, Greensboro, NC, 27409		Emergency: 1-800-888-8372	



Field Safety When Working Alone

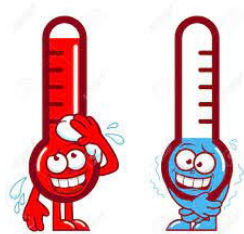
Jennifer Fisher,
FRD from North East Region



Field Safety While Working Alone

- What could possibly go wrong???

- Working with heavy equipment, ATVs, sprayers
- Hazardous chemicals (and FRDs) under pressure
- Demanding physical labor
- Challenging environmental conditions (heat/cold, weather events, rough terrain, wildlife, isolated areas/poor cell service, etc., etc., etc.)



Field Safety While Working Alone

- So, how do we work safely?
 - Be prepared and plan ahead
 - Reduce risks to the extent possible
 - Don't become complacent
 - Have an emergency plan in place
 - Communication is important!



OCCUPATIONAL INJURIES INVOLVING DAYS AWAY FROM WORK UNITED STATES, 2019

TOP 3

#1

Overexertion, bodily reaction

- Injury rate: 27.0 per 10,000 full-time workers
- Age group most at risk: 45 to 64
- Industry most at risk: transportation and warehousing
- Typical days lost: 13
- Most frequent part of body hurt: back

31.0%



275,590

#2

Falls, slips, trips

- Injury rate: 23.9 per 10,000 full-time workers
- Age group most at risk: 55 and over
- Industry most at risk: transportation and warehousing and agriculture
- Typical days lost: 13
- Most frequent type of injury: sprains, strains, tears

27.5%



244,000

#3

Contact with objects/equipment

- Injury rate: 22.4 per 10,000 full-time workers
- Age group most at risk: 16 to 24
- Industries most at risk: agriculture, transportation and warehousing, and construction
- Typical days lost: 5
- Most frequent type of injury: cuts, lacerations, punctures

25.8%



229,410

OTHER EVENTS OR EXPOSURES

#4 Transportation incidents
49,430 injuries

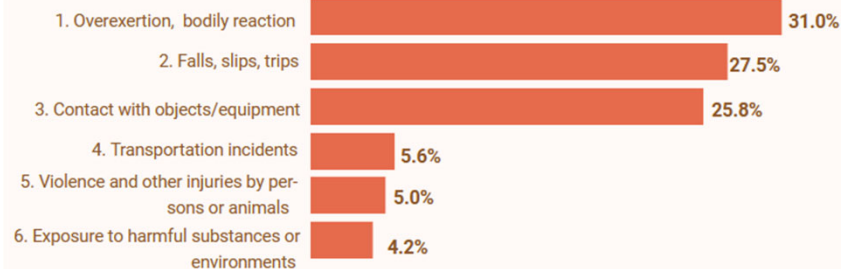
#6 Exposure to harmful substances or environments
36,840 injuries

#7 Nonclassifiable
6,770 injuries

#5 Violence and other injuries by persons or animals
44,480 injuries

#8 Fire and explosions
1,700 injuries

TOP INJURIES OR EXPOSURES



Source: Bureau of Labor Statistics.

Thank You for Attending!

- Please send ideas for future training or questions to wrfield@ucdavis.edu
- **GLP training certificates will be sent to all attending**
 - If multiple people connected on one computer, send chat with all names + emails
- **Next Webinar:**
April date TBD