Why is drift control important

1. Public's increasing concern over environmental contamination.
2. Damage to off-target plants and animals, possible legal concerns.
3. Reduced deposition on target area results in wasted pesticide.

DROPLET SIZE AND DRIFT DISTANCE IN 5 MPH WIND

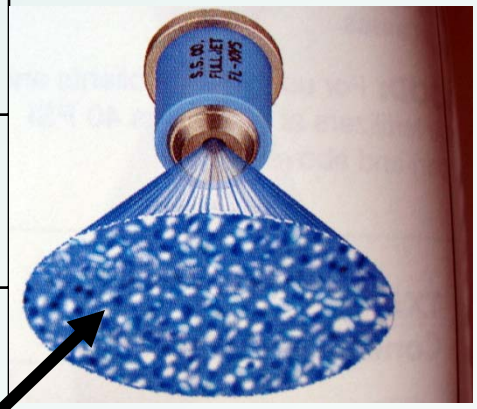
Droplet Diameter (Micron)	Type of Droplet	Drift distance in 10 ft. fall w/3 MPH wind
5	Dry fog	15,800
20	Wet fog	1,109
100	Misty rain	48 (size of human hair)
200	Light rain	15
1000	Heavy rain	5

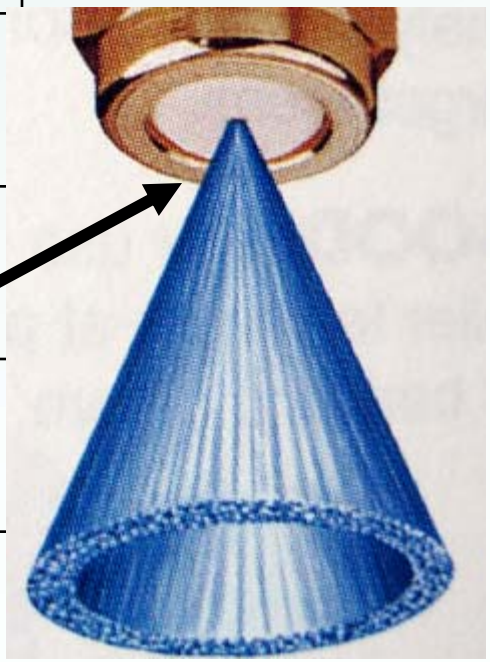
Data for droplet size is "VOLUME MEDIAN DIAMETER"

VMD - where 50% of total volume of liquid spray is made up of droplets larger than the median value
and 50 % made up of droplets smaller than the median value.

See your TeeJet #51 catalog pages 136 to 137 for droplet size at various pressures for all the different nozzle tips

Nozzle Type	VMD – In Microns 40 PSI
STD. 80º FLAT SPRAY TIP	470
XR 80º FLAT SPRAY TIP	460
TK FLOOD JET FLAT SPRAY TIP	450
FL FULLJET	680 Solid cone pattern
TX CONEJET	360 Hollow cone pattern

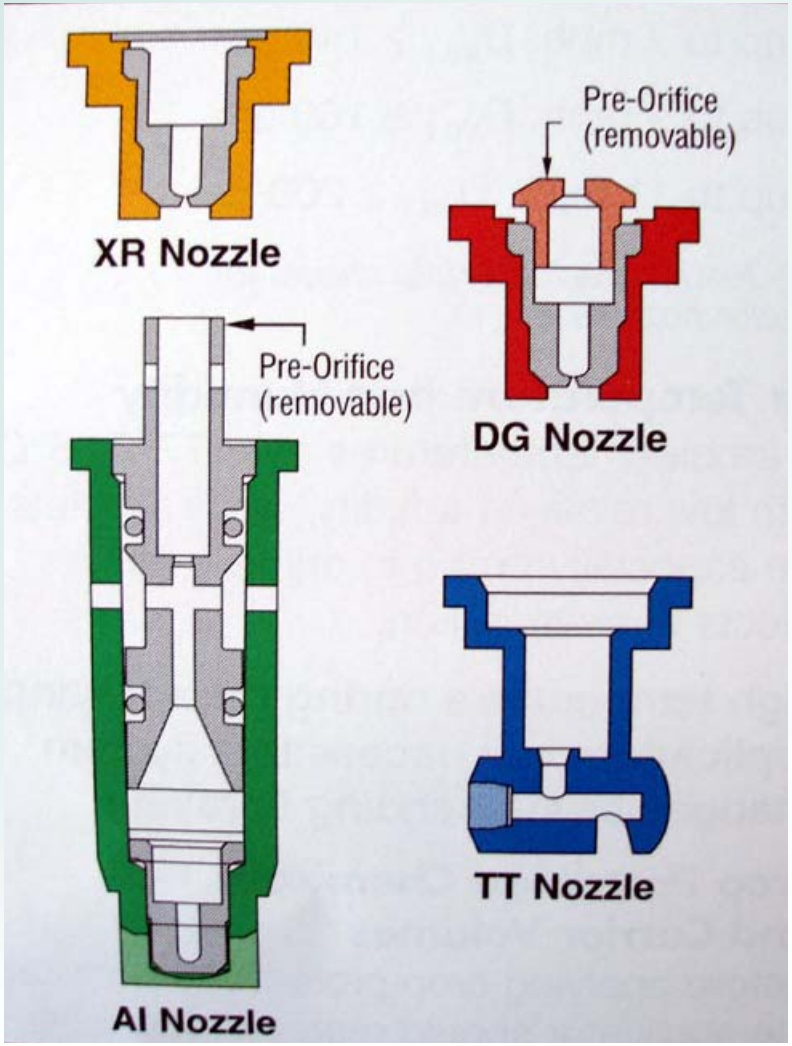




The affect of spray angle on droplet size

Spray angle	Nozzle Type	VMD – In Microns
40^{o}	4005 Flat spray	810
65^{o}	6505 Flat spray	550
80^{o}	8005 Flat spray	470
110^{o}	11005 Flat spray	380

NOZZEL CUTAWAY
4 NOZZLES

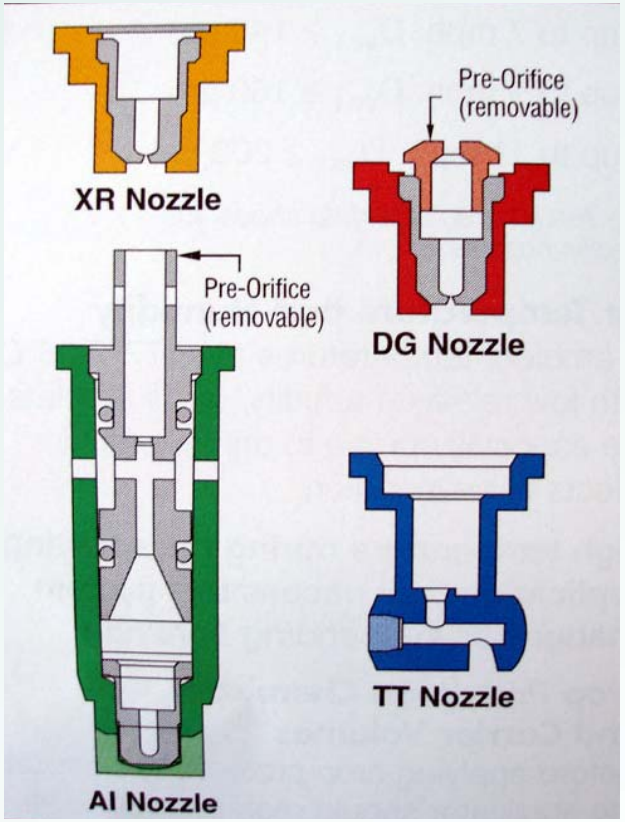


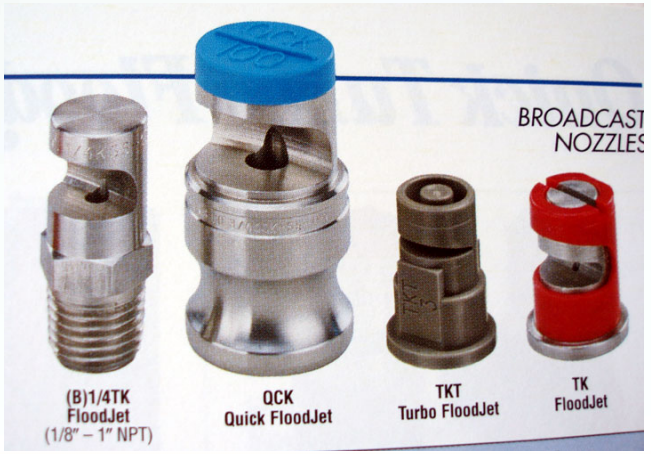
% OF SPRAY LESS THAN 200 MICRONS

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%

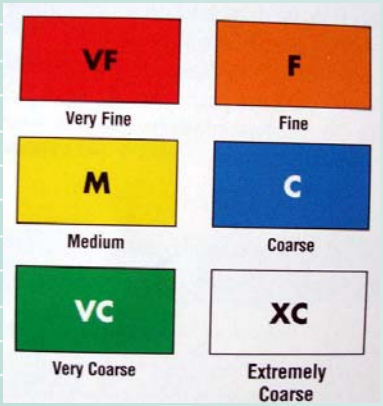
*Data obtained by spraying water at room temperature under laboratory conditions.





The affect of pressure on VMD

Spray angle	Nozzle type	VMD – In Microns		
		15 PSI	40 PSI	60 PSI
80º	8005 Flat Spray	540	470	450



The affect of flow rate or orifice size on VMD

Spray angle	Nozzle type	VMD – In Microns		
		.2 GPM 8002	.5 GPM 8005	.8 GPM 8008
80º	STD. Flat Spray	390	470	560

Turbo TeeJet® (TT)

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

SUMMARY OF NOZZLE AFFECT ON DROPLET SIZE

1. Wider spray angle produces smaller droplets because the liquid sheet generated from the nozzle tip is wider resulting in a finer breakup in drops.
2. Low pressure gives larger drops; higher pressure gives smaller drops.
3. Smaller capacity tips produce smaller droplets than larger capacity tips.

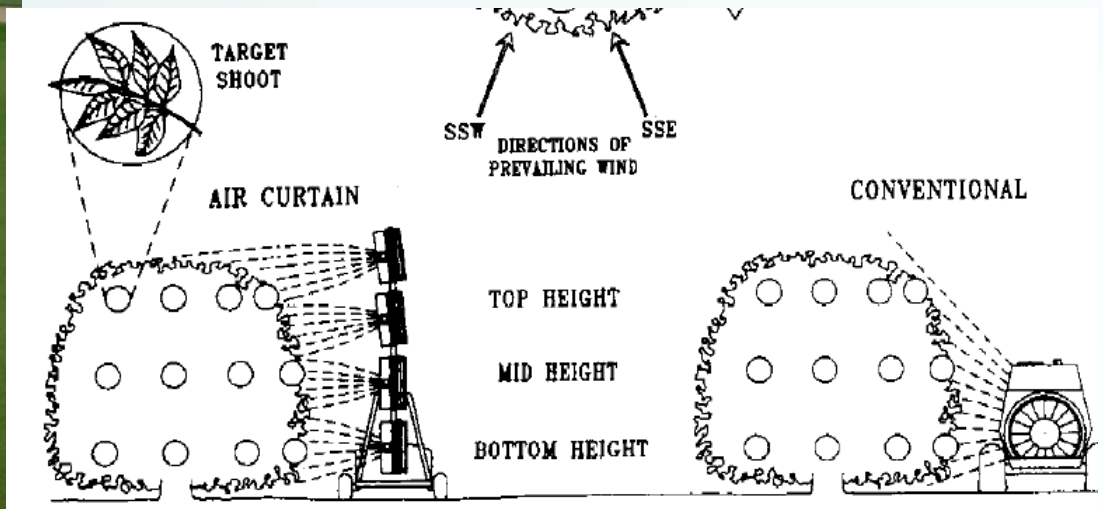
SUMMARY OF DRIFT CAUSES AND CONTROL

1. Smaller nozzle and high pressure produce more driftable dropletes
2. Higher spray heights more chance to drift
3. Faster speeds spray caught in vortex behinds sprayer
4. Higher wind more drift
5. Higher temps more evaporation more drift

Other drift control measures

1. Use shrouded or shielded sprayers
2. Air curtain to move spray into canopy
3. Chemical spray additives – makes droplets stick together – caution when mixing.


HD200
JOHN DEERE


TARGET
SHOOT
SSW
DIRECTIONS OF
PREVAILING WIND
SSE
AIR CURTAIN
CONVENTIONAL
TOP HEIGHT
MID HEIGHT
BOTTOM HEIGHT

Air curtain drive spray down into canopy

Causes of Spray Drift

1. **Droplet size**: The smaller the nozzle size and the greater the pressure the smaller the droplet and the greater proportion of driftable droplets.
2. **Spray height:** The greater the distance from nozzle to target the more impact wind can have on drift.
3. **Operating speed:** Increasing speed can cause spray to divert backwards and get caught in wind currents and vortex's behind the sprayer.
4. **Wind speed:** increased wind speed causes more drift. Spray on low wind days and design production areas with windbreaks to reduce drift potential.
5. **Air temperature and humidity**: higher temperatures with low humidity causes small drops to evaporate and allow solid particles to drift off site.
6. **Carrier volumes:** low per acre volumes require smaller droplets that are prone to drift.