



Growing Success



WITH HYPRO ULTRA LO-DRIFT™ SPRAY TIPS

Growing Success

Thousands of professional applicators and growers have found Ultra Lo-Drift™ tips to be a uniquely versatile tool for maintaining healthy, successful plants. ULDs are not only their first choice for reducing drift, but also for many other types of accurate, coverage-sensitive applications. Applicators are achieving higher levels of success using ULD tips for:

1. **Effective, low-drift herbicide application**
2. **Disease and insect control**
3. **Exceptional coverage using twin sprays**
4. **Directed sprays**

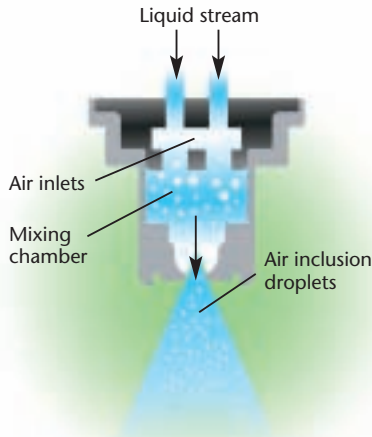


First Impressions

When you first spray with an Ultra Lo-Drift tip, you will notice that it has a thick pattern, measuring nearly 60 degrees front-to-back. The pattern and spray uniformity across the boom is excellent, consistently beating other venturi nozzles. The ULD's pattern thickness and uniformity are the benefits of the patented Dual Air Education design.

How the ULD Works

To fully understand why the Ultra Lo-Drift is such a unique spray tip, consider how it works. Liquid is metered into a ULD tip through dual inlets, into a set of dual venturi where air is drawn into the spray tip through the side air inlets. The dual streams vigorously mix the air and the spray in the tip just before the spray is ejected. The total effect is fewer fine droplets and less drift. Air that is trapped in the droplets create bubbles that help with droplet deposition and coverage when they impact the leaves.



The patented "Dual Air Education" system creates a thick pattern and allows for a compact and durable tip.



Side view: The unique thick pattern of air-filled and drift-resistant droplets from an Ultra Lo-Drift™ tip promotes full coverage.

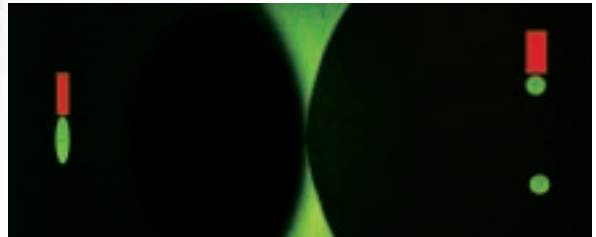


Air in a droplet can improve coverage when the droplet lands and "pops."



Dual Air Eduction, Dual Benefits

The patented Dual Air Eduction design provides unique benefits to ULD tip users. It allows more air intake and mixing in a shorter tip design, making ULD tips the shortest and most break-resistant venturi tips available. Inside the tip, the dual streams vigorously interact in the mixing chamber, not only incorporating air in the spray, but also creating a spray pattern that expands in all directions upon leaving the tip. This gives ULD tips a uniquely thick spray pattern and an effective droplet size that many applicators prefer for coverage-critical and reduced-drift applications. As a side benefit, since the dual inlets are round, they have a wide-open passage that means applicators can use the same standard filtration as with any other fan pattern tip.



Filtration needs are set by the narrowest passage in a tip. The round dual inlets on a ULD tip (right) are wider than the slotted orifice of a similar extended-range tip (left), so standard filtration is more than adequate for ULD tips.

ULD 120° — Ultra Lo-Drift – Dual Air Eduction

	15 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	70 PSI	80 PSI	90 PSI	100 PSI	115 PSI
ULD120-015	VC	C	C	C	C	M	M	M	M	F	F
ULD120-02	VC	VC	C	C	C	C	M	M	M	M	F
ULD120-025	VC	VC	C	C	C	C	M	M	M	M	M
ULD120-03	VC	VC	VC	C	C	C	C	M	M	M	M
ULD120-04	VC	VC	VC	C	C	C	C	M	M	M	M
ULD120-05	XC	XC	VC	VC	VC	C	C	C	C	M	M
ULD120-06	XC	XC	XC	VC	VC	VC	C	C	C	C	M
ULD120-08	XC	XC	XC	VC	VC	VC	C	C	C	C	M

In addition to applying the right volume of spray, the most important key to successful applications is to use an effective droplet size. ULD tips produce versatile droplet sizes over a very wide range of pressures and flows.

Using ULDs for Drift Reduction

A clear strength of ULD tips is their ability to help you reduce drift by making fewer fine droplets. Wind does not have as much of an influence over large droplets. Ultra Lo-Drift tips are engineered to balance the requirements of less drift against good coverage. Droplets that are too small will drift and be wasted, but droplets that are too large provide fewer opportunities for coverage. Extremes in droplet size can cause drift or poor pest control. In contrast, a well-selected spray effectively balances the requirements. Applicators seeking to primarily minimize drift should use ULD spray tips at pressures that create coarse or larger sprays.

The chart below illustrates how Ultra Lo-Drift spray tips use a highly effective method for reducing drift potential. They produce far fewer small droplets, yet maintain a droplet size that can be used for applications where coverage is important. Droplets that are very small can drift great distances, and when they drift, they provide no benefit to target coverage. The information in the chart was collected using a VisiSizer™ Particle Droplet Image Analysis system at Hypro's testing facilities in Cambridge, England, and compares several air induction spray tip technologies.

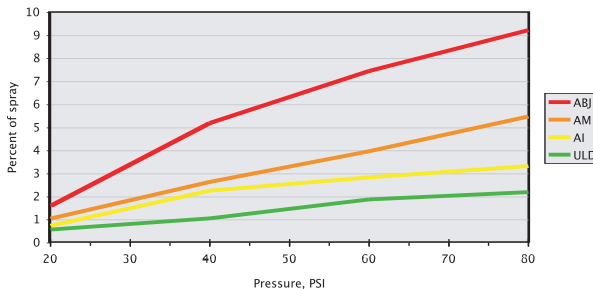


Drift reduction and coverage are two reasons ULD tips are standard on many golf course sprayers.



ULD tips (bottom) reduce drift significantly when compared to other nozzles on the market (top).

Spray Portion in Droplets Smaller than 100 μ
(size 04 spray tips)





ULDs for Disease and Insect Control

A generation ago, hollow cone tips were commonly used to spray for plant diseases and insects. Today, applicators are making the switch to a more efficient method using ULD tips. Neighbors and workers are wary of spray drift, and spray products are too costly to risk losing them. Drift that was once tolerated is no longer acceptable. ULD tips are uniquely equipped to deliver effective sprays that stay on target.

While fine and very fine sprays create lots of small droplets, many of the tiniest droplets may not have the momentum to reach the target and deposit in dense plant canopies. However, changing to a more balanced medium spray will get more spray to the target while reducing drift near sensitive areas, streams, buffer zones, and no-spray zones.

Applicators applying fungicides and insecticides requiring medium sprays can use ULD tips at higher pressures (see droplet size data on page 3).

Droplet Size†	Spray Quality (for illustration only) †	Drift distance (ft) in 8 mph wind*	Droplets created per square inch of leaf**
100 μ	Very Fine	24.2 ft	1966
375 μ	Coarse	0.3 ft	37
800 μ	Extremely Coarse	0.1 ft	4

* Drift distances calculated with DriftSim software using 40% RH, 80° F, 8 mph wind, 2 ft height, and 60 fps

** Theoretical using uniform droplet size, 10 GPA, and leaf area index of 6

† Droplet sizes given in microns are for illustration. No nozzle is capable of producing a single droplet size, and every spray pattern is comprised of a range of droplet sizes.



Twin Fan Sprays

Spray deposits can be enhanced by using forward or rearward-angled sprays. A forward angle enhances coverage on vertical targets such as stems, while a rearward angle encourages coverage on broadleaves.

Old technology twin spray tips make too fine of a spray, and adapters used to create twin sprays from single tips are often large and easy to break. Now, two ULD tips in a TwinCap tip holder can provide more control over droplet size, enhance coverage, and limit drift in a compact assembly. It also allows for faster application speeds, because you can choose two tips that will create an optimum spray, while delivering the flow and spray volume needed. Different sized tips can be combined to create flow rates that are not available in a single tip, such as 035 by selecting one 015 and one 02 tip.

Completely assembled TwinCap tip holders equipped with two ULD tips are available as shown in the following charts. Users can also customize flow rates by matching combinations of two different size tips.

Gallons per Acre—20" Spacing

Tip	Droplet Size	PSI	Flow (GPM)	mph																
				4	5	6	7	8	10	12	14	16	18	20						
TC2ULD120-015	VC	15	0.18	13.4	10.7	8.9	7.6	6.7	5.3	4.5	3.8	3.3	3.0	2.7						
	C	20	0.21	15.6	12.5	10.4	8.9	7.8	6.2	5.2	4.5	3.9	3.5	3.1						
	C	30	0.26	19.3	15.4	12.9	11.0	9.7	7.7	6.4	5.5	4.8	4.3	3.9						
	C	40	0.30	22	17.8	14.9	12.7	11.1	8.9	7.4	6.4	5.6	5.0	4.5						
	C	50	0.34	25	20.2	16.8	14.4	12.6	10.1	8.4	7.2	6.3	5.6	5.0						
	M	60	0.37	27	22	18.3	15.7	13.7	11.0	9.2	7.8	6.9	6.1	5.5						
	M	70	0.40	30	24	19.8	17.0	14.9	11.9	9.9	8.5	7.4	6.6	5.9						
	M	80	0.42	31	25	21	17.8	15.6	12.5	10.4	8.9	7.8	6.9	6.2						
	M	90	0.45	33	27	22	19.1	16.7	13.4	11.1	9.5	8.4	7.4	6.7						
	F	100	0.47	35	28	23	20	17.4	14.0	11.6	10.0	8.7	7.8	7.0						
F	115	0.51	38	30	25	22	18.9	15.1	12.6	10.8	9.5	8.4	7.6							
TC2ULD120-02	VC	15	0.24	17.8	14.3	11.9	10.2	8.9	7.1	5.9	5.1	4.5	4.0	3.6						
	VC	20	0.28	21	16.6	13.9	11.9	10.4	8.3	6.9	5.9	5.2	4.6	4.2						
	C	30	0.35	26	21	17.3	14.9	13.0	10.4	8.7	7.4	6.5	5.8	5.2						
	C	40	0.40	30	24	19.8	17.0	14.9	11.9	9.9	8.5	7.4	6.6	5.9						
	C	50	0.45	33	27	22	19.1	16.7	13.4	11.1	9.5	8.4	7.4	6.7						
	C	60	0.49	36	29	24	21	18.2	14.6	12.1	10.4	9.1	8.1	7.3						
	M	70	0.53	39	31	26	22	19.7	15.7	13.1	11.2	9.8	8.7	7.9						
	M	80	0.57	42	34	28	24	21	16.9	14.1	12.1	10.6	9.4	8.5						
	M	90	0.60	45	36	30	25	22	17.8	14.9	12.7	11.1	9.9	8.9						
	F	100	0.63	47	37	31	27	23	18.7	15.6	13.4	11.7	10.4	9.4						
F	115	0.68	50	40	34	29	25	20	16.8	14.4	12.6	11.2	10.1							



Side view: Two ULD tips placed in a TwinCap tip holder will create a spray zone that is nearly 120 degrees front to back and 120 degrees side to side.

Tip	Droplet Size	PSI	Flow (GPM)	mph															
				4	5	6	7	8	10	12	14	16	18	20					
TC2ULD120-025	VC	15	0.31	23	18.4	15.3	13.2	11.5	9.2	7.7	6.6	5.8	5.1	4.6					
	VC	20	0.35	26	21	17.3	14.9	13.0	10.4	8.7	7.4	6.5	5.8	5.2					
	C	30	0.43	32	26	21	18.2	16.0	12.8	10.6	9.1	8.0	7.1	6.4					
	C	40	0.50	37	30	25	21	18.6	14.9	12.4	10.6	9.3	8.3	7.4					
	C	50	0.56	42	33	28	24	21	16.6	13.9	11.9	10.4	9.2	8.3					
	C	60	0.61	45	36	30	26	23	18.1	15.1	12.9	11.3	10.1	9.1					
	M	70	0.66	49	39	33	28	25	19.6	16.3	14.0	12.3	10.9	9.8					
	M	80	0.71	53	42	35	30	26	21	17.6	15.1	13.2	11.7	10.5					
	M	90	0.75	56	45	37	32	28	22	18.6	15.9	13.9	12.4	11.1					
	M	100	0.79	59	47	39	34	29	23	19.6	16.8	14.7	13.0	11.7					
M	115	0.85	63	50	42	36	32	25	21	18.0	15.8	14.0	12.6						
TC2ULD120-03	VC	15	0.37	27	22	18.3	15.7	13.7	11.0	9.2	7.8	6.9	6.1	5.5					
	VC	20	0.42	31	25	21	17.8	15.6	12.5	10.4	8.9	7.8	6.9	6.2					
	VC	30	0.52	39	31	26	22	19.3	15.4	12.9	11.0	9.7	8.6	7.7					
	C	40	0.60	45	36	30	25	22	17.8	14.9	12.7	11.1	9.9	8.9					
	C	50	0.67	50	40	33	28	25	19.9	16.6	14.2	12.4	11.1	9.9					
	C	60	0.73	54	43	36	31	27	22	18.1	15.5	13.6	12.0	10.8					
	C	70	0.79	59	47	39	34	29	23	19.6	16.8	14.7	13.0	11.7					
	M	80	0.85	63	50	42	36	32	25	21	18.0	15.8	14.0	12.6					
	M	90	0.90	67	53	45	38	33	27	22	19.1	16.7	14.9	13.4					
	M	100	0.95	71	56	47	39	34	29	23	19.6	16.8	14.7	13.0					
M	115	1.02	76	61	50	43	38	30	25	22	18.9	16.8	15.1						
TC2ULD120-04	VC	15	0.49	36	29	24	21	18.2	14.6	12.1	10.4	9.1	8.1	7.3					
	VC	20	0.57	42	34	28	24	21	16.9	14.1	12.1	10.6	9.4	8.5					
	VC	30	0.69	51	41	34	29	26	20	17.1	14.6	12.8	11.4	10.2					
	C	40	0.80	59	48	40	34	30	24	19.8	17.0	14.9	13.2	11.9					
	C	50	0.89	66	53	44	38	33	26	22	18.9	16.5	14.7	13.2					
	C	60	0.98	73	58	49	42	36	29	24	21	18.2	16.2	14.6					
	C	70	1.06	79	63	52	45	39	31	26	22	19.7	17.5	15.7					
	M	80	1.13	84	67	56	48	42	34	28	24	21	18.6	16.8					
	M	90	1.20	89	71	59	51	45	36	30	25	22	19.8	17.8					
	M	100	1.26	94	75	62	53	47	37	31	27	23	21	18.7					
M	115	1.36	101	81	67	58	50	40	34	29	25	22	20						

Directed Sprays

The compact size and unique spray characteristics of ULD tips allow them to be used where other venturi tips cannot. A prime example of this is directed sprays. The low profile of ULD tips prevents breakage, while its spray provides excellent coverage and penetration. For the ultimate in directed spraying, a TwinCap plus two ULD tips can be placed directly over the row and a single ULD tip can be mounted on a swivel on either side of the row to completely surround the plant. ULD tips are also excellent for vertical booms and wrap-around booms in many horticultural applications.



Hollow cones (left) and ULDs in TwinCap tip holders (right).

More Information

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Phone: (651) 766-6300 • 800-424-9776 • Fax: 800-323-6496
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