Greenleaf Technologies

TURBODROP®

www.turbodrop.com

TurboDrop® Venturi Nozzles for Golf Course Spraying

TurboDrop® nozzles maximize on-target performance. Even the best chemistry requires accurate placement. TurboDrop® nozzles minimize drift and provide uniform coverage for maximum chemical efficacy.

TurboDrop® nozzles help prevent striping. The metering orifice protects the life of the pattern orifice by taking most of the pressure. As conventional stainless nozzles wear, the pattern gets heavy in the center, producing a striping effect. Poly TurboDrop® nozzles outlast stainless steel fans two to one. Ceramic TurboDrops® outlast stainless steel about 6 or 7 to one.

TurboDrop® nozzles have been proven for over 12 years in the widest variety of golf course applications. Superintendents do not need a different nozzle for every type of application.

TurboDrop® nozzles eliminate the need for costly drift control additives that can alter the performance of the chemicals being applied.

TurboDrop® nozzles widen the spraying window. Applicators can get the job done more quickly, spraying faster, spraying in a wider variety of conditions and often spraying with less water.

TurboDrop® nozzles provide a more consistent, effective droplet size. The droplets are not as coarse as with flood nozzles and are not as fine as with extended range flat fan nozzles. The droplet size is more uniform, providing more useful droplets with fewer ineffective (wasted) droplets.

TurboDrop® nozzles produce air energized droplets. The air expands inside the droplets, accelerating them toward the target. The droplets spread on contact with the leaf surface. Air-filled droplets mean there are more droplets to hit the target.

TurboDrop® nozzles eliminate the need for cumbersome shrouds or boom covers that hide the nozzles and become covered with chemical contamination.

The TurboDrop® nozzle was developed over 15 years ago to improve coverage, reduce runoff and maximize efficiency with plant protection materials. Its combination of excellent drift control and uniform spray distribution make it the perfect choice for the myriad of spray applications on the golf course.

Nozzle Options for Turf

Nozzle selection can be critical when it comes to getting maximum efficacy from expensive application products. Most golf course sprayers come with either extended range flat fan nozzles or wide angle flood nozzles. The extended range nozzle, while providing uniform spray distribution, creates a relatively fine, drift-prone spray droplet spectrum. The flooding style nozzle delivers a coarser droplet, but pattern uniformity is compromised. The TurboDrop® venturi nozzle combines the drift control of a coarse spray (like the flood nozzle) with the uniform spray distribution of a flat fan nozzle. As a result, the TurboDrop® nozzle may be used in more adverse operating conditions and still deliver on-target performance. The droplet spectrum is not overly coarse or too fine, and the air filled droplets have proven to be effective for both contact and systemic chemicals. Most golf courses using the TurboDrop® nozzle use it for every single application on the fairways and the greens.

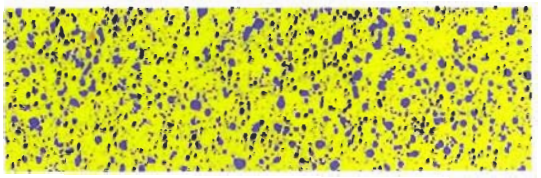
How TurboDrop® Works

TurboDrop® nozzles use Bernoulli's principle to create a low pressure area which pulls air into the nozzle where it is mixed with the liquid stream to create larger air-filled droplets. The metering orifice determines the flow rate and thus the size of the nozzle. The exit orifice determines the spray pattern of the nozzle.

Most spray nozzles have a single orifice that controls both the flow rate and the pattern. Therefore, when the nozzle begins to wear, both the flow rate and pattern are affected negatively. With the TurboDrop®, the initial metering orifice takes most of the pressure, protecting the life of the pattern orifice, to provide extended pattern uniformity, and prevent striping which can be a major issue on golf course greens.

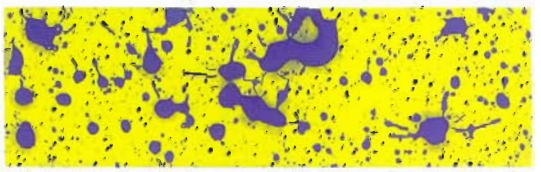
Spray Card Comparison of Common Golf Course Nozzles

Extended Range 11004 @ 50 psi



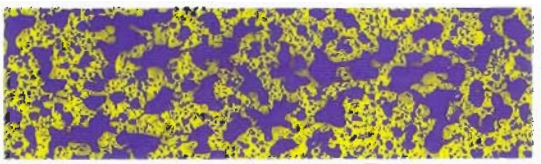
Too Fine (Drift Risk/Loss of Chemical)

Wide Angle Flood 04 @ 50 psi



Extremely Coarse (Uneven Coarse)

TurboDrop® TDXL11004 @ 50 psi



Coarse (Good Coverage & Drift Control)

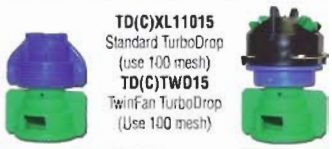
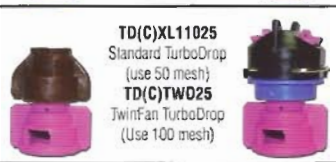
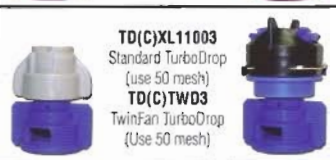
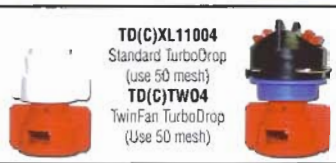
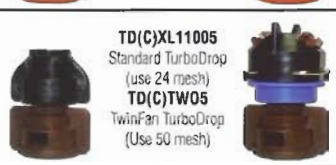
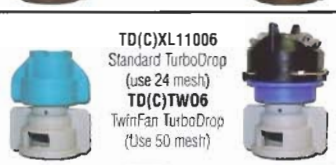
The TurboDrop® utilizes a large mixing chamber and a patented pulsation dampener to produce a more uniform spray droplet spectrum made up of air-energized droplets. The air inclusion is important in that it changes the physics of the spray droplet. Air-filled droplets tend to spread out or collapse on the leaf surface rather than just running off, like big, solid-liquid droplets do. Additionally, having air-filled droplets means that there are more droplets in the spray to hit the intended target.

TurboDrop® TwinFan

The TurboDrop® TwinFan was developed to provide additional coverage for products like plant growth regulators and contact fungicides. This nozzle essentially allows you to spray the turf twice while driving over it only once. The two spray patterns, oriented 30° forward and 30° rearward, provide enhanced "two-sided" coverage of the vertical leaf blade. The TwinFan uses the same venturi technology to deliver air-energized droplets, with the drift control you expect from TurboDrop®. The standard TurboDrop® can be converted to a TwinFan TurboDrop® without replacing the whole nozzle.

TurboDrop® Nozzle Tabulations

TurboDrop® nozzles consist of two primary components, the Venturi air aspirator and the exit pattern tip.
The orifice in the Venturi determines the flow rate of the complete assembly. The Venturi is ISO color coded to designate flow rate.
The exit pattern tip does not affect flow rate; it is only used to form the desired spray pattern. Higher pressures will improve penetration and coverage.

COMPLETE NOZZLE # *"C" designates ceramic metering orifice*	Liquid Pressure PSI	Nozzle Capacity GPM	GALLONS PER THOUSAND SQ. FT. BASED ON 20" NOZZLE SPACING								
			2 MPH	2.5 MPH	3 MPH	3.5 MPH	4 MPH	4.5 MPH	5 MPH	5.5 MPH	6 MPH
 **TD(C)XL11001** Standard TurboDrop (use 100 mesh) **TD(C)TW01** TwinFan TurboDrop (Use 100 mesh)	30	0.09	0.30	0.24	0.20	0.17	0.15	0.13	0.12	0.11	0.10
	40	0.10	0.34	0.27	0.23	0.19	0.17	0.15	0.14	0.12	0.11
	50	0.11	0.38	0.30	0.25	0.22	0.19	0.17	0.15	0.14	0.13
	60	0.12	0.42	0.33	0.28	0.24	0.21	0.19	0.17	0.15	0.14
	70	0.13	0.45	0.36	0.30	0.26	0.23	0.20	0.18	0.16	0.15
	80	0.14	0.48	0.39	0.32	0.28	0.24	0.21	0.19	0.18	0.16
	100	0.16	0.54	0.43	0.36	0.31	0.27	0.24	0.22	0.20	0.18
 **TD(C)XL11015** Standard TurboDrop (use 100 mesh) **TD(C)TW015** TwinFan TurboDrop (Use 100 mesh)	30	0.13	0.44	0.35	0.30	0.25	0.22	0.20	0.18	0.16	0.15
	40	0.15	0.51	0.41	0.34	0.29	0.26	0.23	0.20	0.19	0.17
	50	0.17	0.57	0.46	0.38	0.33	0.29	0.25	0.23	0.21	0.19
	60	0.18	0.63	0.50	0.42	0.36	0.31	0.28	0.25	0.23	0.21
	70	0.20	0.68	0.54	0.45	0.39	0.34	0.30	0.27	0.25	0.23
	80	0.21	0.72	0.58	0.48	0.41	0.36	0.32	0.29	0.26	0.24
	100	0.24	0.81	0.65	0.54	0.46	0.40	0.36	0.32	0.29	0.27
 **TD(C)XL11002** Standard TurboDrop (use 50 mesh) **TD(C)TW02** TwinFan TurboDrop (Use 100 mesh)	30	0.17	0.59	0.47	0.39	0.34	0.30	0.26	0.24	0.21	0.20
	40	0.20	0.68	0.55	0.45	0.39	0.34	0.30	0.27	0.25	0.23
	50	0.22	0.76	0.61	0.51	0.44	0.38	0.34	0.30	0.28	0.25
	60	0.24	0.83	0.67	0.56	0.48	0.42	0.37	0.33	0.30	0.28
	70	0.26	0.90	0.72	0.60	0.52	0.45	0.40	0.36	0.33	0.30
	80	0.28	0.96	0.77	0.64	0.55	0.48	0.43	0.39	0.35	0.32
	100	0.32	1.08	0.86	0.72	0.62	0.54	0.48	0.43	0.39	0.36
 **TD(C)XL11025** Standard TurboDrop (use 50 mesh) **TD(C)TW025** TwinFan TurboDrop (Use 100 mesh)	30	0.22	0.74	0.59	0.49	0.42	0.37	0.33	0.30	0.27	0.25
	40	0.25	0.85	0.68	0.57	0.49	0.43	0.38	0.34	0.31	0.28
	50	0.28	0.95	0.76	0.63	0.54	0.48	0.42	0.38	0.35	0.32
	60	0.31	1.04	0.83	0.70	0.60	0.52	0.46	0.42	0.38	0.35
	70	0.33	1.13	0.90	0.75	0.64	0.56	0.50	0.45	0.41	0.38
	80	0.35	1.20	0.96	0.80	0.69	0.60	0.54	0.48	0.44	0.40
	100	0.40	1.35	1.08	0.90	0.77	0.67	0.60	0.54	0.49	0.45
 **TD(C)XL11003** Standard TurboDrop (use 50 mesh) **TD(C)TW03** TwinFan TurboDrop (Use 50 mesh)	30	0.26	0.89	0.71	0.59	0.51	0.44	0.39	0.35	0.32	0.30
	40	0.30	1.02	0.82	0.68	0.58	0.51	0.45	0.41	0.37	0.34
	50	0.34	1.14	0.91	0.76	0.65	0.57	0.51	0.46	0.42	0.38
	60	0.37	1.25	1.00	0.83	0.72	0.63	0.56	0.50	0.46	0.42
	70	0.40	1.35	1.08	0.90	0.77	0.68	0.60	0.54	0.49	0.45
	80	0.42	1.45	1.16	0.96	0.83	0.72	0.64	0.58	0.53	0.48
	100	0.47	1.62	1.29	1.08	0.92	0.81	0.72	0.65	0.59	0.54
 **TD(C)XL11004** Standard TurboDrop (use 50 mesh) **TD(C)TW04** TwinFan TurboDrop (Use 50 mesh)	30	0.35	1.18	0.94	0.79	0.67	0.59	0.52	0.47	0.43	0.39
	40	0.40	1.36	1.09	0.91	0.78	0.68	0.61	0.55	0.50	0.45
	50	0.45	1.52	1.22	1.02	0.87	0.76	0.68	0.61	0.55	0.51
	60	0.49	1.67	1.34	1.11	0.95	0.83	0.74	0.67	0.61	0.56
	70	0.53	1.80	1.44	1.20	1.03	0.90	0.80	0.72	0.66	0.60
	80	0.57	1.93	1.54	1.28	1.10	0.96	0.86	0.77	0.70	0.64
	100	0.63	2.15	1.72	1.44	1.23	1.08	0.96	0.86	0.78	0.72
 **TD(C)XL11005** Standard TurboDrop (use 24 mesh) **TD(C)TW05** TwinFan TurboDrop (Use 50 mesh)	30	0.43	1.48	1.18	0.98	0.84	0.74	0.66	0.59	0.54	0.49
	40	0.50	1.71	1.36	1.14	0.97	0.85	0.76	0.68	0.62	0.57
	50	0.56	1.91	1.53	1.27	1.09	0.95	0.85	0.76	0.69	0.64
	60	0.61	2.09	1.67	1.39	1.19	1.04	0.93	0.84	0.76	0.70
	70	0.66	2.26	1.80	1.50	1.29	1.13	1.00	0.90	0.82	0.75
	80	0.71	2.41	1.93	1.61	1.38	1.21	1.07	0.96	0.88	0.80
	100	0.79	2.70	2.16	1.80	1.54	1.35	1.20	1.08	0.98	0.90
 **TD(C)XL11006** Standard TurboDrop (use 24 mesh) **TD(C)TW06** TwinFan TurboDrop (Use 50 mesh)	30	0.52	1.77	1.42	1.18	1.01	0.89	0.79	0.71	0.64	0.59
	40	0.60	2.05	1.64	1.36	1.17	1.02	0.91	0.82	0.74	0.68
	50	0.67	2.29	1.83	1.53	1.31	1.14	1.02	0.92	0.83	0.76
	60	0.74	2.51	2.00	1.67	1.43	1.25	1.11	1.00	0.91	0.84
	70	0.79	2.71	2.17	1.80	1.55	1.35	1.20	1.08	0.98	0.90
	80	0.85	2.89	2.31	1.93	1.65	1.45	1.29	1.16	1.05	0.96
	100	0.95	3.24	2.59	2.16	1.85	1.62	1.44	1.29	1.18	1.08
 **TD(C)XL11008** Standard TurboDrop (use 24 mesh) **TD(C)TW08** TwinFan TurboDrop (Use 24 mesh)	30	0.69	2.35	1.88	1.57	1.34	1.18	1.05	0.94	0.86	0.78
	40	0.80	2.72	2.17	1.81	1.55	1.36	1.21	1.09	0.99	0.91
	50	0.89	3.04	2.43	2.02	1.74	1.52	1.35	1.21	1.10	1.01
	60	0.98	3.33	2.66	2.22	1.90	1.66	1.48	1.33	1.21	1.11
	70	1.05	3.59	2.88	2.40	2.05	1.80	1.60	1.44	1.31	1.20
	80	1.13	3.84	3.07	2.56	2.20	1.92	1.71	1.54	1.40	1.28
	100	1.26	4.30	3.44	2.86	2.45	2.15	1.91	1.72	1.56	1.43
 **TD(C)XL11010** Standard TurboDrop (use 24 mesh) **TD(C)TW10** TwinFan TurboDrop (Use 24 mesh)	30	0.87	2.95	2.36	1.97	1.69	1.48	1.31	1.18	1.07	0.98
	40	1.00	3.41	2.73	2.27	1.95	1.70	1.51	1.36	1.24	1.14
	50	1.12	3.81	3.05	2.54	2.18	1.90	1.69	1.52	1.38	1.27
	60	1.22	4.17	3.34	2.78	2.38	2.09	1.85	1.67	1.52	1.39
	70	1.32	4.51	3.61	3.00	2.58	2.25	2.00	1.80	1.64	1.50
	80	1.41	4.82	3.85	3.21	2.75	2.41	2.14	1.93	1.75	1.61
	100	1.58	5.39	4.31	3.59	3.08	2.69	2.39	2.15	1.96	1.80

To convert from gallons per thousand square feet to gallons per acre, multiply by 43.7

Pressure Range: 30-120 psi. **Optimal Pressure Range:** 40-80 psi.

Recommended Boom Height: 18-36" (with 20" nozzle spacing) 16-18" for TwinFan TurboDrop®

"We were able to spray without drift for the first time in my 23 years of experience."

Thomas Brown CGCS
Chesapeake Bay Golf Club, Rising Sun MD

"This is a new $40,000 sprayer. The stock Toro nozzles are junk. I put stock nozzles on one boom and TurboDrop® on the other. The difference was amazing."

Bob Walker
Brattleboro Country Club, Brattleboro VT

"The problem with streaking was eliminated."

Walker Sory
Audubon Golf Club, New Orleans LA

"Better leaf coverage with TurboDrop® TwinFan."

Brian Benedict
The Seawane Club, Hewlett Harbor NY

GOLF COURSE TURBODROP® USER TESTIMONIALS

"Great nozzles! Still the best product out there!" **Bruce Morse** - Norwich Golf Club, Norwich CT

"We had much better coverage and seemed to have more efficient sprays. With TurboDrop®, we can spray in the wind and spray at lower GPA rates with a great pattern."

Jason Allen
Platteview Country Club, Bellevue NE

"I have been very pleased with the TurboDrop® nozzles. Since the year 2000, I have worked at 3 different golf courses, and at each one, I have requested TurboDrop®."

Michael Bergelin
Sandy Ridge Golf Course, Midland MI

GENUINE PRODUCTS
GREEN-LEAF
TECHNOLOGIES

P.O. Box 1767, Covington, LA 70434 (800) 881-4832 • www.turbodrop.com