

HYPRO[®] NOZZLES

GUARDIAN AIR[™]

FINER AIR-INDUCTION NOZZLES WITH SHALLOW REAR INCLINE



FEATURES & BENEFITS

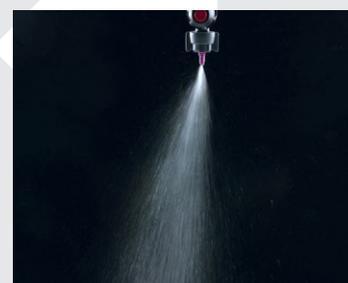
Guardian AIR[™] air-induction nozzles combine the smallest droplet size with a shallow rear incline to offer excellent target coverage in a wide range of crop spraying applications.

At 3 bar, spray performance is often equivalent to a medium flat fan spray. At lower pressures spray drift is reduced by up to 75% so the balance between spray coverage and drift reduction can be easily adjusted by the operator.

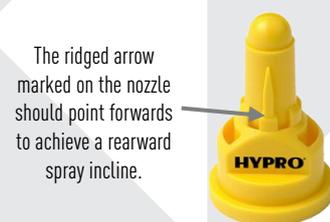
- More drops per litre than other air-induction nozzle brands for improved spray coverage*
 - Excellent results at 100 l/ha water volumes for faster work rates
 - Unique air filled droplets reduce bounce and help stick spray to target
- 110° flat fan spray inclined at 10-13°
 - When inclined to the rear the incline compensates for the forward motion of the sprayer to give uniform front and back coverage of target
- Up to 75% drift reduction at lower pressures to enable more spraying days
 - LERAP 3 ★, JKI, Z.N.T. and T.C.T. drift classifications
 - Holds spray angle at lower spraying pressures for improved flexibility
- Proven in the field and recommended by Syngenta UK for applying fungicides, insecticides and some herbicides to combinable crops**
 - Performance equivalent to a medium flat fan spray for all except the smallest spray targets
- Available in seven sizes

* HGCA 2010 Nozzle Selection Chart, re-published 2014.

** Always refer to the product label or latest application advice from the agrochemical manufacturer before selecting a spray quality.



A shallow rearward spray incline provides more uniform spray coverage.



The ridged arrow marked on the nozzle should point forwards to achieve a rearward spray incline.



HYPRO® NOZZLES

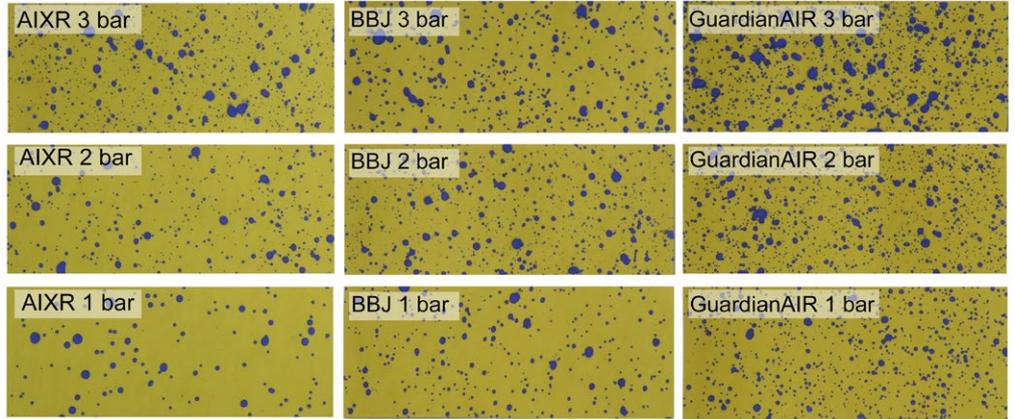
GUARDIAN AIR™ FINER AIR-INDUCTION NOZZLES

FINER DROPLETS FOR BETTER COVERAGE

Guardian AIR™ nozzles produce smaller droplets than other air-induction nozzles, this means more droplets and better spray coverage. The balance between drift reduction and spray coverage can be adjusted by the sprayer operator, for example by lowering spraying pressure to coarsen the spray and reduce drift.

Spray pattern of three popular air-induction nozzles sprayed onto water sensitive paper at different pressures. From left to right showing coarser to finer droplets spectrums.

The HGCA 2010 NOZZLE SELECTION CHART includes data comparing droplet size for different commercial designs of air induction nozzles (see www.hgca.com).



REAR INCLINE FOR MORE UNIFORM COVERAGE



Standard Nozzle:
Spray is accelerated forward by the sprayer, resulting in more spray landing on the leading side of the plant.

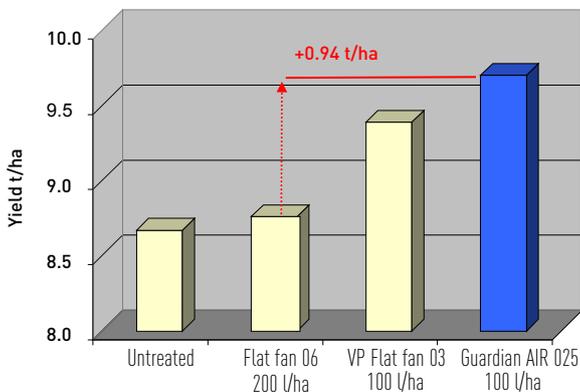


Guardian AIR™ Nozzle:
Spray is inclined rearwards to compensate for forward acceleration, resulting in uniform coverage on the front and back of the target.

A straight down spray does not give even coverage on the front and rear of the target.

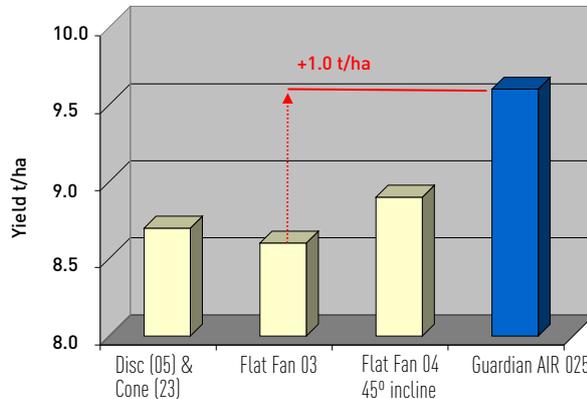
The rear incline of Guardian AIR™ nozzles has been tuned between 10 and 13 degrees to optimise spray coverage for each nozzle size when applying a rate of 100 l/ha, meaning a steeper incline for larger nozzle sizes.

FIELD TRIAL - FLAG LEAF FUNGICIDE



Single flag leaf spray of Amistar+Menara+Bravo at GS39 (flag leaf). Trial conducted by Syngenta Crop Protection UK in 2004.

FIELD TRIAL - EAR SPRAY FUNGICIDE



Single ear spray (Amistar+Folicur) at 150 l/ha. Untreated yield 6.4 t/ha. LSD 0.425 t/ha. Trial conducted by Morley Research Centre (TAG) in 2003 and reported in Aspects of Applied Biology 71 (2004) by E.S Powell et al.

HYPRO® NOZZLES

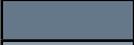
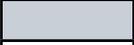
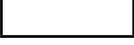
GUARDIAN AIR™ FINER AIR-INDUCTION NOZZLES

NOZZLE SELECTION GUIDELINES

Guardian AIR™ nozzles are recommended for a much broader range of applications than traditional air-induction nozzles because they produce more droplets and better spray coverage at normal spraying pressures. Guardian AIR™ nozzles were introduced as the Amistar nozzle* in 2003, since then they have been rigorously tested and proven on a wide range of applications in both independent field trials and farmer comparisons.

For Guardian AIR™ nozzles spray quality is consistent across all nozzle sizes sizes when used at the same pressure.

	CROP STAGE AND CHEMICAL TYPE:	TARGET:	APPLICATION CHALLENGE:	FLAT FAN		AIR INDUCTION		
				MEDIUM		FINER	COARSER	
								
AUTUMN	SOIL-ACTING PRE OR EARLY POST-EM HERBICIDES	SOIL	EVEN COVERAGE OF SOIL CLOUDS					
	INSECTICIDES	SMALL OILSEED RAPE OR CEREAL PLANTS	SMALL TARGET AREA TO WET					
	POST-EM SELECTIVE HERBICIDES	SMALL GRASSES (LESS THAN 3 LEAVES)	SMALL TARGET AREA, WEED SHADING					
SPRING	POST-EM SELECTIVE HERBICIDES	GRASSES (MORE THAN 3 LEAVES)	VERTICAL TARGET ORIENTATION					
	POST-EM SELECTIVE HERBICIDES	BROAD-LEAVED WEEDS (UP TO 2 CM ACROSS)	SMALL TARGET AREA, CONSIDER WEED SHADING					
	POST-EM SELECTIVE HERBICIDES	BROAD-LEAVED WEEDS (2 - 5 CM ACROSS)	CONSIDER WEED SHADING					
	POST-EM SELECTIVE HERBICIDES	BROAD-LEAVED WEEDS (MORE THAN 5 CM ACROSS)	PENETRATE INTO CROP CANOPY					
	EYESPOT FUNGICIDES AND PLANT GROWTH REGULATORS	CROP STEM AND LOWER LEAVES	PENETRATION TO BASE OF CROP					
	CEREAL FUNGICIDES T0, T1, T2	CROP LEAVES AND LEAF AXILS	PENETRATE CROP CANOPY					
	OSR FOLIAR FUNGICIDES	CROP LEAVES	COVERAGE FROM TOP TO BASE					
SUMMER	POTATO BLIGHT FUNGICIDES	CROP LEAVES AND STEMS	KEEP WATER RATES UP FOR GOOD COVERAGE					
	EAR FUNGICIDES (T3) AND APHIDIDES	CROP EAR	CONTACT ACTION IMPORTANT					
	DESICCATION WITH CONTACT ACTING HERBICIDE	CROP LEAVES AND STEMS	KEEP WATER RATES UP FOR GOOD SPRAY COVERAGE					
	GLYPHOSATE	LARGER WEEDS AND CROP DESICCATION	NOT OVER-WETTING LEAF					

Best for efficacy		Urgent spraying only	
Acceptable efficacy		Not suitable	

Spray quality varies with pressure. The application guidelines shown above are at 3 bar pressure, 10-16 kph. At these pressures finer air induction nozzles such as Guardian AIR™ typically reduce spray drift by 50-75%, whilst coarser air induction nozzles such as DriftBETA and ULD typically reduce drift by over 75%.

Always refer to the product label or the latest application advice from the agrochemical manufacturer before selecting a spray quality.

HYPRO® NOZZLES

GUARDIAN AIR™ FINER AIR-INDUCTION NOZZLES

GA110-015AZ	Pressure Bar	Flow L/min	Litres/hectare @ Km/h						LERAP RATING	JKI APPROVAL/ DRIFT RATING	
			6	8	10	12	14	16			18
	1	0.346	69	52	42	35	30	26	23	★★★★ 1.0 - 1.25 bar ★★★ 1.3 - 2.0 bar	
	1.5	0.424	85	64	51	42	36	32	28		
	2	0.490	98	73	59	49	42	37	33		
	3	0.600	120	90	72	60	51	45	40		
	4	0.693	139	104	83	69	59	52	46		
	5	0.775	155	116	93	77	66	58	52		
6	0.849	170	127	102	85	73	64	57			

GA110-02AZ	Pressure Bar	Flow L/min	Litres/hectare @ Km/h						LERAP RATING	JKI APPROVAL/ DRIFT RATING	
			6	8	10	12	14	16			18
	1	0.462	92	69	55	46	40	35	31	★★★★ 1.0 - 1.25 bar ★★★ 1.3 - 2.0 bar	Ref#: G-1812 50% at 1.0 - 2.0 bar (provisional TBC)
	1.5	0.566	113	85	68	57	48	42	38		
	2	0.653	131	98	78	65	56	49	44		
	3	0.800	160	120	96	80	69	60	53		
	4	0.924	185	139	111	92	79	69	62		
	5	1.033	207	155	124	103	89	77	69		
6	1.131	226	170	136	113	97	85	75			

GA110-025AZ	Pressure Bar	Flow L/min	Litres/hectare @ Km/h						LERAP RATING	JKI APPROVAL/ DRIFT RATING	
			6	8	10	12	14	16			18
	1	0.577	115	87	69	58	49	43	38	★★★★ 1.0 - 1.5 bar ★★★ 1.6 - 2.5 bar	Ref#: G-1817 50% at 2.0 - 2.5 bar
	1.5	0.707	141	106	85	71	61	53	47		
	2	0.816	163	122	98	82	70	61	54		
	3	1.000	200	150	120	100	86	75	67		
	4	1.155	231	173	139	115	99	87	77		
	5	1.291	258	194	155	129	111	97	86		
6	1.414	283	212	170	141	121	106	94			

GA110-03AZ	Pressure Bar	Flow L/min	Litres/hectare @ Km/h						LERAP RATING	JKI APPROVAL/ DRIFT RATING	
			6	8	10	12	14	16			18
	1	0.693	139	104	83	69	59	52	46	★★★★ 1.0 - 1.5 bar ★★★ 1.6 - 2.5 bar	Ref#: G-1813 75% at 1.0 - 1.5 bar 50% at 1.6 - 2.5 bar
	1.5	0.849	170	127	102	85	73	64	57		
	2	0.980	196	147	118	98	84	73	65		
	3	1.200	240	180	144	120	103	90	80		
	4	1.386	277	208	166	139	119	104	92		
	5	1.549	310	232	186	155	133	116	103		
6	1.697	339	255	204	170	145	127	113			

GA110-035AZ	Pressure Bar	Flow L/min	Litres/hectare @ Km/h						LERAP RATING	JKI APPROVAL/ DRIFT RATING	
			6	8	10	12	14	16			18
	1	0.808	162	121	97	81	69	61	54	★★★★ 1.0 - 1.5 bar ★★★ 1.6 - 4.0 bar	Ref#: G-1811 75% at 1.0 - 1.5 bar 50% at 1.6 - 2.5 bar
	1.5	0.990	198	148	119	99	85	74	66		
	2	1.143	229	171	137	114	98	86	76		
	3	1.400	280	210	168	140	120	105	93		
	4	1.617	323	242	194	162	139	121	108		
	5	1.807	361	271	217	181	155	136	120		
6	1.980	396	297	238	198	170	148	132			

GA110-04AZ	Pressure Bar	Flow L/min	Litres/hectare @ Km/h						LERAP RATING	JKI APPROVAL/ DRIFT RATING	
			6	8	10	12	14	16			18
	1	0.924	185	139	111	92	79	69	62	★★★★ 1.0 - 1.5 bar ★★★ 1.6 - 4.0 bar	Ref#: G-1814 75% at 1.0 - 1.5 bar 50% at 1.6 - 2.5 bar
	1.5	1.131	226	170	136	113	97	85	75		
	2	1.306	261	196	157	131	112	98	87		
	3	1.600	320	240	192	160	137	120	107		
	4	1.848	370	277	222	185	158	139	123		
	5	2.066	413	310	248	207	177	155	138		
6	2.263	453	339	272	226	194	170	151			

GA110-05AZ	Pressure Bar	Flow L/min	Litres/hectare @ Km/h						LERAP RATING	JKI APPROVAL/ DRIFT RATING	
			6	8	10	12	14	16			18
	1	1.155	231	173	139	115	99	87	77	★★★★ 1.0 - 1.5 bar ★★★ 1.6 - 4.0 bar	Ref#: G-1815 75% at 1.0 - 1.5 bar 50% at 1.6 - 2.5 bar
	1.5	1.414	283	212	170	141	121	106	94		
	2	1.633	327	245	196	163	140	122	109		
	3	2.000	400	300	240	200	171	150	133		
	4	2.309	462	346	277	231	198	173	154		
	5	2.582	516	387	310	258	221	194	172		
6	2.828	566	424	339	283	242	212	189			

Application rates shown are based on tests at 3 bar and 50 cm nozzle spacing.

Part numbers:

For single nozzles, use the part numbers shown.

For bags of 50 with a rate card add ' _bag50 ' to the part number.

For FastCap version including cap and sealing washer, order using the part number format FC-GA110-XX.

★★★★ 3-star LERAP - At least 75% less drift

★★★ 2-star LERAP - 50 to 75% less drift*

* LERAP drift ratings are compared with reference F110/1.2/3.0 blue nozzles.

Approvals are at pressures shown for nozzles 50 cm above the target at 6-12 kph.



JKI drift ratings are compared with reference F110/1.2/3.0 nozzles and FRD110/1.0/3.0 blue nozzles.

Approvals are at pressures shown for nozzles 50 cm above the target.



HYPRO EU LIMITED

STATION ROAD, LONGSTANTON, CAMBRIDGE, CB24 3DS UNITED KINGDOM

TEL: +44 (0)1954 260097 FAX: +44 (0)1954 260245 EMAIL: INFO@HYPRO-EU.COM WWW.HYPRO-EU.COM

PENTAIR TRADEMARKS AND LOGOS ARE OWNED BY PENTAIR LTD. ALL OTHER BRAND OR PRODUCT NAMES ARE TRADEMARKS OR REGISTERED MARKS OF THEIR OWNERS.

BECAUSE WE ARE CONTINUOUSLY IMPROVING OUR PRODUCTS AND SERVICES, PENTAIR RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT PRIOR NOTICE.

© 2013 PENTAIR, LTD. ALL RIGHTS RESERVED.