

# HYPRO<sup>®</sup> NOZZLES

## GUARDIAN AIR™

### FINER AIR-INDUCTION NOZZLES WITH SHALLOW REAR INCLINE

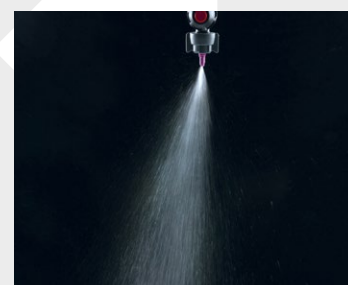


#### FEATURES & BENEFITS

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 nozzles for improved coverage
  - Excellent results at 100 l/ha water volumes for faster work rates
  - Unique air filled droplets reduce bounce and stick to target
- 110° flat fan inclined 12-15°. When inclined to the rear this will compensate for the forward motion of the sprayer when spraying at 100 l/ha
- 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



A rearward spray incline provides more uniform spray coverage.

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



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

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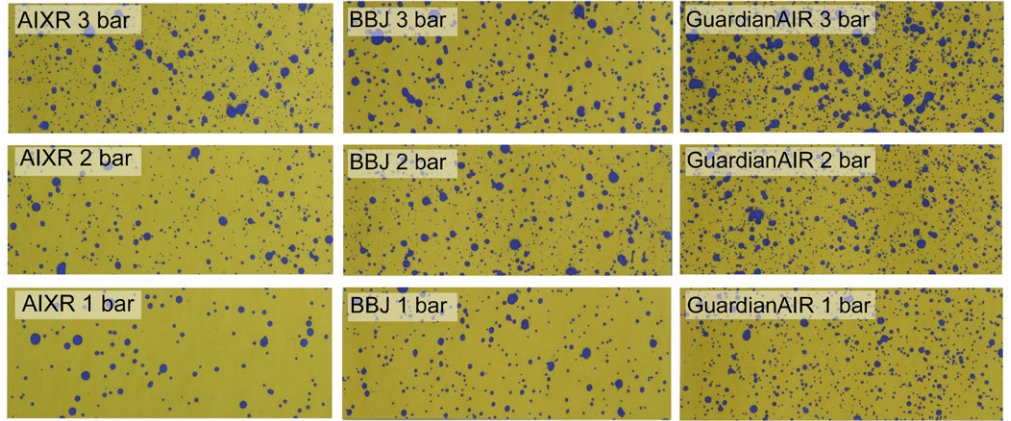
## GUARDIAN AIR™ FINER AIR-INDUCTION NOZZLES

### FINER DROPLETS FOR BETTER COVERAGE

GuardianAIR™ 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, for detailed comparisons see [www.hgca.com](http://www.hgca.com).



### REAR INCLINE FOR MORE UNIFORM COVERAGE



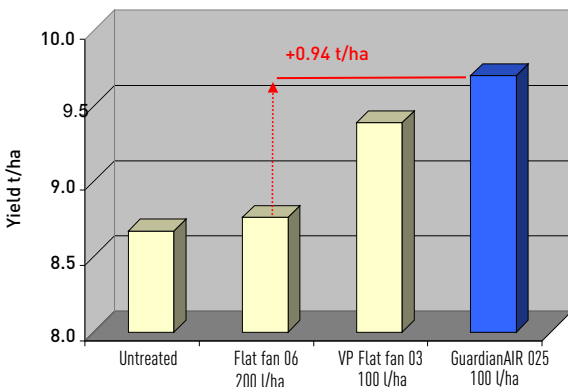
**Standard Nozzle:**  
Spray is accelerated forward by the sprayer resulting in more spray landing on the leading side of the plant.



**GuardianAIR™ Nozzle:**  
Spray is inclined by 12-15 degrees backwards to compensate for the forward acceleration resulting in more uniform coverage on the front and back of vertical targets.

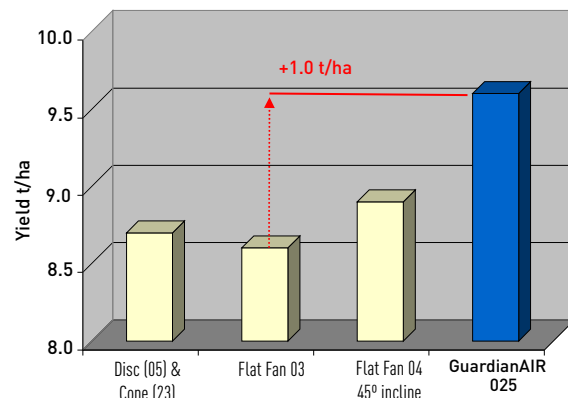
Tests were carried out with the GuardianAIR™ nozzle to optimise the coverage on the front and rear of the target. The incline selected is optimised for a rate of 100 l/ha, meaning the the incline is increased slightly for larger nozzle sizes.

### 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.

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## GUARDIAN AIR™ FINER AIR-INDUCTION NOZZLES

### NOZZLE SELECTION GUIDE – CEREALS AND OILSEED RAPE

Guardian AIR™ nozzles are based on the Amistar nozzle, designed by Hypro for Syngenta in 2003. Since then, this nozzle technology has been rigorously tested and proven on combinable crops in both independent field trials and farmer comparisons.

Guardian AIR™ nozzles are recommended for a much broader range of applications than existing air-induction nozzles because they produce better spray coverage at normal spraying pressures.

NOZZLE	GUARDIAN AIR™	DRIFT BETA / ULD	FLAT FAN		
					
Spray quality	'Finer' Air-Inclusion	'Coarser' Air-Inclusion	Fine	Medium	Coarse
Likely drift potential	Low	Low	High	Mod	Low
<b>Soil-acting herbicides</b>					
Pre and early post emergence	▲	▲ ■		▲	▲
<b>Foliage-acting herbicides</b>					
Small grasses (less than 3 leaves)			▲ ▲	▲	
Grasses (more than 3 leaves)	▲ ■		▲	▲ ▲	
Broad leaved weeds (up to 2 cm across)			▲ ▲	▲ ▲	
Broad leaved weeds (2 - 5 cm across)	▲ ▲ ■		▲	▲ ▲	
Broad leaved weeds (more than 5 cm across)	▲ ▲ ■			▲ ▲	
Large weeds: non-selective (e.g. glyphosate)	▲ ▲	▲ ■		▲ ▲	▲
<b>Cereal PGRs and eyespot fungicides</b>					
Pre and post GS32	▲ ▲ ■			▲ ▲	
<b>Cereal fungicides</b>					
T0 - up to GS23	▲ ▲ ■		▲	▲ ▲	
T1 and T2 - GS 24-49	▲ ▲	▲ ■	▲	▲ ▲	
T3 - after GS50 (ear spray)	▲ ▲ ■			▲ ▲	
<b>Cereal insecticides</b>					
Autumn	▲ ■		▲	▲ ▲	
Ear spray	▲ ▲ ■		▲ ▲	▲	
<b>Oilseed rape fungicides</b>					
Vegetative phase	▲ ■		▲	▲ ▲	
From green bud	▲ ▲ ■		▲	▲ ▲	
<b>Oilseed rape insecticides</b>					
Vegetative phase			▲	▲ ▲	
From green bud	▲ ▲ ■		▲ ▲	▲	

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


▲ Acceptable  
▲ Preferred  
■ Best for drift

Guidelines are given for 3 bar, 10-16 kph. Spray quality varies with pressure.

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


# HYPRO® NOZZLES


## GUARDIAN AIR™ FINER AIR-INDUCTION NOZZLES


GA110-015AZ	Pressure Bar	Flow L/min	Litres/hectare @ Km/h							LERAP RATING
			6	8	10	12	14	16	18	
	1	0.346	69	52	42	35	30	26	23	★★★★
	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		


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

Order GuardianAIR™ nozzles using the part numbers shown or add '\_bag50' to the part no. to order in bags of 50 with a rate card.

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	★★★★	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	★★★★	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	★★★★	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	★★★★	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			


★★★★


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 the pressures shown for nozzles 0.5 m above the target at 6-12 kph.

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	★★★★	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	★★★★	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			



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 0.5 m above the target.



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