Weed Control with ROXY Rice Production System

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Herbicide Resistant Weeds in California Rice Fields

Common name	Trade name	MOA
Bensulfuron	Londax®	ALS inhibitor
Bispyribac-sodium	Regiment®	ALS inhibitor
Halosulfuron	Sandea®	ALS inhibitor
Imazosulfuron	League	AL inhibitor
Orthosulfamuron	Strada	ALS inhibitor
Penoxsulam	Granite®	ALS inhibitor
Benzobicyclon	Butte	HPPD inhibitor
Carfentrazone	Shark H2O®	PROTOX inhibitor
Clomazone	Cerano®, Bombard®	Carotenoid biosynthesis inhibitor
Cyhalofop-butyl	Clincher®	ACCase inhibitor
Pendimethalin	Prowl H2O®	Tubulin inhibitor
Propanil	Stam®, SuperWham®	Photosystem II inhibitor
Thiobencarb	Abolish®, Bolero®	VLCFA (Very long chain fatty acids)
Triclopyr	Grandstand®	Synthetic auxin

Observed Resistance to One, Two, Three, Four or Five Modes of Action for each Rice Weed Species						
	Total	----------%----------				
Weed Species[a]	Samples	One	Two	Three	Four	Five
BYG	155	8	16	37	26	1
LWG	106	5	10	12	10	37
EWG	42	17	62	5	2	0
ST	103	39	4	-	-	-
SF	188	9	72	18	1	-
BR	18	33	6	-	-	-
RS	13	77	8	-	-	-

[a]BYG, barnyardgrass; LWG, late watergrass; EWG, early watergrass; ST, bearded sprangletop; SF, smallflower umbrella sedge; BR, ricefield bulrush; RS, redstem

Roxy Rice Production System

- ROXY RPS® is based on herbicide tolerance and this is not a herbicide resistant technology
- ROXY RPS® will be launched in CA rice market and is an exclusive partnership between CRRF and Albaugh, LLC
- ROXY RPS® herbicides have been submitted for registration with the EPA with a concurrent review process with the CA DPR
- ROXY® Trait confers tolerance to Oxyfluorfen herbicide – Albaugh will have the only registered Oxyfluorfen herbicide (ALB2023) for use in the ROXY RPS®
- The ROXY RPS will position the use of ALB2023 as a base weed control herbicide that can be combined with other herbicide modes of actions for resistance management
- ALB2023 will be applied at rates of 1.0 – 2.0 pt/acre applied pre-flood and pre-plant in water seeded rice
- Good rice crop safety
- Excellent weed control with weakness on sprangletop and Rice bulrush

Treatment #	Product and Rate
1	ALB 2023 (1.0 pt/A)
2	ALB 2023 (1.5 pt/A)
3	ALB 2023 (1.75 pt/A)
4	ALB 2023 (2.0 pt/A)
5	ALB 2023 (2.25 pt/A)
6	ALB 2023 (2.0 pt/A) fb
	Granite GR (13 lbs/A)
7	ALB 2023 (2.0 pt/A) fb
	Grante GR (13lbs/A)
	Grandstand CA (0.5 pt/A) with
	NIS (0.25% v/v)
8	Alb 2023 (2.0 pts/A) fb
	Grante GR (13lbs/A) &
	Loyant (2 pt/A) with
	Clincher (11 floz/A) with
	MSO (0.5 pt/A)
9	Butte (7.5 lbs/A) fb
	Grante GR (13 lbs/A) &
	Grandstand CA (0.5 pt/A) with
	NIS (0.25% v/v)
10	Untreated control (UTC)

14 DAS				
	Crop injury (%)			
Trtmt	blch	chlor	stnt	stand red
1	0	0	0	0
2	0	0	6.25	0
3	0	0	8.75	0
4	0	0	11.25	0
5	0	0	16.25	0
6	0	0	13.75	0
7	0	0	10	0
8	0	0	3.75	0
9	0	0	3.75	0
10	0	0	0	0

28 DAS												
	Crop injury (%)				Weed Control (%)							
Trtmt	blch	chlor	stnt	stand red	Echi	SP	BL	SM	DS	Mono	WH	RS
1	0	0	0	0	98.75	100	96.25	95	90	100	97.5	100
2	0	0	0	0	100	100	99.5	100	95	99.5	99.5	100
3	0	0	0	0	100	100	100	98.75	100	100	100	98.75
4	0	0	0	0	100	100	100	98.75	98.75	100	100	100
5	0	0	0	0	100	100	98.75	98.75	98.75	100	100	100
6	0	0	0	0	100	100	100	100	100	100	100	100
7	0	0	0	0	100	100	100	100	100	100	100	100
8	0	0	0	0	100	100	100	100	100	100	100	96.25
9	0	0	0	0	100	100	100	98.75	87.5	98.75	95	87.5
10	0	0	0	0	0	0	0	0	0	0	0	0

Final Yield for all treatment groups			
Treatment #	lb/ac	Treatment #	lb/ac
1	6937.541	6	9696.047
2	8280.022	7	8871.931
3	7893.363	8	9249.925
4	8598.514	9	7997.192
5	7734.148	10	4987.954

Roxy Rice

Untreated control

ALB 2023 2 pt/A