

Alternative carbon sources in ASD in Ventura trials, an update

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How to reduce costs associated with rice bran application?

1. Reduce rice bran rate but grow carbon source on site - cover crops

2 . Test alternatives:

'Midds' = middlings, milfeed, byproduct of flour milling (Arden Mills, San Bernardino, CA)

Feb 1, 2020



Midds (mill-feed) 9t/A

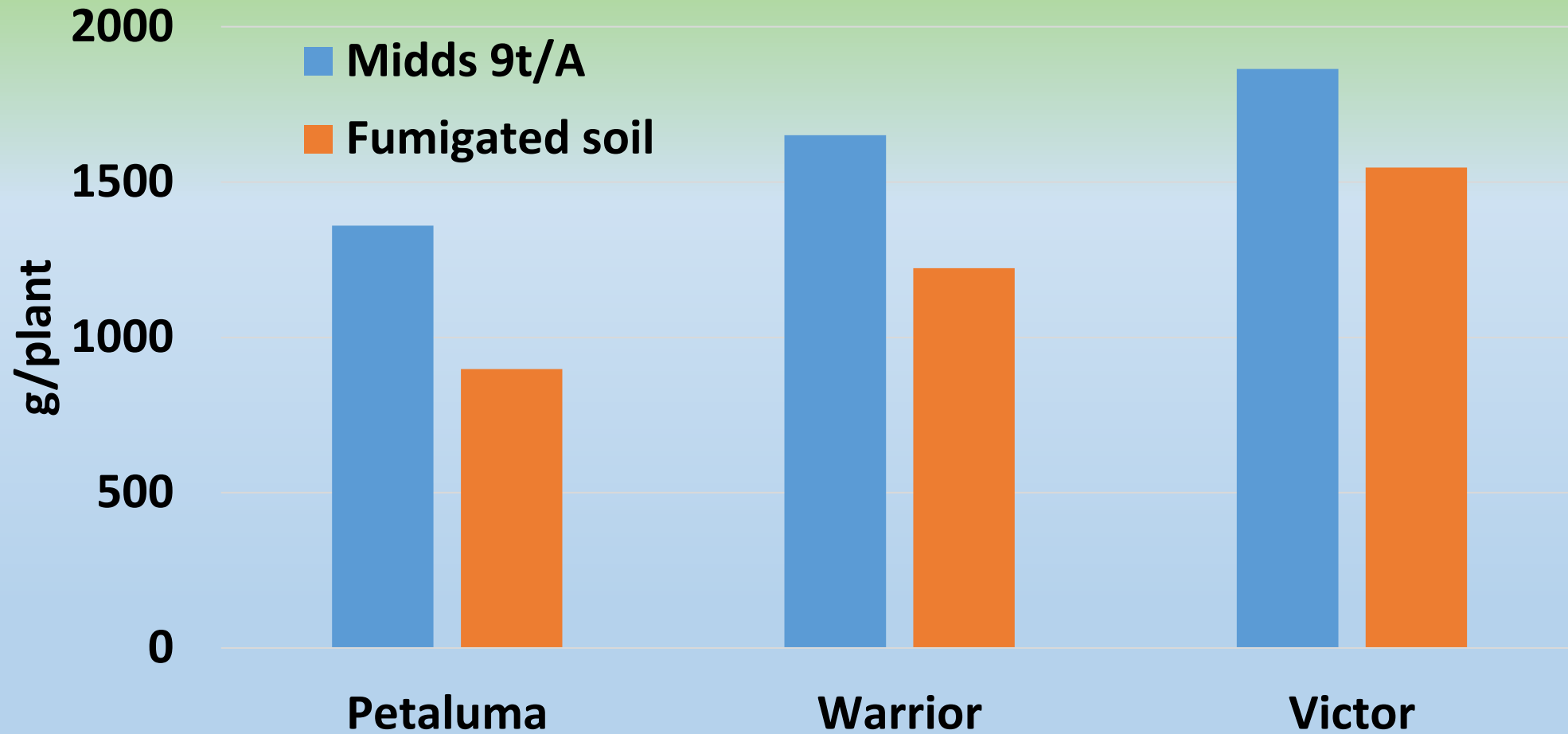


**Pic 300 flat fumigated
(no crop grown for 1.5
years)**

October 25, 2020; 2 Weeks after planting

	Fumigated soil (standard), 300 lbs/A per-plant N		Midds-ASD (9t/A)		Optimum range
	Oct 25	May 25	Oct 25	May 25	
Nitrate Nitrogen, ppm	245	45	126	60	50-150
Phosphorus, P2O5, ppm	67	70	191	203	40-150
Potassium, K2O (Exch.) , ppm	498	514	851	848	200-700

Fruit yields Jan-May 2020



Mids>Fumigated (P= 0.03) ; Warrior= Victor> Petaluma (P=0.04)



Petaluma



Victor



Warrior

Midds (mill-feed) 9t/A

ASD with cover crops

- 1) 9 t/A rice bran
- 2) 6 t/A rice bran + rye cover crop
- 3) 6 t/A rice bran + barley cover crop

Both cover crops provided ~ 3 t/A dry biomass in 6 weeks

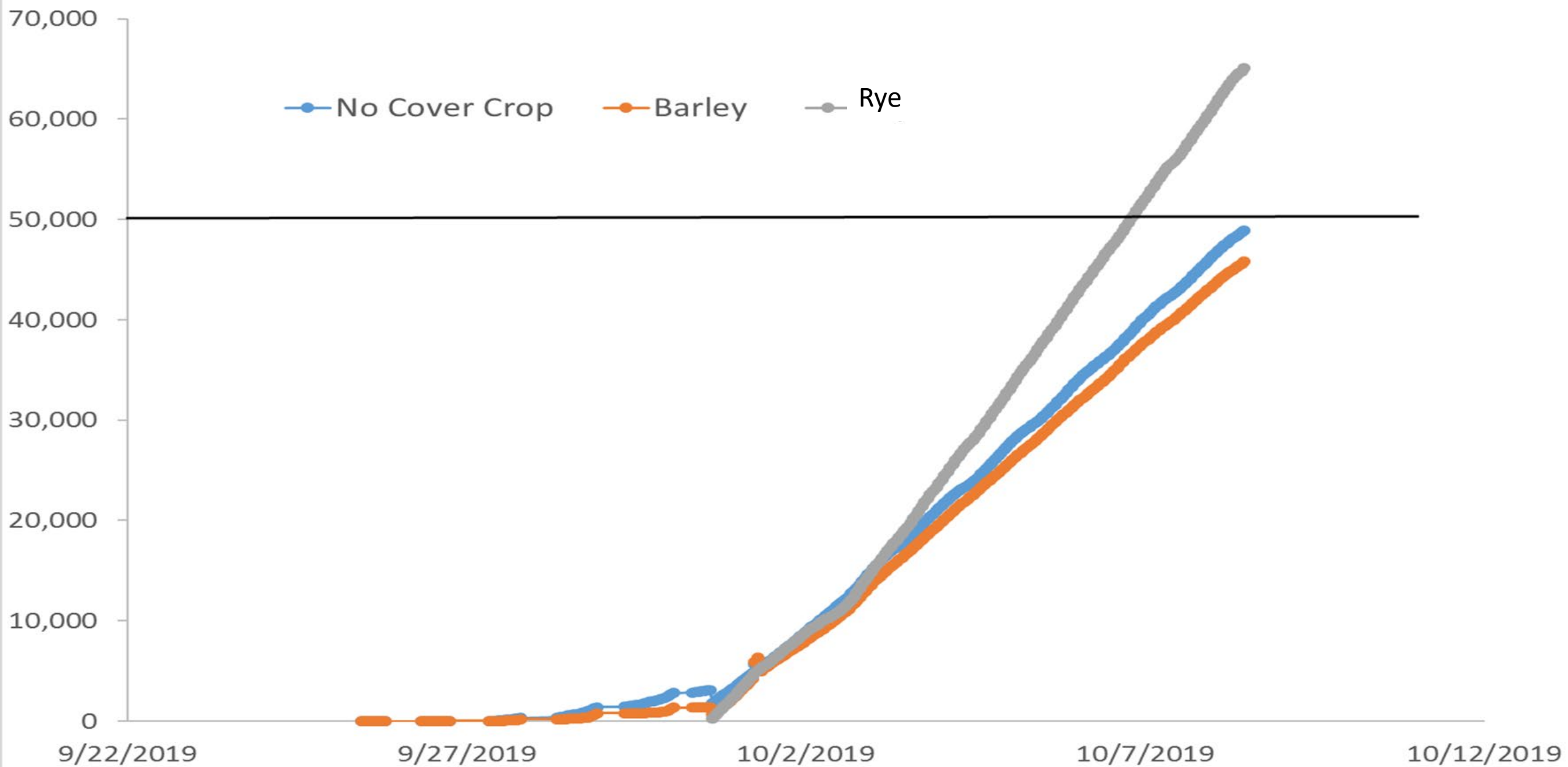
Late termination = cover crops heading and producing seed



**Cover crop+rice
bran before
bedding,
then 2 weeks of
ASD**

Anaerobic conditions in soil

Cumulative Eh < 200 mv



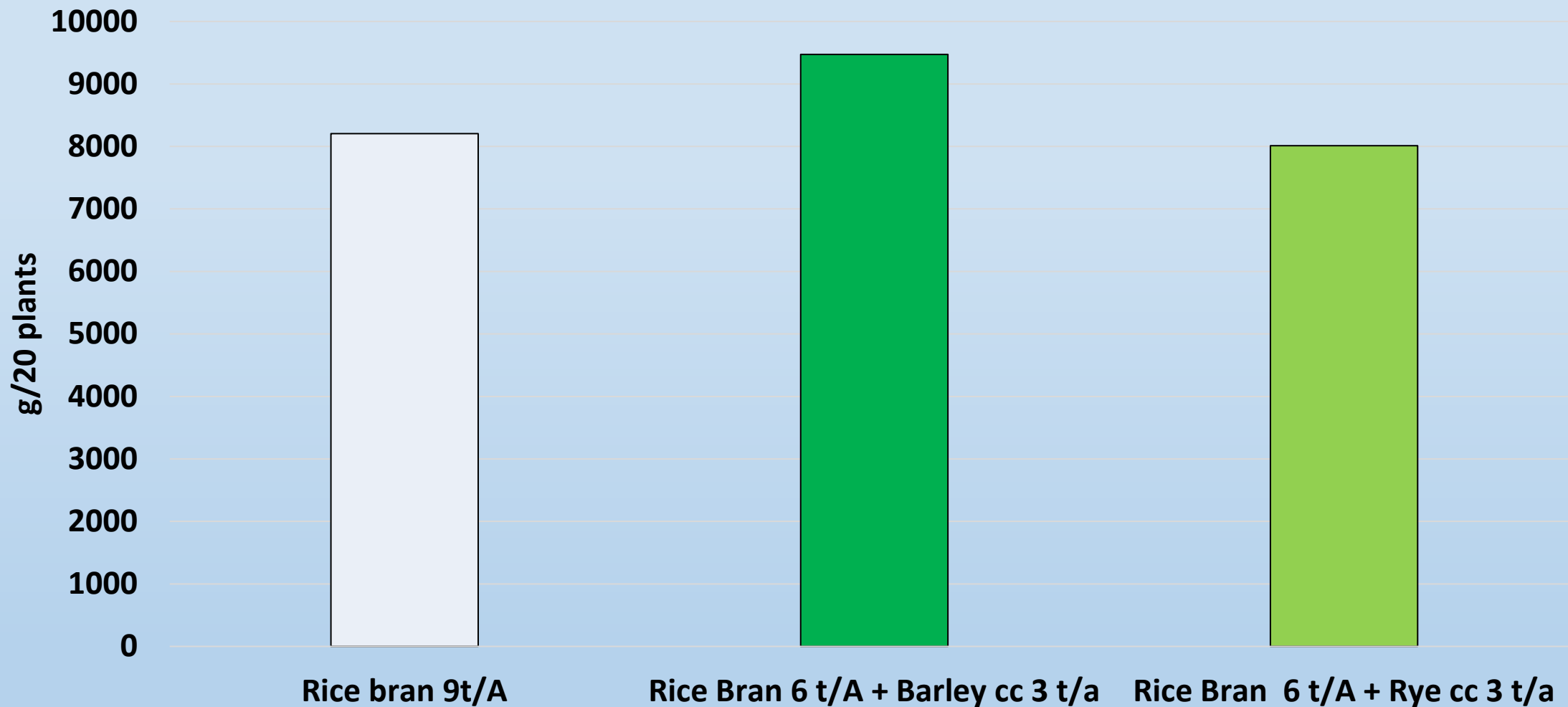
Nitrogen before planting (0-12")

		Ammonium-N, ppm	Nitrate-N, ppm
Rice bran 9t/A		14.6	2.8
Rice bran 6 t/A + rye		12.3	2
Rice bran 6 t/A + barley		16.6	2.3

Nitrogen on May 18th (0-12")

		Nitrate-N, ppm
Rice bran 9t/A		4.4
Rice bran 6 t/A + rye		6.2
Rice bran 6 t/A + barley		9.4

Marketable yields, Jan-May 2020: NO Differences among treatments ($P=0.2$)



'Fronteras' on 27 April, 2020



9 t/A rice bran



6 t/A rice bran + rye cover crop



3 t/A rice bran + barley cover crop

Volunteer cover crops in strawberry



Acknowledgements

- Solimar Farms and Hansen REC
- NIFA USDA funding
- Ardent Mills

Questions:

- 1) Did cover crop biomass with reduced rate of rice bran and 9t/A of bran alone have the same effect on strawberry performance?
- 2) Did millfeed/midds provide plant available nitrogen in soil?