

Organic Wheat Trial Results



In our organic wheat trial in the California Central Valley, our biological programs performed very well.

The farmer has been growing wheat in rotation and fertilizing only with poultry litter, spread pre-plant at 5 tons/acre. This year we helped him set up 4 treatments in 2 acre plots. Each treatment included Pacific Gro complemented with other inputs.

Like many fields in the Central Valley, the irrigation water is high in sodium. The programs are designed to overcome the sodium challenge through healthy and diverse soil biology.

We took leaf samples three times during the season and used Leaf Extract Analysis from Apical Crop Science to assess plant response.

Three of the treatments increased the yield and the net return. The fourth treatment, without biological inoculants, had lower yield (73.8 bushels vs. 75 bu/acre in the control plot) but a higher protein content (15.1% vs. 13.5%). If a customer would pay a higher premium for 15% protein organic wheat, then this treatment would also be profitable.

In the table below, you can see that the program in Plot 1, which includes Pacific Gro Oceanic and Tainio biological products, increased yield to 90 bu/acre, at similar grain protein content. This was a relatively expensive program, but it did produce a net return of about \$63 per acre.

The Plot 2 treatment, without a biological input, cost less and underperformed, though it did produce very high protein content.

Treatments in Plots 3 and 4 applied Pacific Gro Sea Phos in February and Pacific Gro Oceanic in March, together with SGS MetaGrow biologicals. Rates were higher in Plot 4, so it cost about \$77 per acre, vs. \$51/acre for Plot 3. Plot 3 had higher yield; Plot 4 had higher protein content.

Plot 3 was the most profitable. The inclusion of Sea Crop in the March application appears to have made a big difference.

This trial showed that an organic program based on poultry litter and challenged by high sodium water can be improved on and produce a better crop — with Pacific Gro and biological inoculants.



Organic Wheat Trial, with 4 different programs including Pacific Gro

Kings River Produce, Lemoore, California (south of Fresno)

Planting Date Dec. 20, 2019

Harvest Date June 4 - 5, 2020

Fertility Programs	Cost of Inputs	Yield, Bushels per acre	Yield vs Control, bushels/A	Net Return NROI	% Protein	Net Return including Protein Premium
Plot 1	Pacific Gro, Tainio biologicals, Ferticell, Nutra Need \$ 126.78	90.0	15.20	\$ 5.75	13.4% ↑	\$62.93
Plot 2	Pacific Gro, Ferticell \$ 71.50	73.8	(1.20) ↓	-\$82.23	15.1% ↑	-\$86.86
Plot 3	Pacific Gro, SGS MetaGrow biologicals, Sea Crop \$ 51.00	91.1	16.10	\$ 88.64	13.4% ↑	\$148.88
Plot 4	Pacific Gro, SGS MetaGrow biologicals, Ferticell \$ 76.75	86.1	11.10	\$ 19.82	14.8% ↑	\$61.49
Plot 5	Control: 5 tons/acre poultry litter, applied to all plots and the field	75.0	-		13.5%	

Adding Pacific Gro and biological inoculants increase yield and return per acre. The highest yield was achieved in Plot 3, though the additional input cost was the least of the 4 treatments.

Value of Organic Wheat: 14.5 cents/lb

Value of Protein Premium: \$125/ton for > 13% protein

Pacific Gro Application Rates

Plot 1	PG Oceanic 7 gal/acre split in 2 soil applications and 1 foliar
Plot 2	PG Sea Phos 6 gal/acre split in 2 soil applications
Plot 3	PG Sea Phos 4 gal/acre and PG Oceanic 2 gal/acre
Plot 4	PG Sea Phos 4 gal/acre and PG Oceanic 4 gal/acre
Plot 5	None