

### Langleys Bio-Energetic™ technology

- The Next Generation Seed Coating Inoculum
- for use in both Conventional and Regenerative Farming Systems

#### This Trial -

1. used Langleys Bio-Energetic™ technology to:
  - inoculate wheat seeds with a multi-strain suite of energized beneficial microbes;
2. Results show increased plant performance:
  - increased germination;
  - increased Yield;
  - increased Soil Organic Carbon (SOC);
  - increased nutrient density and quality;
  - increased Gross Margins and Profitability.
3. Can be used in Conventional or Regenerative programs.

#### Fertiliser Applied Units /ha

##### Conventional -

(8.2N,9.6P,9K,4.8S+Cu+Zn)  
+ Post Liq-N (12.7N)

##### Biominerals -

(8N,5.4P,3.6K+3.7S+TE's)  
+ Post Liq-N (12.7N);

#### Soil Carbon\*\* Analysis:

Treatment	Soil Carbon (SOC)
Control	0.8%
Conventional + BMB	1.2%
Conventional No Microbes	0.6%
Biominerals + BMB	1.6%
Biominerals No Microbes	1.1%



Langleys Bio-Energetic Microbes **P.1**

Case Study - Wheat Program **P.1**

Results and Conclusion **P.2**

## Comparing Bio-Energetic Seed Coating Technology on Conventional and Regenerative Systems in Wheat.

Report by PJ. Storer, S. Brain and H. Strydom

#### Aim :

A field trial was conducted in Pingelly to evaluate Langleys Bio-Energetic™ Microbe blend (BMB) seed coating technology on a Conventional program (+/- BMB microbes) and a Troforté Biomineral fertiliser program (+/- BMB microbes).

#### Case Study: Wheat Trial

Mace wheat seed were sown at 80kg/ha (minimum till). The seeds were either treated with –

1. Bio-Energetic Microbes(+ BMB); or
2. No Microbes.

Fertiliser regime applied –

1. Conventional K-Till Extra Fertiliser @80kg/ha;
  - + Post UAN 30L/ha
2. Troforté NPK Biomineral Fertiliser @80kg/ha;
  - + Post UAN 30L/ha
3. Control (No fertiliser, No microbes).

The Conventional (+BMB) and Biomineral (+BMB) treated plants *had no fungicide treatments* and had no *disease issues*. Control, Conventional (No Microbes) and Biomineral (No Microbes) were treated with fungicides (seed dressing and foliar).

Herbicides were applied to all treatments –

- 1.5 L/ha Roundup,
- Pre-em 118 g/ha Sakura; and
- Post-em 2 L/ha Boxer Gold.

#### Wheat (+/-) BMB microbe trial



(L) Conventional + BMB; (R) Conventional No Microbes

This seed coating system uses Langleys Bio-Energetic™ technology aimed at enhancing soil health and the plants ability to more efficiently extract nitrogen, phosphate and mineral nutrients.

#### Summary of Trial Results

(samples of data presented on Pg 2):

In both the Conventional and Biomineral programs the application of **Bio-Energetic™ Microbe blend** as a seed dressing showed significant increases in:

- Soil Carbon\*\* (SOC); Seed germination;
- Grain mineral nutrient uptake (Table 1);
- Protein %, Hectolitre Weight and less screenings (Table 2);
- Yield, and Gross Margins (Table 3).

## Table 1 – Grain Nutrient Analysis

Treatment	Nitrogen %	Phosphorus %	Potassium %	Sulfur %	Calcium %	Mg %	Sodium %	Copper mg/kg	Zinc mg/kg	Mn mg/kg	Iron mg/kg	Boron mg/kg	Moly mg/kg	Cobalt mg/kg	Silicon mg/kg
Control	1.44	0.15	0.41	0.13	0.04	0.09	<0.01	1.0	6.9	20	31	2.1	<0.5	<0.1	298
Conventional + BMB	1.59	0.20	0.45	0.14	0.05	0.11	<0.01	1.2	7.8	26	37	2.9	<0.5	<0.1	339
Conventional No Microbes	1.55	0.18	0.47	0.13	0.04	0.10	<0.01	1.1	7.1	24	33	2.5	<0.5	<0.1	312
Biominerals + BMB	1.57	0.21	0.48	0.13	0.05	0.13	<0.01	1.4	8.2	32	39	3.2	<0.5	<0.1	394
Biominerals No Microbes	1.54	0.17	0.45	0.13	0.05	0.12	<0.01	1.2	7.4	28	35	2.7	<0.5	<0.1	375

## Table 2 – Grain Quality

	Control Nil Fertiliser No Microbes	Conventional 80kg/ha NPK program No Microbes	Conventional 80kg/ha NPK program + BMB Microbes	Biominerals 80kg/ha Program No Microbes	Biominerals 80kg/ha Program + BMB Microbes
Protein (%)	10.6	11.4	12.1	11.2	11.7
Hectolitre Weight (kg/hL)	76.1	76.8	78.2	77.8	78.9
Screenings (%)	4.7	6.2	4.4	4.7	4.2

## Table 3 – Yield, Total Costs of Production and Gross Margins

	Control Nil Fertiliser No Microbes	Conventional 80kg/ha NPK program No Microbes	Conventional 80kg/ha NPK program + BMB Microbes	Biominerals 80kg/ha Program No Microbes	Biominerals 80kg/ha Program + BMB Microbes
Yield per ha	0.99 t/ha	1.65 t/ha	1.87 t/ha	1.54 t/ha	1.91 t/ha
Farm Operating Income (per ha) <i>(@ APW1 \$ per tonne)</i>	\$301.95 <i>\$305.00 ***</i>	\$503.25 <i>\$305.00 ***</i>	\$570.35 <i>\$305.00 ***</i>	\$469.70 <i>\$305.00 ***</i>	\$582.55 <i>\$305.00 ***</i>
Total Input Expenses (\$ per ha) *	\$24.48 per ha	\$108.34 per ha	\$106.09 per ha	\$97.05 per ha	\$98.65 per ha
Total Contractor Costs **	\$109.50 per ha	\$119.00 per ha	\$112.50 per ha	\$112.50 per ha	\$112.50 per ha
Total Costs \$ per ha (Inputs + Contractor)	\$133.98 per ha	\$227.34 per ha	\$218.59 per ha	\$209.55 per ha	\$211.15 per ha
Crop Gross Margin (per ha)	\$167.97 per ha	\$275.91 per ha	\$351.76 per ha	\$260.15 per ha	\$371.40 per ha
What is the change from Control?					
- Change in Gross Margin Before Tax (\$/ha)	\$0.00	\$107.94	\$183.79	\$92.18	\$203.43
- % Change in Gross Margin Before Tax	0.00%	64.26%	109.42%	54.88%	121.11%

\* Input Costs (includes Knockdown, Pre- and Post- Em herbicides, seed treatments, fertilisers, Post-N etc)

\*\* Contractor Costs (includes cost of application of herbicides and fungicides, air-seeding, post- N application, harvesting etc)

\*\*\* Based upon 2020 Pricing APW1 \$305/t

### Highlights

#### Conventional program -

(No microbes) = 1.65t/ha and \$275.91 Gross Margin  
 (+BMB microbes) = 1.87t/ha and \$351.76 Gross Margin  
 = +13.3% Yield and +27.5% Gross Margin

#### Troforté Biomineral fertiliser program (+/- BMB microbes) –

(No microbes) = 1.54t/ha and \$260.15 Gross Margin  
 (+BMB microbes) = 1.91t/ha and \$371.40 Gross Margin  
 = +24.0% Yield and +42.7% Gross Margin

### Take Home Message:

- Application of **Langley's Bio-Energetic™ Microbe blend** as a seed dressing in cereal crops has great potential:
  - It has been successfully used on both Conventional and Regenerative Farming systems;
  - Compared to Control and No microbe treatments -
    - Both Conventional (+ BMB) and Biomineral (+ BMB) showed:
      - increased Soil Carbon\*\* (SOC);
      - improved plant germination and performance, grain quality and nutrient density, yield and ultimately increased profitability.