



Better soils. Better crops. Better stock.™

Soil & Seed®

Soil Amendment and Seed Inoculant

BioAg Soil & Seed is formulated to improve soil microbial activity, thereby improving natural soil fertility and moisture and nutrient utilisation. It acts as an excellent soil inoculant. It encourages rapid germination and early root development, enhancing yield potential. Independent trials in a wide variety of crops attest to its efficacy in improving yield and quality.

Product Benefits

- Provides a balanced food supply for soil microbes
- Stimulates soil microbial population and diversity
- Accelerates conversion of crop residues into humus
- Improves soil moisture and nutrient utilisation
- May be used as a seed inoculant for rapid germination and early root development

Physical Properties*		
Ash	%	6.50
Fat	%	0.15
Protein	%	1.60
Carbohydrate	%	18.20
Total Solids	%	33.60
Specific Gravity	kg/l	1.152
pH		3.40
Phosphorus	%	2.09
Phosphorus (bio-available)	%	2.04
Orthophosphate (water sol.)	%	1.70
* Typical Analysis. National Measure Institute, Environmental Analytical Laboratories, BioAg and JBS Swift Laboratories		

Microbial Composition*			
		Biomass [g/l]	Biomass [g/l]
Total Microorganisms		38.6	
Total Bacteria		26.7	
	Pseudomonas		4.8
	Actinomycetes		0.7
	Anaerobic spp		0.1
	Gram positive spp		3.2
	Gram negative spp		23.4
Total Fungi		11.5	
* Typical Analysis. Creation Innovation Agricultural and Forestry (CIAAF)			

Microbial Populations

One of the microbial species present in Soil & Seed belongs to the *Aspergillus* species. *Aspergillus* microbes can have very diverse functions in soils; they can be important nitrogen fixers and agents in remediating contaminated soils. In addition, *Penicillium* species have also been detected. In soil, some species of *Penicillium* such as *P. notatum* can promote plant growth. Other species can help the plant by suppressing root pathogens.

Amino Acids

Soil & Seed contains a wide variety of amino acids, including Arginine, Aspartic Acid and Glutamic Acid, which are either free (available from the metabolites) or bound in the biomass. These amino acids, especially the free amino acids are available to assist in the improvement of the soil biology.

Effect on Soil Microbe Populations

Soil & Seed improves the biomass of the soils which are treated with it, as shown in the following table.

Microbial Biomass [kg/ha]					
Soil Type			Total Micro-organisms	Total Fungi	Total Bacteria
			kg/ha		
Sandy	Untreated	PC-1	35,114	32,121	2,993
	Treated	PC-2	38,429	34,953	3,476
Loam	Untreated	EA-1	15,304	12,896	2,408
	Treated	EA-2	33,178	30,429	2,749
Clay-loam	Untreated	NS-1	22,143	20,186	1,795
	Treated	NS-2	63,804	59,856	3,948

Analysis by Creation Innovation Agricultural and Forestry (CIAAF)

Application Directions

Application may be made by boom (drip or low level sprinklers), aerial spray, or by fertigation (centre pivot or water-run).

Crop	Application Rate l/ha	Comments
Broad Acre cereals, pulses, oilseeds, lucerne, sorghum	Non-Irrigated 3.0-4.5 Irrigated 4.5-8.0	Apply to moist soil before seeding and incorporate within 72 hrs, by seeding or other cultivation.
Irrigated Crops cotton, potatoes, mangoes, sugarcane, bananas	10.0	Where applicable may be applied through irrigation to avoid the need for incorporation
Horticulture vines, citrus, vegetables, nut and fruit trees	10.0	Apply to soil before bud burst. Apply post harvest to improve soil structure and plant balance.
Pastures	2.5 – 4.0	Apply to moist soils. Grazing delay post application - NIL
Seed Inoculant	2.5 – 4.0 l/tonne	Sow within 72 hrs of inoculation. Dilute (water) to moisten grain.

Mixing and Spraying

1. Agitate contents before use.
2. Jar test all added materials for compatibility before tank mixing.
3. Fill tank to a minimum of two thirds with water.
4. Add other nutrients as prescribed under agitation.
5. Add Soil & Seed under agitation, bring volume up to full.
6. Use within 48 hours of dilution.
7. Rinse sprayer after use.



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Storage and Handling

1. Store all containers out of sunlight as the product is light and temperature sensitive.
2. The product has a shelf life of 18 months at temperatures below 30°C.



For more information, call 1300 599 911 or visit www.bioag.com.au