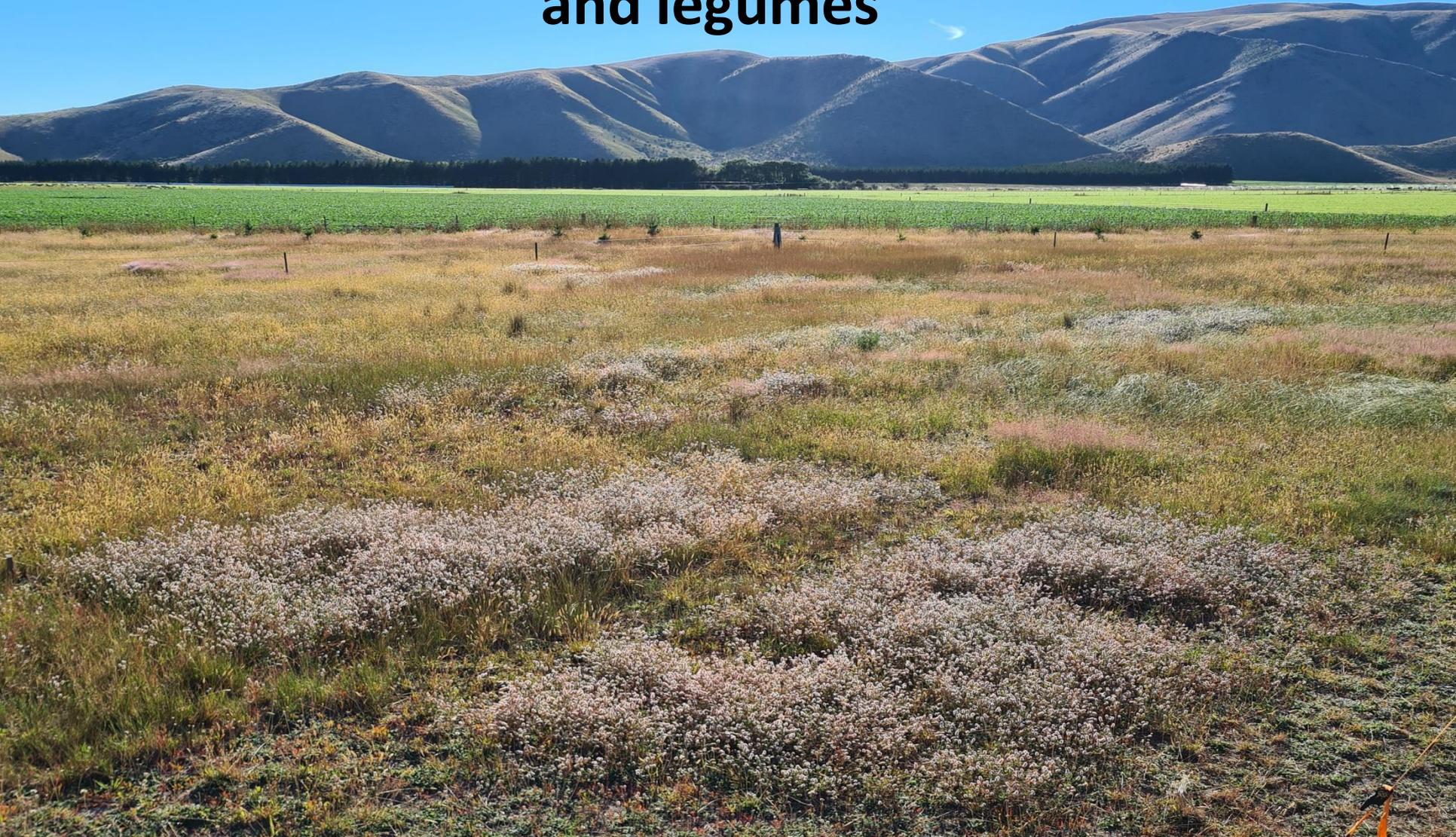


**Biological Stimulants  
increase fertilizer efficiency  
and legumes**





Food and Agriculture  
Organization of the  
United Nations

# THE SOIL MICROBIOME A GAME CHANGER FOR FOOD AND AGRICULTURE

Executive summary for  
policymakers and  
researchers



## BioAg Stimulants

Increased yields:

### US Trials 2013 -18

Corn	16%
Cotton	13%
Soybean	16%

### NZ Trials 2016 - 18

Beef	17%
Dairy	28%





Low  
Fertility  
Soil

# Spring Pasture Response





# Summer Response



Bio-Active  
P

Nil

BAP + S&S

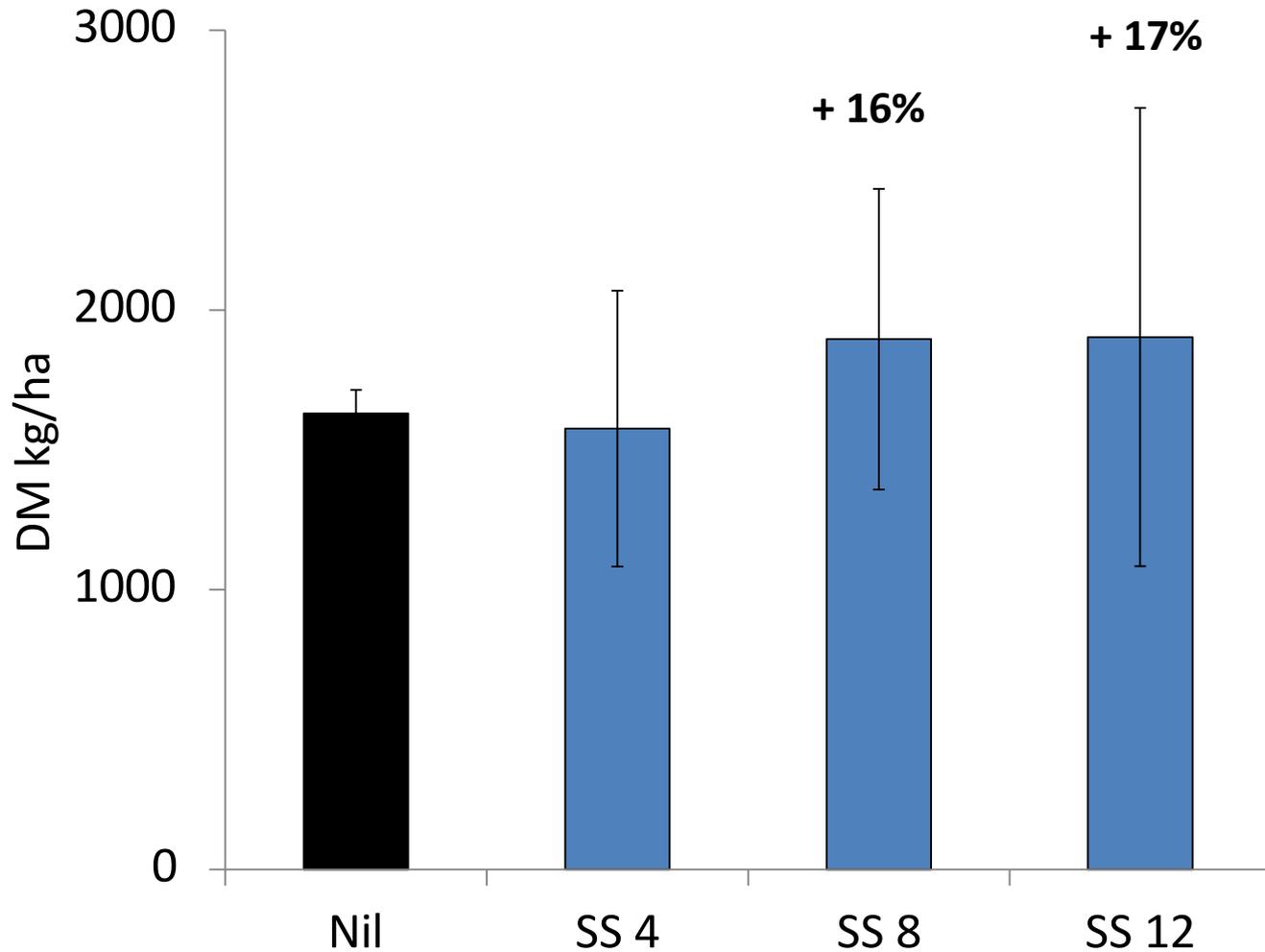


Blowing  
in the  
wind...

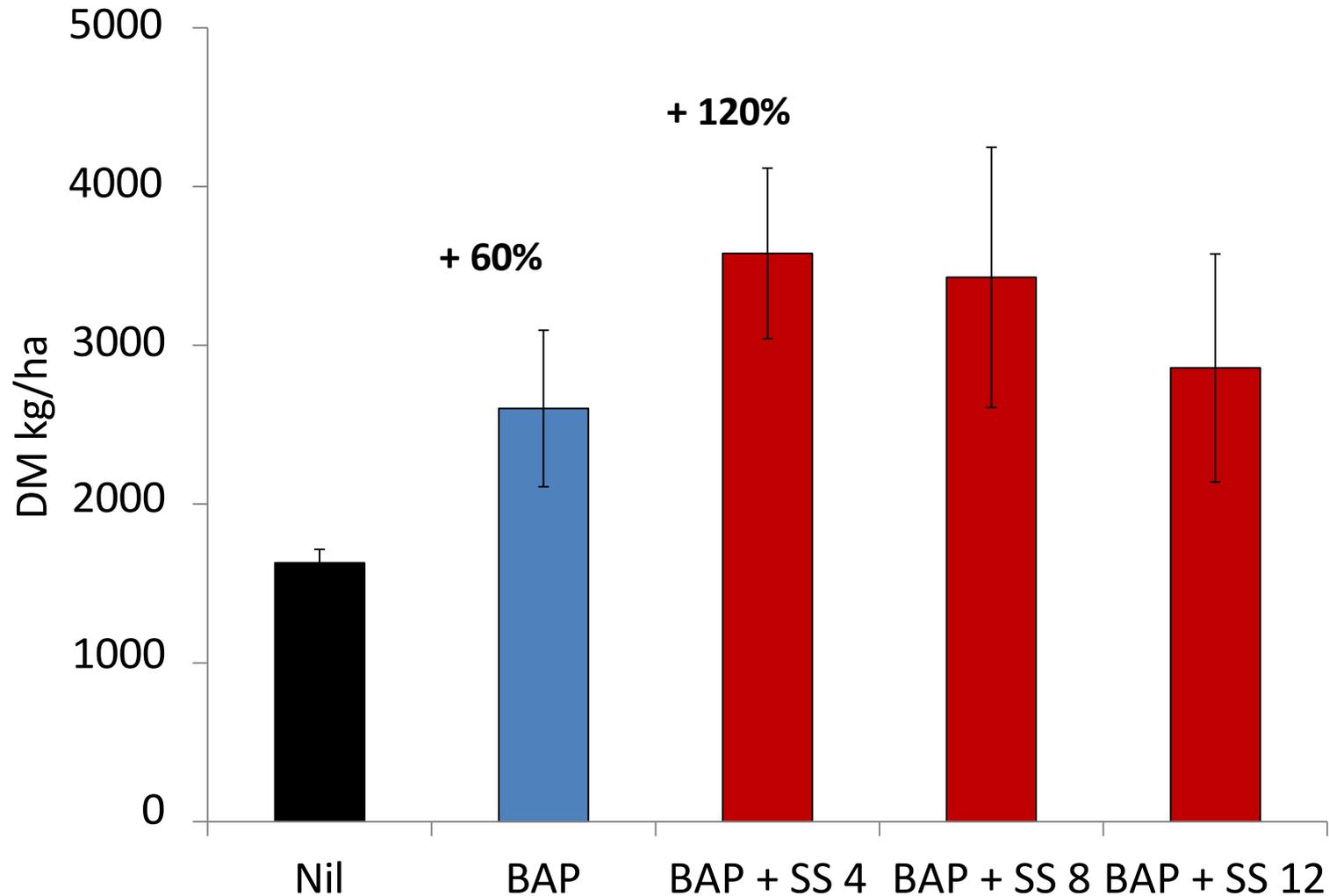
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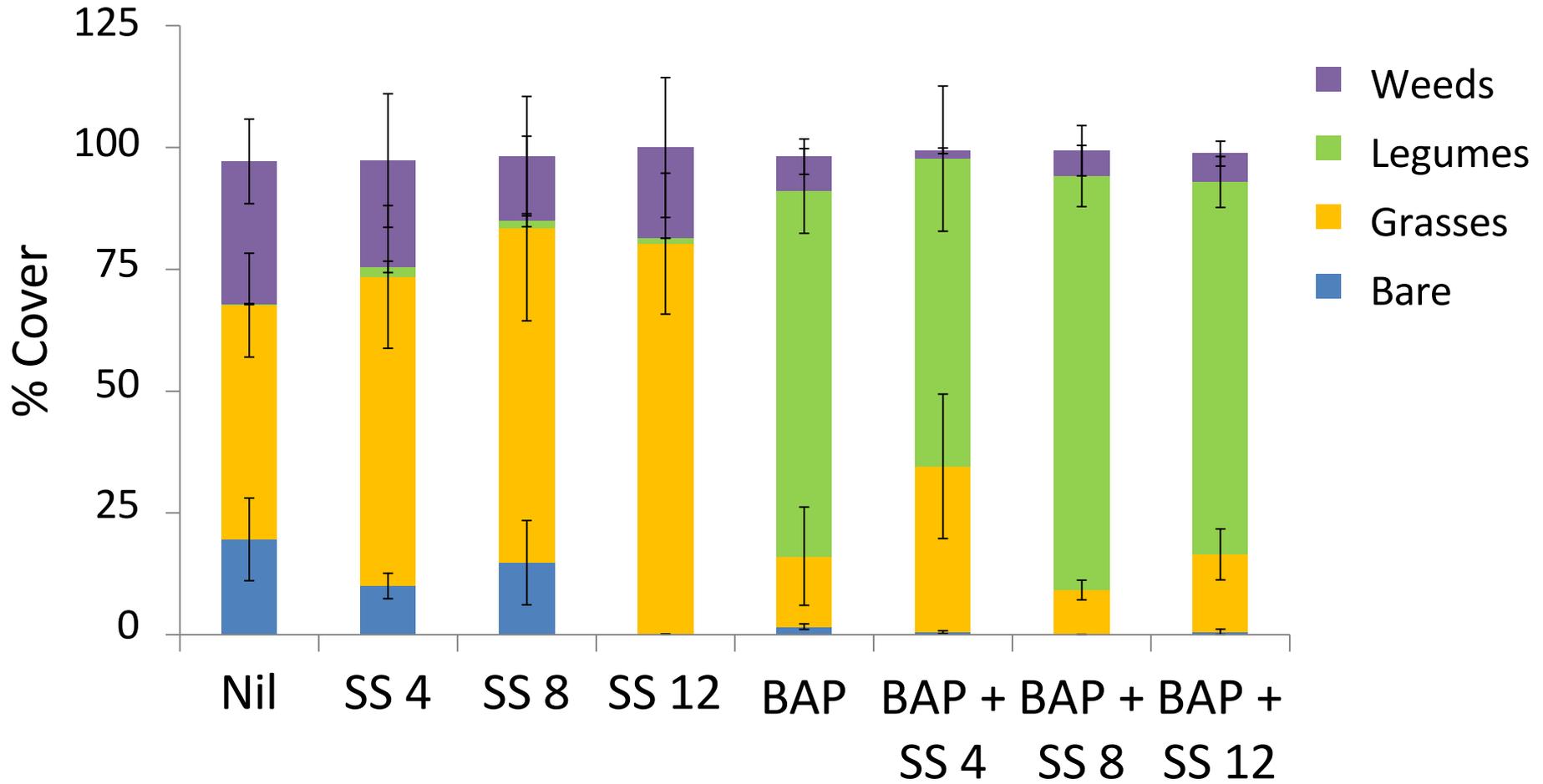
# Soil & Seed Biostimulant



# Bio-activated P + Soil and Seed



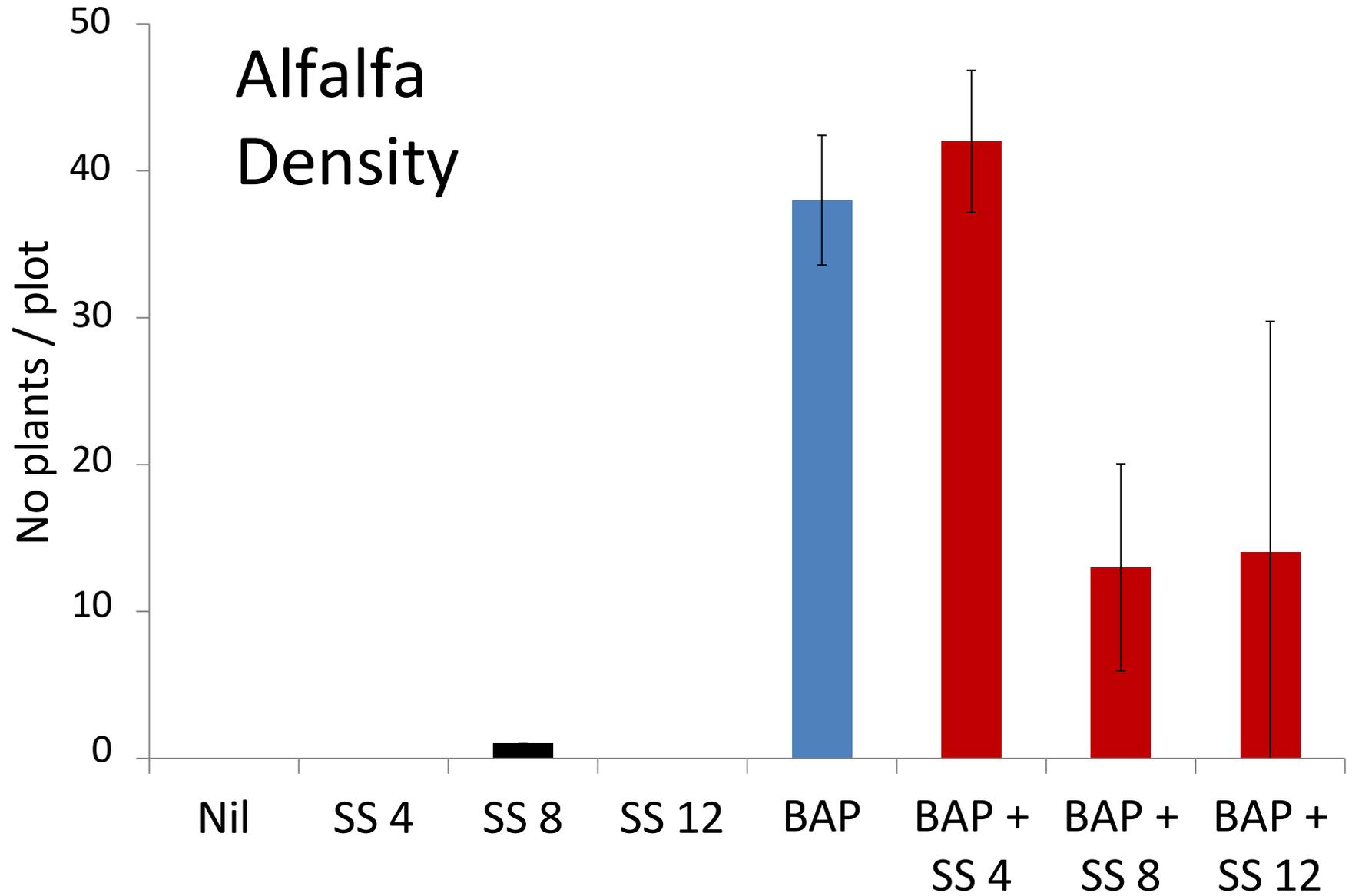
# Pasture Composition



# Alfalfa Indicator



# Alfalfa Density



# Conclusions

- **Biological stimulants increase production and legume composition**
  - 17% alone**
  - 60% with bio-activated P**
  - 120% combined**
  - 85% increase in legume content**
- **A beneficial new pathway for sustainable agriculture ?**

# Questions

Anton Barton

Executive Chairman,  
Founder, BioAg Australia

Steven Haswell

CEO, BioAg NZ

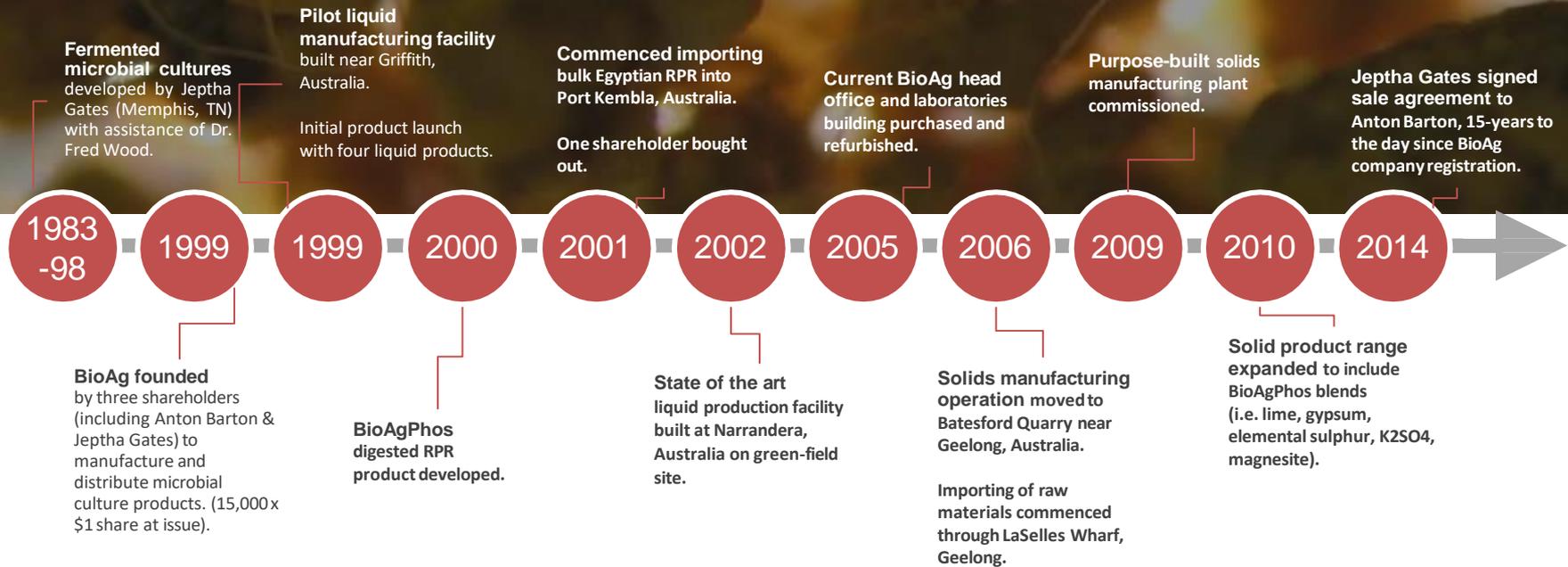
Peter Espie

AgScience NZ

# Biostimulants

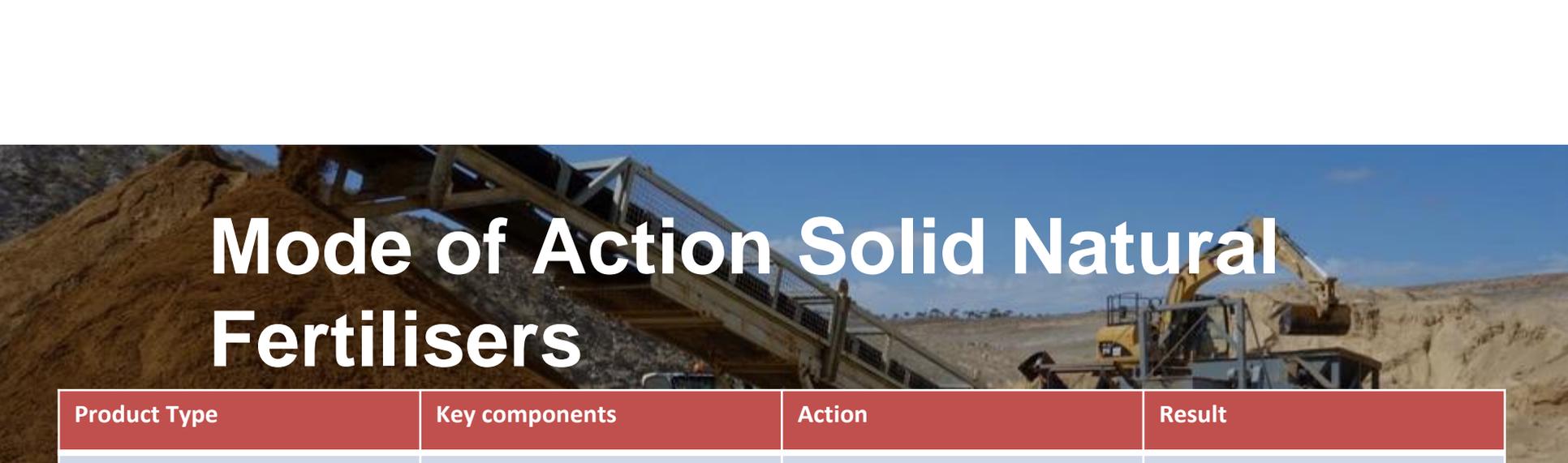


# Technology & Product Evolution



# Mode of Action Liquid Microbial Fermented Cultures

Product Type	Key components	Action	Result
BioAg liquid fermented cultures.	<p>A range of proprietary microbial culture blends designed for specific periods in a crops growth cycle.</p> <p>Source of fermented microbial cultures containing vitamins, minerals, proteins, enzymes, amino acids, carbohydrates, dormant organisms &amp; growth promoters.</p>	<p>Active liquid form delivers beneficial ingredients in a form ready for immediate uptake.</p> <p>Adds to, and stimulates existing microbial activity in the soil.</p> <p>Effective bio-chelator of soluble nutrients.</p> <p>Convert soluble nutrients into a microbial state.</p>	<p>Makes other inputs more readily available to the plant.</p> <p>Unlocks existing nutrients in the soil.</p> <p>Protects applied &amp; existing nutrients from becoming <i>tied up</i>.</p> <p>Improves utilisation of nutrients &amp; moisture.</p> <p>Reduces the need for various inputs over time.</p> <p>Increases yields &amp; quality of yield.</p> <p>Unblocks the flow of nutrients within the plant.</p> <p>Increases the plants resistance to stresses such as heat &amp; frost.</p>



# Mode of Action Solid Natural Fertilisers

Product Type	Key components	Action	Result
BioAg solid phosphate-based fertilisers	<p>BioAg phosphate digester (proprietary microbial culture).</p> <p>High-grade reactive phosphate rock (RPR).</p> <ul style="list-style-type: none"><li>• High citric &amp; formic acid solubility.</li><li>• High phosphorus content (13%).</li></ul>	<p>Microbial culture digests phosphorus &amp; other nutrients, adding them to the nutrient reservoir in the soil, in a plant-available form.</p> <p>Soil biology is enhanced along with a range of minerals, amino acids, vitamins, enzymes &amp; proteins.</p> <p>Provides sustained release &amp; availability of phosphorus for crop &amp; pasture uptake.</p>	<p>Approx. 1/3 of nutrients are immediately available, while the remainder is slowly digested &amp; made available.</p> <p>Reduces the amount of nutrient traditionally lost through issues such as leaching &amp; 'lock-up'.</p> <p>Increases beneficial soil biology population.</p>

