

August Biological Farming Roundtable Notes

What: The Biological Farming Roundtable was held at the NutriSoil Production and Education Facility on Thursday the 27th of August 2015.

Why: The aim of the Biological Farming Roundtable is to use papers/articles written by leading biological thinkers to initiate discussion and to help farmers learn and apply the information on farm.

Who: This Roundtable discussion was based on the article: “**Diversity is King - South Dakota Farmer, Gabe Brown, Combines Cover Crops for Improved Soil Health, Fertility and High Yields**” – Article from ACRES U.S.A October 2013

Summary of Gabe Brown’s Farming Journey

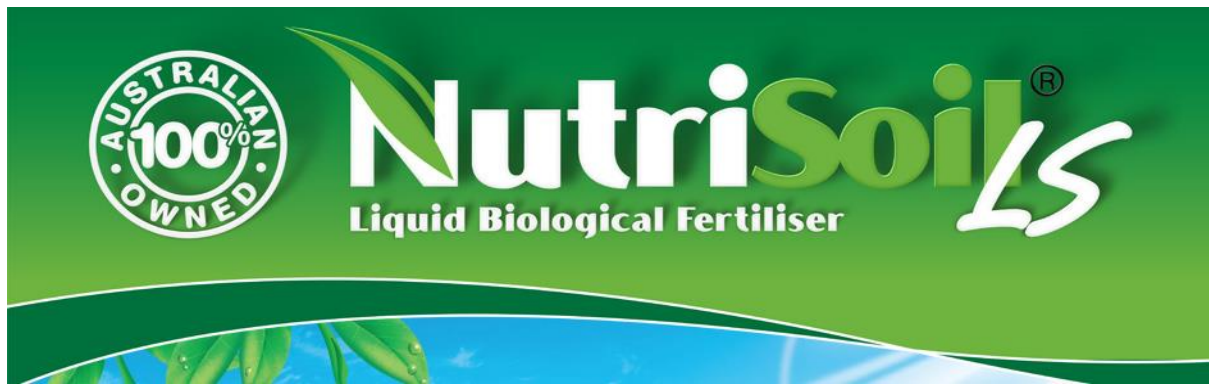
- Began his farming operation in 1983 – Primarily cool season grasses, half summer fallow, half crops.
- Rainfall 380mm, some of this in snow. 2000 acres cropping and 3000 acres native pasture.
- Began No Till Farming in 1993.
- Had a number of crop losses due to environmental conditions – hail and drought.
- Found himself BROKE – Needed to operate without the cost of synthetic fertilisers.
- Invested in legumes and forage crops to feed cattle - began diversifying with different pasture species, some 15 to 20 species.
- Following each forage crop his cash crop kept getting a little better.
- In 13 years - Increased organic matter from 1.9 to 6.1% and water infiltration from .5 inches of water per hour to 8 inches per hour.
- For every 1% in organic matter Gabe could hold an additional 75 700 litre water
- Gabe began mob grazing.



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- Stock grazing numbers used were 270 000 kg to 317 500 kg per acre rotated over the 5000 acres. E.g. If the average weight of a beef cow was 700kg. This would be equivalent to over 450 cows per acre.
- Gabe used the stock in the pasture cropping rotations.



Lessons from Gabe

There are four main crop types. There are warm and cool season, broad leaves and grasses in each type. E.g. Consider wheat (a cool season grass), you can then add the other three species – Cowpeas (a warm season broadleaf), some sunflowers (a warm season broadleaf), Sudan Grass and Millet – both warm season grasses.

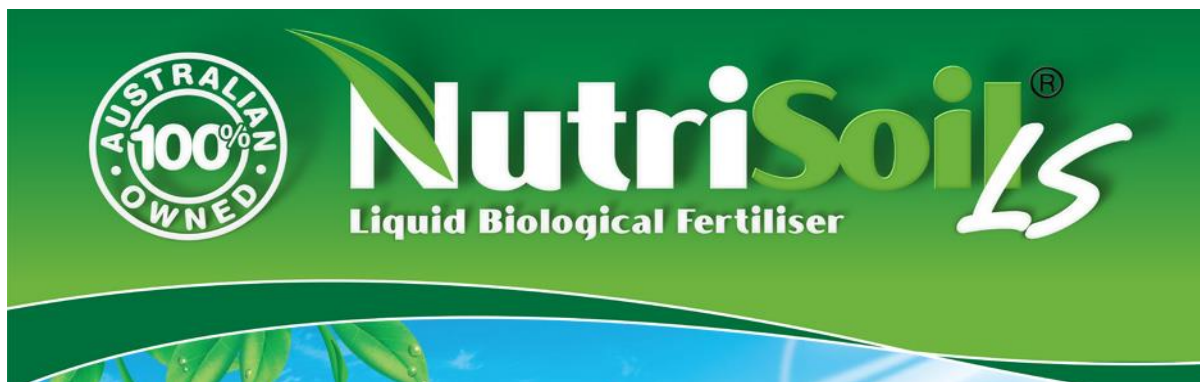
- Gabe always thought moisture was the limiting factor in crop production.
- **It's not how much rain you get – it's how much water you can infiltrate and store in your soil.**
- Gabe saw his biggest jump in soil health when he began mob grazing.
- You have to tailor pasture cropping mixes to each specific region, what's good for one region may not work in another.
- Trials are your best teachers. You want to fail at things to learn from them. And try again with this lesson in mind.
- You have to follow nature's template. (Diversity and integrating livestock). By livestock Gabe also means insects also. Gabe has not used fungicide in his operation in over a decade. "That does not mean I don't have fungal diseases, but they never reach the point they're economically detrimental to me. Monoculture crops are susceptible to predator damage because there is no environment for the beneficial predator insects to habitat".
- Choose a good flowering species in your cover crop – one that will attract pollinators and be a home for the predator insects.



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Discussion of how this can be achieved in Australia/My area?

Comparable Conditions Consideration.

Often we are guilty of dismissing successful farming examples as something that we cannot take on because we think that our farming conditions are much more difficult.

The Biological Farming Roundtable is held at Wodonga (North East Victoria). The comparable conditions we considered was based on this area. It was interesting to discover that South Dakota had similar summers and harsher winter conditions.

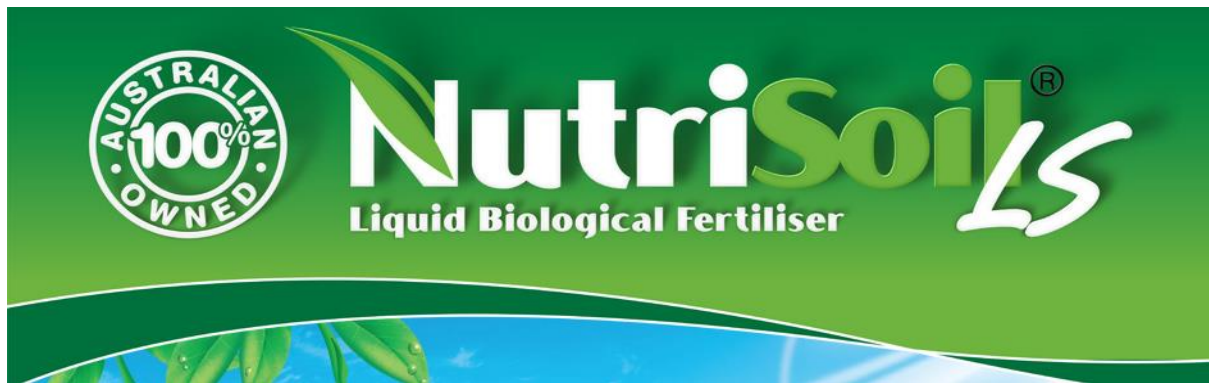
Albury/Wodonga, Australia	South Dakota, USA
Cool to mild winters, warm to hot summers.	Four distinct seasons, ranging from cold winters to hot summers.
Summer, the mean daily maximum temperature is 30°C.	Summer, the mean daily maximum temperature is 30°C.
Mean winter maximums are 13 °C with many crisp, sunny days. Frosts are commonplace in winter.	Average winter maximums are -3°C. Snow is commonplace in winter.
Annual rainfall is 701.3 mm.	Annual rainfall is 380mm, some of this is in snow.



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We asked Mark Palmer from Stephens Seeds to come along and share with us what seed mixes are working in this area. (Northeast Victoria). Weather conditions and soil water holding capacity/health will always need to be considered when considering these species.

Sorghum, Brassicas, Red Clover, Strawberry Clover, Chicory, Lucerne, Plantain, Turnips, Radish, Vetch.

Cow Peas – if it's really warm,

Lab Lab – will not grow in heavy country,

Rye Grass – shuts down over 30 degrees.

Can we achieve living green groundcover all year round to increase our photosynthetic capacity in hot dry summers?

- In hot dry conditions plant species that are dormant in summer **but have the ability to respond to rain**. This will minimise risk of planting summer active pastures that will not survive in minimal rainfall.
- Keep dry litter on your ground which will assist in protecting microbes, reducing erosion, and hold moisture.
- Learn to use your stock. They are four legged microbial digesters that will fertilise your crops in the non-crop phase.
- Keep stubble and allow weeds to grow over summer.
- Grow as much ground cover in the non-crop phase as possible.
- Summer crops and cover crops will over time assist with reducing herbicide use.
- As you build organic matter in your soil, your water holding capacity will increase and maintaining summer active species will be more achievable.



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