

Pasture legumes: successes and failures in South Africa

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CONFESSION

- Even after retirement, I am still involved with one of the successful pasture legumes
- I am not the only legume addict in South Africa but there are not many of us

History of legume pastures in SA

- Since 1890 advisors to the Cape Province Department of Agriculture advised the use of legumes in planted pastures for the higher production areas of SA

The benefit of legumes in pastures is:

Higher quality

and the Nitrogen fixed by the legumes
available to companion crops

For a legume to be successful we need 4 factors

1. A legume adapted to area of application.
2. A source of seed and *Rhizobium*.
3. A skilful farmer who is prepared to manage the pasture
4. A support base from a research organisation

Lets look at these factors:

1. **Adapted legume** (ignoring fashion legumes and their prophets), we have only three groups of successful pasture legumes in South Africa.

The **medics and sub-clovers** in western Cape
White clover adapted to high potential areas,
and
Lucerne, widely adapted but mostly for hay.

2. A **Seed source** and effective ***Rhizobia***

For sub-clovers and medics it seems that they have a source in their area of adaptation by prolifically producing seed and seed imported from Australia.

White clover seed we have to import, even after breeding cv Dusi

Lucerne developed as fodder crop under irrigation. Seed of forage varieties is imported, seed of two grazing tolerant varieties produced locally.

Lucerne was imported to South Africa as a hay crop and was deemed so important that a **Lucerne Seed Board** was formed to regulate imports.

Seed was produced all over South Africa and sent back to the Board and its agents in Oudsthoorn to clean and redistribute

This caused a massive **natural selection** process, and a landrace S A Standard was formed which was tolerant to grazing.

3. **Skills of the farmer**, it requires much fewer inputs to manage veld than a productive cultivated pasture.

4. SA has much more veld than cultivated pasture and this fact influenced the **ratio of research** on pastures relative to veld.

We can see this even in the composition of our Grassland Congresses.

Research on cultivated pastures, and even less, **research on legume based** pastures was limited to a few researchers.

Which legumes do we have that can be called successful, that **produce** well, can **withstand grazing** and has a **seed supply** and **supporting research**.

Only the three groups: medics/sub-clover, white clover and lucerne

The **medics and sub-clovers** have had evaluations done to find adapted and productive cultivars, but newly bred cultivars were introduced from Australia.

White clover had a problem with persistence, especially in KZN

Breeding led to an acid tolerant deep rooted long lived cultivar Dusi, bred at Cedara.

With no seed production in SA we produce seed in California limiting its availability and acceptability.

A lucerne introduction and evaluation programme was started in the 1980's as SA Standard did not have any tolerance to **aphids**. (NLEP)

The **Lucerne Seed Board** financed an **ARC breeding program** which resulted in the release of a grazing tolerant cultivar, **SA Select** which also had tolerance to aphids.

This leaves us with two related grazing tolerant cultivars.

Failures

We evaluated many pasture legumes which were suited or not suited to our conditions.

1. We failed pasture legumes with the limited research capacity that was allocated to them over decades of pasture research.
2. Advances in Genetics resulted in no conventional breeding programs and breeders that could compete with biotech genetics.

3. The **ARC** failed all pasture crops by closing down its forage crop breeding program.

We stand to lose very valuable genetic material of forage crops, especially grasses which already have PBR, but which do not get released or licensed to seed companies.

Impact on animal production

In a very few years South Africa may be totally dependent on imported seed of forage varieties **at a cost**, and on the research done in countries like Australia and New Zealand.

Similar but not the same as South Africa

The future of pasture legumes in South Africa will be limited to **imported cv's** and to two locally bred lucerne cultivars.