Case Study 6 – The role of subtropical grasses and fodder shrubs in managing the risk of wind erosion in a paddock

Business profile

Keith Tunney

Enterprises:	Grazing livestock and Cereal
Total farm area:	800 ha plus 500ha leased
Mean annual rainfall:	450mm
Landform and soil types:	Undulating landscape with deep white sandy soil

Farmer: Keith Tunney standing next to his well established subtropical grass

Background of the farm

Keith Tunney is a member of the Mingenew-Irwin Group and farms a property 'Wongalea' about 7 km east of coastal town of Dongara in the Northern Agricultural Region of WA. Wongalea lies on the typical undulating deep grey sandy soils of this area. Keith bought 'Wongalea' in 1997 having moved from Queensland. "I bought this property because it was cheap then and I wanted to take advantage of the rainfall from coastal westerly wind", Keith explained.

Keith main enterprises are sheep and cattle. He runs about 500 head of beef cattle and about 200 sheep mainly for lamb and wool. Cropping is small part of his enterprise though the yields aren't satisfying. Generally wheat and lupins yield about one tonne per hectare. According to Keith the country is not really suitable for cereal cropping.

Challenges

When I moved to the property there was evidence of wind erosion. "A major limiting factor was a lack of adequate protective cover against the erosive forces of the coastal wind". There was little organic matter in the soil due to poor cover from short term annual plants. What came back were weeds (such as Brome, Paterson Curse, Double-Gee and Blue Lupins) and that made it difficult to farm at Wongelea". I knew I had to do something, Keith explained.

Learning to manage the poor soils

While in Queensland, Keith learnt about the important role tagasaste and perennial grass play in managing poor soils. In 2000, he decided to take plunge with 400 ha of tagasaste in 15m double row. Sometime later, Keith wanted to further increase the productivity of his tagasaste paddocks. Between the rows he sowed subtropical perennials grasses (Gatton panic, Fine cut Rhodes and Signal grass). The idea was not only to get more out of season feed for his livestock, but also to reduce the risk of wind erosion on some of the lighter paddocks.

Although the perennials were very successful on the lighter soils, Keith believed he could further push the system. This is when he got into pasture cropping. "Because the sands are non-wetting, there were too many gaps, between plants. There was not enough cover, so after I got the perennials established, I filled the gaps by putting in some legumes", Keith said. He designed and built a double-disc opening machine that safely sows through the perennials without disturbing them. Through this trailing, Keith was able to establish annuals legumes such as lupins and serradella, but also ryegrass, oats and barley for feed or sometimes for grain

production. Keith reckoned the addition of high annual legume component would boost feed quality during the growing season and provide the nitrogen input to drive the productivity of his perennial grasses.

Keith's cattle enjoying the well established subtropical grass and annual legumes in the paddock.

Progress made

- "When I got here the property's carrying capacity was about 1.0 dry sheep equivalent (DSE) per hectare. With pasture manipulation using tagasaste and subtropical perennial grasses my stocking rate is now up around 6 DSE/ha. The lift in carrying capacity is also due to rotational grazing," Keith said. "When I bought the place it had seven paddocks, now it has 45. The subtropical perennials provide additional grazing throughout the year." he further explained.
- "The root systems of the perennial grasses go down deep five metres, and tagasaste has a root system that goes down 10–15 m. Any fertiliser that leaches through the sand gets recycled", he explained. The perennials also pull up any moisture from rain during the season," he added.
- The other great benefit of the sub-tropical perennials is they are summer-active giving year round cover which stops the country blowing away, he said.

Learnings

- Because it is non-wetting sand, unless it rains continually for a week or more, it is hard to get new seedlings established.
- Subtropical perennial species provide feed into summer and respond to early breaks and summer storms.
- An over-sown annual crop provides grazing opportunities during winter and the potential of grain harvest, at no detriment to perennial pastures.
- Pasture cropping increases the biomass of the paddocks allowing for further increases in stocking rates.
- Pasture cropping also allows you to carry your stock through drier seasons without the need to sell.

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