

Pastures for the flood plains

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Nevin and Tracy Olm manage an integrated live-stock and cropping enterprise on two small properties (Glenoak & Oaklands) located on the Darling Downs, west of Dalby. Glenoak was first settled by Nevin's grandfather in 1908 and Oaklands, located within 2 km, was purchased in 1999. Farm income is supplemented with off-farm employment due to the relatively small size of the properties (260 ha).

Natural Resources

The land resource is a deep (>2 m) self-mulching cracking clay (*Kupunn*) on brigalow clay sheets. The surface is strongly alkaline (pH 8.5) and the PAWC for winter cereal is 220 mm. In its natural state, shallow melon-holes or gilgai, dotted the landscape; however, these have now been land-planned for cropping. Landform is very flat (<0.2% slope) and previous to the last 20 years, was subject to episodic overland flow inundation during most summers. Livestock are watered by bores and overland flow is stored in dams for domestic use. Prior to clearing, brigalow (*Acacia harpophylla*) and Queensland bluegrass (*Dichanthium sericeum*) were the predominant vegetation.

Management

The properties are managed by applying ley farming principles, which aim to maximise profitability and long-term productivity. While productivity has been significantly reduced during the current adverse climatic conditions, a lift in commodity prices has more than helped to maintain profitability. The key to achieving our positive business return is the maintenance of soil fertility

through a range of short-, medium- or long-term pasture leys, which incorporate summer and winter legumes. Pasture management and species selection are also important to achieve high dry matter production. However, the opportune purchasing and marketing of beef is a key strategy to maximise returns per hectare during the pasture phase.

Pasture monitoring is an essential management tool to assist with decisions such as stocking rate and pasture performance. Adequate ground cover (>50%) is critical to capture rainfall, protect the soil resource and minimise evaporation. Figure 1 shows how the percentage of cover on a long-term pasture, established in 2001, has improved over time.

Each year during the autumn period, long-term pastures are over-sown with vetch, which is a great soil fertility builder with an added benefit as a high protein feed source. However, for the first time last year, this strategy failed with no useful autumn, winter or spring rainfall (118 mm). Therefore, protein supplements were required to maintain acceptable weight gains (0.7 kg/d) and reduce stocking rates by marketing feed-on cattle. All cattle are weighed to determine herd weight gains (0.5–>1 kg/d) and assist with marketing.

Short-term leys of one-year duration are included during the cropping phase. Legume species, such as snail medic, lab lab or cowpea, are usually grazed following either a winter cereal (wheat, barley) or summer crop (sorghum). Lucerne (*Medicago sativa*) provides the medium-term (3 years) pasture ley. Studies indicate that, given reasonable seasons, lucerne can provide 80–100 kg N/ha/yr, which is available for a following cropping phase.

Long-term pasture leys (>7 years) consist mainly of an initial mix of improved pasture species (Figure 2). In favorable seasons, mixed pastures that include legumes can produce 80–100 kg N/ha/yr and improve soil organic carbon (>0.9%) after a 4-year ley period. Establishing a range of species is highly advantageous in extending pasture protein levels, which in turn equates with better herd weight gains. Pasture monitoring also

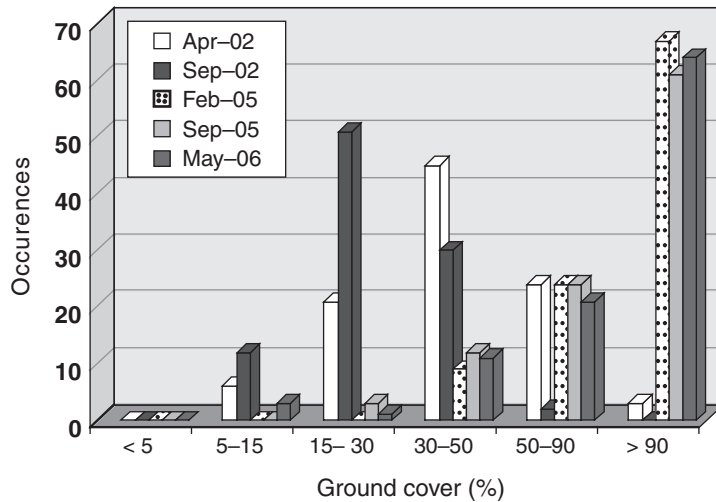


Figure 1. Ground cover at Oaklands.

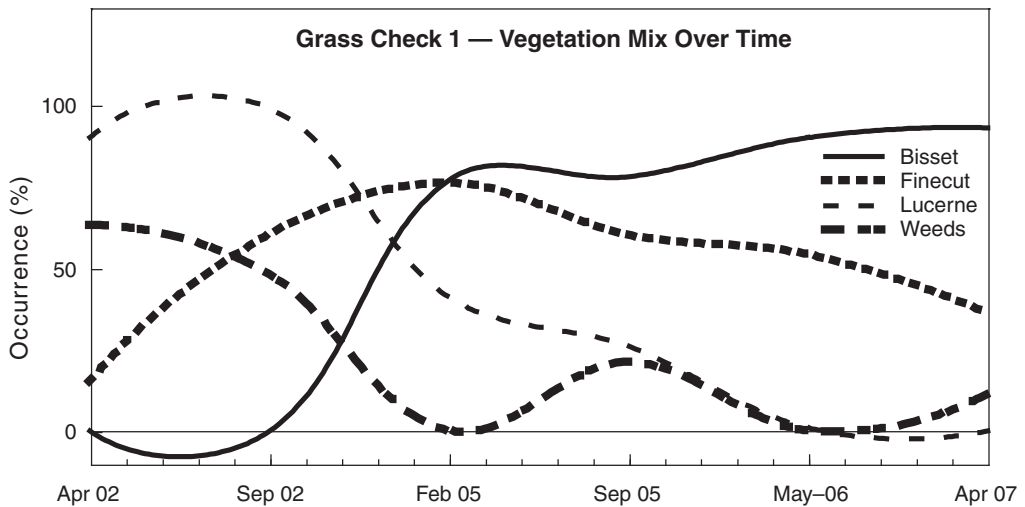


Figure 2. Change in proportions of species over time.

provides an indication of how the pasture composition has changed (Figure 2) since establishment in 2001. The occurrence of lucerne, once dominant, has decreased, while Bisset seems set to become the dominant species. Cultivation weeds (*e.g.* mint weed, barnyard grass) are usually controlled by slashing during the establishment phase.

The most productive pasture (>14 t/ha) over the past 7 years has been a super-brew pasture blend of lucerne, Finecut rhodes, Bisset creeping bluegrass and Floren bluegrass. Low-lying areas, that were once subject to long periods of inundation, were sown with bambatsi panic during the early 1970s,

which means the stand is more than 30 years old. Although overall it is less productive than the above mix (<5 t/ha), the species has proven more persistent during the existing extreme period of dry weather (<250 mm/yr rainfall).

Conclusion

Ley farming practices are not popular or perhaps suited to modern farming systems. However, on a small scale with careful management and niche marketing of production, a positive return on investment can be achieved.