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## Case Study: Conservative stocking on the Fitzroy River floodplain; Jubilee Downs and Quanbun Downs, central Kimberley Western Australia

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### Introduction

Keith and Karen Anderson and family run a breeder operation on Jubilee Downs and Quanbun Downs in the Fitzroy Valley of Western Australia (18°21' S, 125°18' E). These adjacent pastoral leases are in the shire of Derby/West Kimberley. The Andersons have been managing Jubilee Downs station since 1985. Quanbun Downs station was purchased in 2002, and a farm in the northern agricultural region of WA has been recently added for use as a finishing block. The current combined herd for Jubilee Downs and Quanbun Downs is around 8,000 head. Keith believes in selling close to his branding percentage and that the secret to improving production is selling females.

A declining trend in range condition on the high potential black soil country (WA Department of Agriculture 1981) was the catalyst for a producer demonstration trial on Jubilee Downs station that commenced in 1988. The main aspects of the demonstration were using DAFWA recommended stocking rates according to land type and range condition, introduction of Brahman bulls from a predominantly shorthorn herd, pregnancy diagnosis, early weaning and botulism vaccinations (Beurle 1992). The demonstration also included an enclosure on the degraded Gogo land system which yielded positive results.

Reducing cattle numbers and improving grazing distribution has maximised the recovery of the country during the run of above average rainfall years from the mid-1990s to 2010. Range Condition Survey data and satellite imagery clearly demonstrate an improvement in range condition and the productive potential. Herd production data show that the benefits of improved productivity to the business outweigh the costs.

### Management strategy method

Keith began a comprehensive program of subdivision, river fencing and water point establishment to facilitate better control of stock grazing distribution. Cattle numbers on Jubilee Downs station were cut by 35% in the early 1990s and further reductions continued until 1993 when the herd stabilised at around 5,000 head, approximately half its original size. Keith was so impressed with the resulting benefits on Jubilee Downs

that he subsequently turned off 3,000 head from Quanbun Downs. The sale of cows compensated for the reduction in weaner sales and contributed to cash flow. As breeder numbers decreased, the diet quality for those that remained increased, leading to an increased calving percentage and overall improvement in stock condition. The series of above average seasons, along with the relatively low stock numbers has allowed Keith to continue to run a steady herd and provide a consistent product to buyers.

### Satellite imagery method and results

Satellite imagery analysed for the period 1989-2010 support the on-ground assessments of an improving range condition trend. The satellite imagery was produced using the commercial image processing software package *ERmapper*<sup>TM</sup> (distributed by Intergraph). This package was used to compare a sequence of historical satellite images to analyse changes in perennial vegetation. Generally, comparison of the images shows that cover declined from 1989 to 1995 and improved substantially from 1995 to 2010. The decline was most evident in the centre of the lease with the black soil country showing the most resilience, even in poor years.

The decline in cover was most likely caused by a number of factors, including poor seasonal conditions. Although total rainfall for the 1992-1993 wet season was close to average (560mm), approximately 75% of this fell in February with minimal follow up rain. The 1993-1994 wet season was well below average with only 377 mm recorded. In addition, although the herd reduction program was underway the conservative stocking target was not achieved until 1993.

There is usually a lag between changing land management practices and achieving an improvement in overall range condition. This is more evident on the pindan country where the porous soils and inherently low nutrient availability would likely mean that the processes of landscape function and pasture condition recovery would be slower than on the floodplain. The important trend shown by the satellite images is the rapid and continued improvement from 1995 in the "greenness", suggesting a positive trend in range condition. Good control of stock numbers and grazing distribution has permitted this improvement to occur.

## Production benefits results and discussion

Keith's observations are that the grazing enterprise is more profitable, the cattle are in better condition and the country is continuing to improve since implementation of the changes to management.

Pregnancy rates rose from a mean of 50% to 75% in the early stages of the demonstration, which led to a subsequent increase in weaning percentages. Breeder condition also improved due to improved diet quality and steers reached their turn-off weight at two years of age rather than three to four years. This created a faster cash turnover and further reduced grazing pressure. Other strategies introduced to improve overall herd performance included botulism vaccinations and early weaning to allow breeders to regain body condition and increase re-conception rates. Early weaned calves were able to be intensively managed on the best pastures as a result of the improved infrastructure.

The low stock numbers reduce the risk of pests and diseases (*e.g.* ticks) because of reduced pressure at water points. A flow-on from this reduced risk is that stress levels for Keith and the family have decreased. Keith's observations are that wildlife biodiversity has improved and the risk of pasture overuse is also reduced.

The observed benefits to production on Jubilee Downs and Quanbun Downs stations are consistent with the results of the Northern Grazing Systems project (Scanlan 2010), modelled on a 'typical' grazing enterprise in the Fitzroy Valley, which suggested conservative stocking resulted in a higher percentage of perennial grasses in the pasture, higher live weight gains on a per head basis and had a greater profit and gross margin return over the medium to long term than heavy stocking.

## Conclusions

The combination of improved grazing management and a run of above average rainfall years has resulted in the improvement in overall and degraded range condition on Jubilee Downs and Quanbun Downs stations. Significant differences between different grazing strategies such as

wet season spell, rotational and continuously grazed paddocks are not apparent in the satellite imagery analysis of Jubilee Downs station. These results support the conclusions of grazing systems modelling, which suggests that a conservative stocking rate grazing system provides the greatest chance of improved range condition and cattle productivity outcomes over the long term (McIvor *et al.* 2011), while between paddock effects are far less significant than the major stocking rate reduction across the entire lease. Good stock control combined with conservative stock numbers and good seasons can result in a marked improvement on degraded country without compromising business profitability.

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