

Riparian Forage Production – Understanding the Riparian Forage Base

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Key Points

- Information on the amount and range of forage production in riparian areas available to agricultural producers is limited.
- Understanding the capacity of riparian areas to produce forage and what factors affect that production will aid in more well-informed management decisions as part of a producer's grazing plan.
- Riparian areas are only 2-5% of the landscape, but may be up to 4 times as productive as the associated upland.
- There is a high degree of variability in production between sites and years depending on site characteristics, flooding and management.

Body

Prior to this study almost no information existed on riparian pasture productivity, with essentially no information available for the central parkland. Varying levels of upland production information, through work by the Lands Division of Alberta Sustainable Resource Development exists for most regions, but is lacking in the core of the central parkland (what exists is primarily for the eastern edge, in the Wainwright area). Cows and Fish began this study to capture missing information and expand its usefulness, both for the program's extension work and others who work on grazing in Alberta.

This information will help producers better understand how productive riparian areas are and how their pastures respond over time to changes in grazing pressure or other influences. Providing the pasture and range health assessment methodology to producers is one key way to get this information to them. This method has become the provincial standard for determining the condition of pasture, and using the production data, linked to the range health assessment will ensure more well-informed management decisions can be made as part of a producer's grazing plan.

In 2003, 2005, 2006 and 2007 the Cows and Fish Program collected information to determine forage production in riparian areas, the "green zones" of water loving vegetation along lakes, rivers, creeks and wetlands. Riparian areas are only 2-5% of the landscape, but may be up to 4 times as productive as the associated upland. In addition, maintaining a healthy riparian is an important part of maintaining healthy range and pasturelands.

Riparian areas next to a variety of water body types were sampled for:

- plant species composition,
- forage and litter (carryover) production, and
- utilization (select sites).

Twenty-five riparian sites mostly in the Central Parkland Natural Subregion were established and were successfully clipped. There was a high degree of variability between sites and years. Average forage production for riparian areas and the ranges are as follows (2007 data to be presented):

- 3684 lb/ac ranging from 1137 to 5596 lb/ac (2003)
- 2585 lb/ac ranging from 536 to 5723 lb/ac (2005)
- 3820 lb/ac ranging from 966 to 6136 lb/ac (2006)

Many of the sites were subjected to high water levels during flooding in June 2005, which resulted in silt deposition that covered or removed low vegetation, having the effect of reducing the weight of the clippings. These sites showed recovery and corresponding increased production in 2006. Sites away from water at a distance of 100 m or greater or with dense over-storey, e.g., *Populus* species, generally had lower forage production while those directly beside a stationary water body had greater forage production. Creeks and rivers had similar forage production, although less than some of the lakes.

Between 4 and 6 upland areas were surveyed, depending on the year. The upland sites were composed of native or tame species and were associated with adjacent riparian sites occurring in the same pasture. In both upland types, associated riparian production is greater in almost all cases, especially in the native rangeland comparisons.

Plant species composition analysis also shows differences between sites. These ranged from saltgrass (*Distichlis stricta*) communities to tall willow (*Salix* spp.) to riparian communities composed mainly of tame species.

A companion project was completed in 2006 evaluating forage values for different riparian health regimes on the same water body. Overall, the highest total average forage was found in the healthy sites, while unhealthy sites had the lowest averages. Further correlation was made with breeding bird diversity, as a measure of biodiversity. The results of that study are found in the Cows and Fish report "Breeding bird surveys on select riparian sites in central and southern Alberta (2006)".

Conclusion

The forage values determined in this study indicate riparian areas as an important forage resource and also the potential for problems in areas where this forage is a substantial component of the total production. For proper management, riparian areas should be included in the forage capacity of an area and managed to ensure their health as well as the uplands. This information will be provided to agricultural producers and other land managers in Alberta to aid in making appropriate decisions regarding forage production and utilization in riparian areas. It will also provide more information to better understand the resilience of riparian to grazing and other disturbances. The high

variability of production and plant communities surveyed in this study warrants the importance of current and specific knowledge on these areas.

References

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