

Effects of medusahead on beef cattle gains

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The issue

- The invasive grass medusahead dominates millions of acres of rangeland across the West
- While the ecological impacts of medusahead on rangeland ecosystem function have been well-demonstrated the economic impact of this and similar invasive species has never been quantified, severely limiting cost:benefit assessment of different management decisions
- The objective of this study is to quantify the relationship between medusahead abundance and beef cattle gain

Approach

- We experimentally manipulated medusahead abundance in 9, 5-acre pastures for two years (2013-2014) using fire, seeding, herbicide and grazing to reduce medusahead abundance in some pastures while increasing medusahead abundance in other pastures (Fig. 1)
- In March 2016, we stocked pastures with 6 steers (approximately 650 lbs. starting weight) in each of the 9 pastures
- Pastures were grazed from March to beginning of May and we adjusted stocking rate (removing or adding animals) to achieve equal utilization across pastures by the end of the growing season (target 800 lbs. per acre dry matter)
- We quantified forage production and utilization monthly across 10 transects as well as forage composition as frequency (Fig. 1) in mid spring

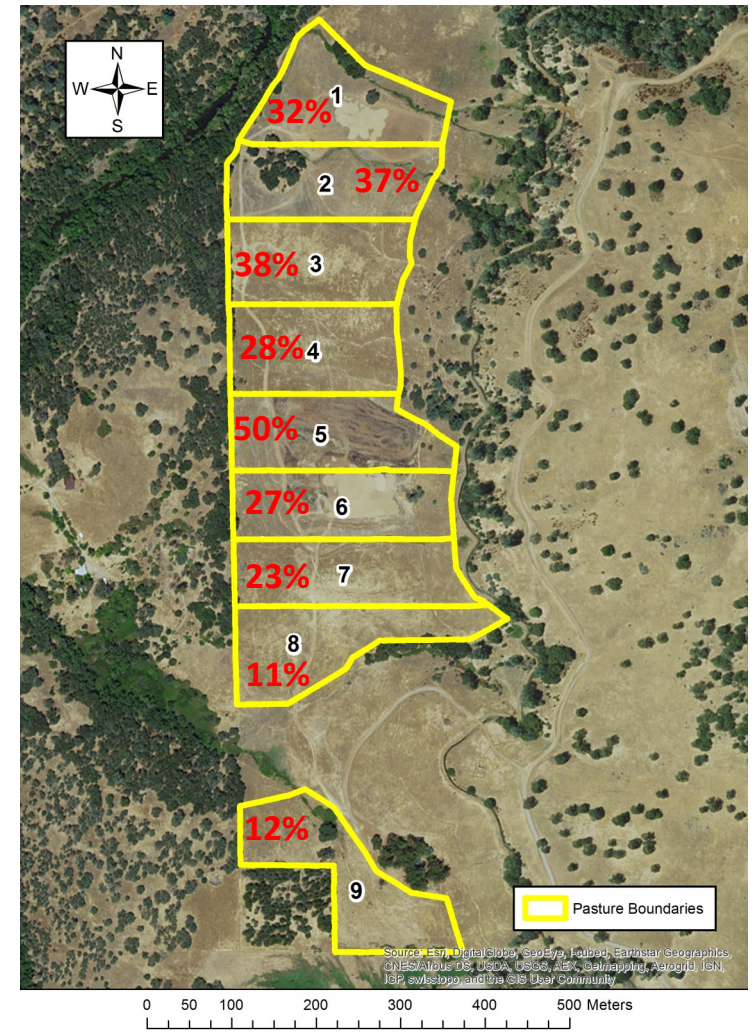


Figure 1. Location of the 9 pastures where medusahead composition was experimentally manipulated with values in red indicating medusahead frequency in each pasture (measured in April 2016)

Results

- Average daily gain of steers was higher in March (4.2 lbs/animal/day) than in April (3.1 lbs/animal/day) but was not associated with variation in medusahead abundance (Fig.2).
- Total live stock production per acre over the growing season was significantly negatively influenced by medusahead abundance (Fig. 3)
- On average, for a 10% increase in medusahead abundance, steer gains decreased by over 30 lbs per acre over the grazing season.

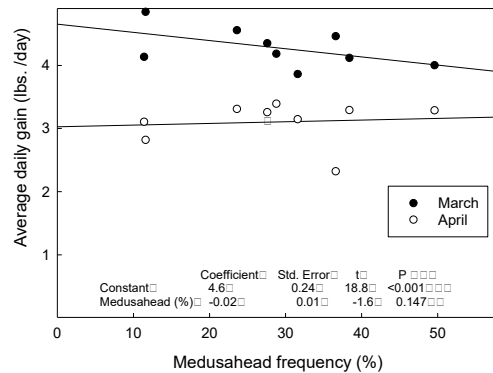
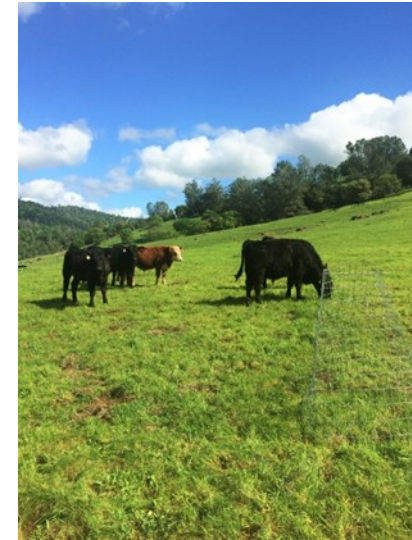


Figure 2. Relationship between medusahead frequency and steer average daily gains in March (closed symbols) and April (open symbols)

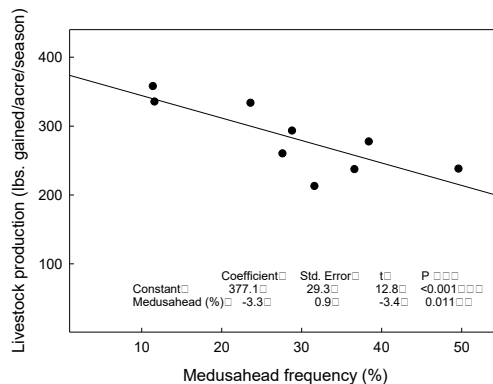


Figure 3. Relationship between medusahead frequency and total livestock production per acre for the grazing season (March to early May).

Implications

- During the most important time of the grazing season where forage production is exceeding 1,000 lbs per acre per month medusahead appears to strongly affect steer gains.
- The main mechanism in which medusahead decreases gains appears to be by lowering overall carrying capacity of a pasture rather than an effect on individual animal gain
- At the time steers were shipped, 800-900 lb steers were selling for \$1.19 per pound. In this scenario a 10% reduction in medusahead would have resulted in about a \$38 more per acre in market value
- This study did not examine effects of medusahead on beef cattle performance in summer or fall where additional impacts may occur
- Modest per acre inputs or changes in management that can progressively lower medusahead abundance are likely to produce significant economic and ecological benefits