HOW FINICKY ARE CATTLE ABOUT WOLF PLANTS?

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"Wolf plants" in our sagebrush bunchgrass environment are typically thought of as individual bunches of any grass species that have dense accumulations of last year's reproductive stems still standing in the crown. Livestock typically avoid wolf plants while foraging, probably to avoid the extra effort required for sorting the palatable and unpalatable portions, and unless some event occurs to remove the cured material these plants may go ungrazed for years.

Many things can lead to the evolution of wolf plants. These include: 1) selective grazing by cattle in mixed species pastures; 2) typically under stocking a pasture to such a degree animals do not get around to all plants in the pasture; 3) above normal precipitation years following drought when plants produce exceptional growth and high numbers of reproductive stems; 4) or animal avoidance of plants receiving recent depositions of fecal material. What ever the case, substantial amounts of available forage can go unused if wolf plants exist in high numbers. Additionally, remaining uncontaminated plants may be forced to bear more and more of the grazing load as they are repeatedly defoliated by livestock or wildlife over the season. The result may be a stand of overgrazed and ungrazed plants within the same area or pasture.

This problem is especially prevalent with grasses producing large numbers of persistent seed stalks. Some representative species in this area include: crested wheatgrass (<u>Agropyron</u> <u>desertorum</u>), bluebunch wheatgrass (<u>Agropyron</u> <u>spicatum</u>), and basin wild rye (<u>Elymus</u> <u>cinereus</u>). We have speculated that the presence of small amounts of cured material are sufficient to begin the evolution of a wolf plant, but have never investigated this possibility in a controlled environment. The objective of this research was to determine just how sensitive cattle are to the previous season's reproductive stems in standing forage and whether they were equally sensitive at different stages of plant growth.

MATERIALS AND METHODS

This project was conducted on the Squaw Butte Experiment Station in crested wheatgrass seedings established approximately 18 years ago. The area was heavily grazed the previous fall to insure removal of nearly all standing forage and subdivided into 9 separate pastures with the aid of electric fence. Within each pasture 20 plants were assigned to each of seven treatments. Treatments consisted of artificially stocking plants with either 0, 1, 2, 3, 6, 9, or 12 seed stalks that had been gathered the previous fall. We punched holes in the soil within the crown of each plant and simply dropped the seed stalks into the holes, so the stems were not firmly attached to the plants in any way.

Three stages of plant growth were sampled with three pastures being used at each stage. These included: vegetative - when plants supported only leafy growth; flowering - when flowering stems were fully elevated and all current year's leaves and stems were still green; and dormant - when all current year's leaves and stems had turned brown. Cattle were then placed in each pasture and allowed to forage until 75 to 80 percent of all plants in the pastures had been grazed (4 to 5 days). We then counted the number of plants in each treatment that been grazed and estimated the amount of material that had been utilized or removed from each plant.

RESULTS AND DISCUSSION

Cattle appeared to be more sensitive than anticipated to cured stems when forage was green but more or less oblivious to their presence after leaves and stems had turned brown. Responses to treatments were identical during the vegetative and flowering stages of growth, so data from these periods are pooled and referenced as "green forage" for the balance of this discussion.
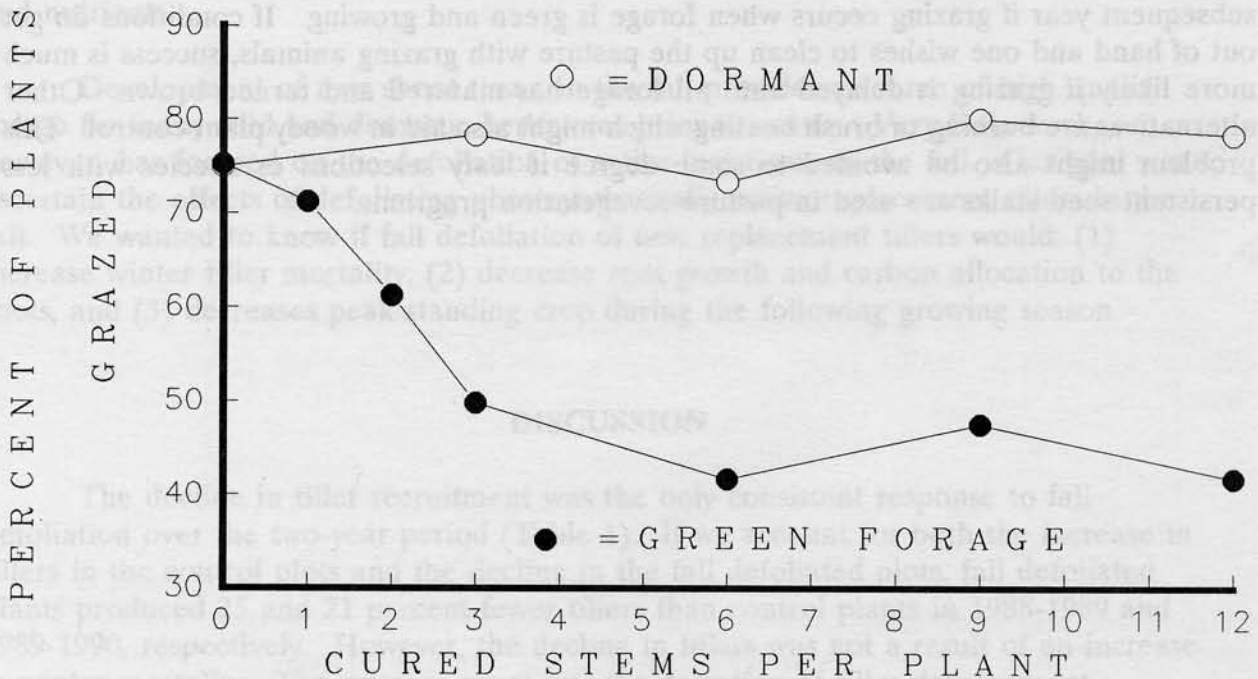

Figure 1. Number of cured seed stalks per plant and percent of plants grazed by cattle during green and dormant stages of growth in crested wheatgrass at the Squaw Butte Experiment Station in 1989 and 1990.

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During the green forage periods approximately 75 percent of plants with no cured stems were grazed, while plants with 1, 2, or 3 stems were progressively less acceptable (Figure 1). The 3 stem treatment appeared to approach the level of tolerance by cattle as no differences occurred among the 3, 6, 9, or 12 stem treatments. Only 45 percent of the plants in these treatments received some level of grazing, indicating there is roughly a 30 percent less chance a plant will be grazed if it contains 3 or more dead stems.

Cattle did not appear to have a discriminating eye after all forage had turned brown, as each treatment was grazed at roughly the 75 percent level. We suspect that they responded to the visual presence of cured stems during the green forage periods as no greater effort would have been required to harvest the free standing, cured stems along with the green forage. Lack of response during dormancy also suggests that grazing animals might be more successful in cleaning up a pasture containing large numbers of wolf plants if grazing is postponed until all forage has turned brown. This would best be accomplished by high numbers of mature animals (preferably dry cows or bulls) in the pasture for a short time, as one would not wish to leave animals on poor quality forage for an extended period.

In closing we suggest that pasture and livestock managers avoid the proliferation of wolf plants by obtaining uniform levels of forage utilization. Our findings indicate the presence of 1 to 3 residual stems will lower the likelihood of a plant being grazed in the subsequent year if grazing occurs when forage is green and growing. If conditions do get out of hand and one wishes to clean up the pasture with grazing animals, success is much more likely if grazing is delayed until all forage has matured and turned brown. Other alternatives are burning or brush beating which might also aid in woody plant control. This problem might also be avoided to some degree if leafy selections or species with less persistent seed stalks are used in pasture revegetation programs.