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OREGON beef PRODUCER

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Make Grazing Management a Priority in Invasive Annual Grass Infestations

Brenda Smith, Roger Sheley and Tony Svejcar -
USDA- Agricultural Research Service, Burns, OR

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OCA Mid-Year Agenda and Registration Forms for the joint Oregon/Washington Cattlemen's Conference at the Wildhorse Resort & Casino in Pendleton.

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Murdock & Thomas Branding - Echo Oregon
From left: Donita Taruscio, JP Giesen, Clint Sexson, BJ Taruscio,
Terry Francis, Ian Murdock

Photo by Lindsay Murdock



THE OLD FARMER SAYS...

A good way to determine if you are intellectual or not is if you can listen to the William Tell Overture and NOT think of the Lone Ranger.

Make Grazing Management a Priority in Invasive Annual Grass Infestations

Brenda Smith, Roger Sheley and Tony Svejcar - USDA- Agricultural Research Service, Burns, OR

Why we are concerned about invasive annual grass infestations

Invasion of rangeland by annual grasses has become one of the most serious and catastrophic land management problems in the western United States. Millions of acres of rangeland are dominated by invasive annual grasses. Annual grasses displace desired plants and create monocultures that do not provide adequate year-around plant cover. Degraded ecosystems and the associated loss of vegetation lower wildlife quality and reduce forage production for livestock. Water cycling and nutrient cycling can be severely inhibited when these species are present, which continues the downward spiral of rangelands. Monocultures of annual grasses also increase the frequency of fires which severely limits the land's usefulness and creates risks for both landowners and society at large. Additionally, most strategies to manage invasive annual grasses on large scales are expensive propositions.

What is the advantage in using livestock to manage invasive annual grasses?

Livestock grazing is quite possibly one of the most useful tools to keep rangelands in good condition and maintain optimum production. There are numerous scientific studies that document how proper grazing with livestock can be used to facilitate the resistance to invasion as well as the recovery of rangeland.



Figure 1. Grazing intensity should be focused on removing as much biomass from invasive annual grasses as possible before perennials begin growth initiation in the spring.

Grazing has been shown to alter species composition from less desirable species to desired species, increase the productivity of selected plant species, increase the nutritive quality of the forage and increase the diversity of habitat. Grazing management of these weeds is the only management option that has the potential to make money while improving the rangeland; all other options are expensive and usually with limited success.

Critical factors to making a "Green and Brown" strategy work.

There are two fundamental differences in life strategies between annual and perennial grasses that allow land managers to exploit them using grazing and these differences form the basis for the "Green and Brown" strategy. The first difference is annual grasses have a growth period out of phase with many native perennial grasses and many non-native perennial grasses as well. Annual grasses such as cheatgrass and medusahead germinate in the late-fall, winter or early-spring. Germination is prompted by precipitation occurring when temperatures are high enough for biological activity.

Even when they germinate in the spring it is usually very early, prior to the time when most perennial grasses come out of winter dormancy and begin to grow. This difference makes invasive annual grasses temporarily more preferred and selected by livestock and sets up an opportunity to develop a grazing strategy that exploits this difference.

It's called "Green and Brown". When invasive grasses are green it indicates they are actively growing, very palatable, highly nutritious and preferentially selected by livestock. Grazing at this time reduces the competitive ability and seed production of annual grasses. On the other hand, perennial grasses senesced, or not growing, are of low nutritive value during much of the period that annual grasses are green and growing. In addition, senesced perennial grasses are very tolerant to grazing when they are brown.

(See Table 1 next page).

The second fundamental life strategy difference between annual and perennial grass species is annual grasses start from seed every year. If land managers can reduce seed production through grazing it can be very effective in long-term control of annual grasses.

Animals grazing tendency plays perfectly into this as well because they typically remove the top portion of the plant first.

If the soil remains moist into early summer, light grazing can in fact stimulate more seed production in annual grasses than no grazing. To be successful in managing invasive annual grasses, grazing should be heavy stocking for short periods. The advantage of high intensity and short-duration grazing is the negative impact on weeds and grazing recovery periods for desired species can be planned which ensures the range is grazed more efficiently.

Linking Management Priorities with the "Green and Brown" Grazing Strategy

Land management goals often vary based on the specific conditions of the ranch, the desired uses of the land and the services the land is capable of producing. It is helpful to prioritize management based on the level of infestation of invasive annual grasses. We categorized three different management goals and have listed them from the most to least cost effective priority. Even though the basic "Green and Brown" strategy doesn't change across management priorities, there are slight variations in setting up a grazing plan that can gain better results.

1. Preventing annual grass invasion:

In a landscape where preventing infestations of annual grasses is the objective, a grazing plan where the animals remove standing litter will keep the perennials' growth robust. Standing litter impedes vegetation growth within the plant and provides fuels for very hot and harmful fires. In a prevention program, all efforts should be made toward a grazing plan that keeps the perennials in good condition and with adequate energy stores throughout the year. This approach can be incorporated into general grazing plans.

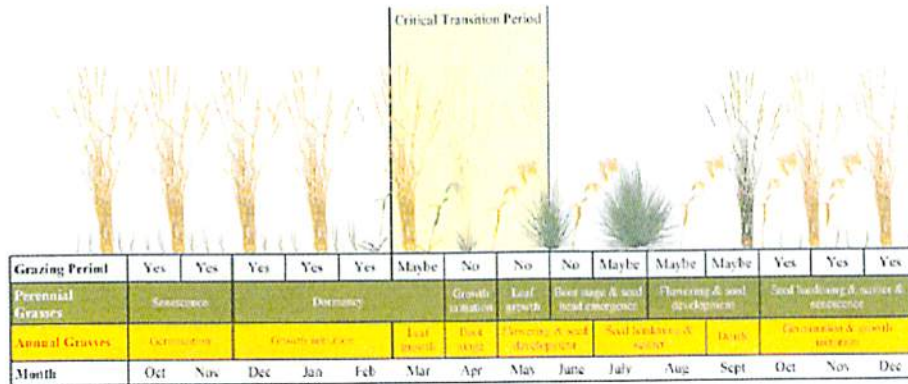
2. Controlling annual grasses when desired perennial grasses are still present:

Generally these are areas with annual grass infestations but at least 10% of desired species are still present. In using a "Green and Brown" grazing strategy, grazing treatments must shift as much competi-

Continued on page 12

Table 1. Green and Brown grazing strategy calendar and critical transition period.

"GREEN AND BROWN" GRAZING STRATEGY FOR INVASIVE ANNUAL GRASSES



Use this chart to help you manage invasive annual grasses such as medusahead and chestgrass. In the table above, grazing periods are imposed based on the actual plant growth stage for both desired perennial grasses and annual grasses. The calendar months are only to be used as a general reference, always graze by plant growth stage paying close attention to early green-up of perennials. This also illustrates the critical transition period for removing livestock.

tive advantage to the desired perennial species as possible. This is best accomplished by intensively grazing invasive annual grasses when they are green and removing the livestock when green-up occurs of the desired perennials. Implementing the "Green and Brown" strategy will not likely eliminate seed production of the invasive annual grasses, but with careful timing, intensity, and frequency of grazing, the annuals' seed production can be reduced enough to give desired species a competitive edge. This is a long term commitment, and may require methods to concentrate animals into a specific area.

3. Restoration of annual grass monocultures:

In restoration programs, the "Green and Brown" grazing strategy can be used to reduce the amount of annual grasses by repeated grazing, both in the fall and early spring. Grazing invasive annual grass monocultures does not have to be limited to the time when desired species are dormant because they are not present in the system. Keeping up with the fast growth when water and temperatures are favorable is one of the biggest obstacles when annual grasses are growing in monoculture. If the animals need to be held in these areas with supplemental feed into the non-growing season, it will not negatively affect the landscape. Under situations where annual grasses have created a monoculture, it can take at least three years of grazing to deplete the seedbank enough to the point that the annuals lose their competitive edge and desired perennials can be established. This strategy requires a method

to concentrate animals and will likely require additional treatment (such as reseeding)

Additional Resources

Producers will readily realize how critical it is to have a good plan in place to be successful in managing invasive annual grasses. Since we have no control over the amount or occurrence of precipitation, it is important to be conservative in planning. Developing a method to assess progress and adjust management will be an important step in setting up an effective "Green and Brown" grazing strategy. We suggest using a monitoring system for data collection outlined in the adaptive management guide available at www.ebipm.org. Additionally much of this information presented in this article is available as a recently-printed guideline "Grazing Invasive Annual Grasses: The Green and

Brown Guide". This guide is free and can be requested at the above website. In the appendix of this guideline we have provided resources for detailed ideas about fencing requirements and water development that might fit your needs on open rangeland. The bottom line is that to see success using cattle for invasive grass management takes commitment and dedication to grazing. By making it your objective to control invasive annual grass infestations, it can be economical and satisfying to see a grazing plan implemented.

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In order for the "Green and Brown" strategy to work well, there are three major considerations:

1. Stocking rates must be high enough to heavily graze the annual grasses
2. Animals must be removed prior to growth by desired perennial plants which occur mid-spring
3. Grazing annual grasses be a part of a long-term approach to managing invasive annual grasses. Once animals are removed, annual grasses rapidly return. The message here is that grazing isn't a one time prescription to managing invasive annual grasses.