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How will a Fire Affect Annual Rangeland and What Should You Consider Doing?

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A fire on foothill annual rangeland will undoubtedly result in a reduction of grass production for several seasons following the fire. The effect the fire has on the resulting vegetation and production can vary based on the intensity, quality of ground, rainfall, and timing of the fire.

Regardless of most factors, the production year after a summer season fire will result in dominance of filaree due to the lack of cover going into the first rains (excessive cover = grass, little cover = filaree). In measuring the end of season production following a burn an almost 50% reduction is possible in the following year, and over 20% the second year (Davy and Dykier, 2017). Losses this high would be mostly expected in better quality soils, with less loss on shallow soils. With no grass mulch to conserve moisture, a dry year following a burn may produce little to no usable forage until spring. With hotter fires, such as those with brush, the losses can continue for three years (Frost 1988).

In grass fires the timing of the fire is important. Grass seed on the soil surface isn't affected by fire. With the exception of wild oats (technically slender oat), most seeds don't mature and fall to the soil surface until after June. So burns that occur before July will result in a reduction of grass seeds such as soft chess the next season. On the upside, this timing would control weedy grasses such as medusahead. Wild oats mature and shatter seed in early spring so if a stand of oats was present before the fire this should help in grass returning.

If a stand of wild oats was not present, it is worth considering reseeding desirable grasses in early season fires to provide forage and prevent the rapid reinvasion of weedy grasses. Seeding would best be done immediately prior to fall rains as grass fires don't provide enough ash for broadcast seed to settle down in to and be adequately covered. Broadcast seeding to early results in

birds eating the seed prior to germination. Drilling or covering the seed with a harrow after broadcasting is the most desired method of seeding, but commonly isn't feasible, leaving broadcast (airplane) seeding just prior to rain the most practical option. Grass fires that occur in July and later should have little effect on mature seed laying on the soil surface, negating much benefit in seeding. Production will still be less due to the lack of soil cover, especially if it's a dry winter.

Brush burns get hot enough to affect seed on the soil surface. They're advantage is that they do provide a nutrient rich seed bed and source of cover for seed to fall in to. Reseeding these areas can be successful by dropping seed into the white ash. Because weed competition is usually eliminated by these hot fires, and fertility is high, these seedings have been successful in the past.



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If seeding is necessary your local Cooperative Extension office can help in designing the most appropriate mix. Site conditions, management, and rainfall vary between properties which can change appropriate seeding recommendations. It's worth getting this part right otherwise the effort may be wasted. Soft brome sold as 'Blando' brome is a good choice as an annual grass that works well in most valley/foothill soils. Coastal grass mixes would benefit from annual ryegrass, but it should be viewed as a short term investment in valley foothill areas. Mixes of subterranean clovers with differing maturities are good choices for sites with good soils or dependable rainfall. Mixes containing annual medics may be better choices than sub clover in areas with lower quality soils and rainfall. In high quality valley soils perennial grasses such as 'Flecha' fescue and 'Berber' orchardgrass could be options if they fit management needs. These grasses are productive, but require specific management for success.

There is usually assistance from the USDA Farm Service Agency (FSA) and Natural Resource Conservation Service (NRCS) in replacing lost forage, livestock, and fences. When evaluating livestock losses it's important to remember that lameness may not be present for up to two weeks after the fire in some cattle (laminitis). These cattle would not be expected to recover. Reporting losses prior to this time may result in a lower number than is actually present. Check with a local FSA county office to make sure that all production acreage is on file so that it is covered, and that all applicable programs are signed up for. In many cases there are deadlines to file for assistance that are put in place once losses occur. University of California Cooperative Extension publication 9446 "[Estimating the Cost of Replacing Forage Losses on Annual Rangeland](#)" can be downloaded free of charge to assist with calculating ranch losses and help reporting to the Farm Service Agency. The Natural Resources Conservation Service offers financial assistance in the form of a cost share (EQIP) for reseeding rangeland. This program is valuable because it provides enough financial help to make the practice economical.

When calculating losses most often the equivalent in hay is considered in monetizing the forage loss value (1 ton of forage lost = the cost of a ton of hay). USDA releases a weekly [California Hay Report](#) that can be used to determine the cost of replacement forage. This is usually the most practical method, but there are other costs to consider. With an ongoing forage loss of 50%, turning out the regular number of cattle would eliminate any possibility of new green feed establishing. If cattle are not sold, many would need to be fed in a dry lot. If a daily feeding commitment isn't possible they may need to be hauled to a feed yard. Local feedyard costs are around \$3/hd/day for a maintenance ration.

A call to a local marketing rep would be valuable in calculating the best economic plans. Cull cow prices tend to drop in the fall when pregnancy testing causes the supply to go up, and the fire situation may not help that. Acting sooner may be of value if a marketing rep advises that as a way to go. Most counties in California have emergency drought declarations which could help in avoiding capital gains taxes if cattle are replaced at a later date. This also means it would be prudent to discuss options with an accountant.

References

- Davy J.S., K. Dykier. 2017. Longevity of a controlled burn's impacts on species Composition and biomass in Northern California annual rangeland during drought. *Range Ecology and Management*. 70(6):755-758.
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Photo by Josh Davy

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