

# after the fire

## To Seed or Not to Seed after Wildfire? It's a HUGE question but the answer is getting easier

USDA Natural Resources Conservation Service

Seeding grass(es) on burn areas to prevent soil erosion following wildfire has been a common response, although a controversial treatment, over the last 50 years. In recent years there has been growing and wider acceptance by resource agency professionals, local restoration experts and even land owners that seeding provides less than desirable results in forest and wildlands destroyed by wildfire. However, many experts also agree that there may still be some application for selective post-fire erosion control seeding (of appropriate species) on burned slopes around homes, important access routes and water sources as well as in areas severely disturbed by the actual fire-fighting effort.

The majority of research on this subject indicate that seeding forests and wildlands following wildfire has marginal effects if any. One research report evaluated several different post fire seeding studies over a 30-year period, finding only a few instances (approximately 10%) where there was some measurable seeding success for erosion control. It is interesting to note that the positive results from these successes were directly correlated to the timing of the planting; precipitation in the fall/winter following the wildfire; seedbed preparation; and degree of cover over the planted seedbed.\*

Two important questions become apparent:

1. *“How does a property owner know whether or not their burned property and individual situation warrants seeding?”*
  - The answer will ultimately depend on the results of a site-specific assessment conducted by a natural resources agency expert, restoration ecologist or a licensed/certified professional erosion and sediment control specialist.
2. *“Under what circumstances, following a site-specific post-fire land assessment, would seeding grass for erosion control make sense?”*
  - If the fire damaged property had soils with a high hazard of erosion and/or there was soil/slope disturbance by the fire-fighting effort. *Note: A higher hazard of soil erosion can be associated with factors such as: length and steepness of slope; degree of disturbance to the surface soil and profile; disturbance to pre-fire plant root systems and any resident seed bank that may have existed; the actual soil type; the present or opportunity for increased and/or concentrated flows over the area of concern; the presence and amount of ash cover; and the likelihood of high volume and/or high intensity rainfall events depending on the geographic location of the property.*
  - If seeding would not interfere with natural recovery of pre-existing and “fire following” native plants, native seedbank, and/or the local ecology.
  - If the goal of seeding grass is for surface soil protection and erosion control and not slope stability. *Note: Seeding grass on slopes especially those with potential for instability and debris flow is not recommended. Grasses do little if anything for slope stability and debris flow mitigation. If anything, grass could make the slope situations more hazardous depending on individual site conditions.*
  - If the selected grass or grass mix to be seeded is native to the wildfire geographic area (to avoid the possibility of native grass gene pool pollution) and/or is a sterile (non-reseeding) non-native annual grass with none to very slight (if any) interference with natural recovery and the local ecology.

*Note: One or two sterile annual fast-growing grasses (such as sterile wheat, common barley or sterile Triticale) can be added to an appropriate native grass mix as a nurse crop to provide some immediate erosion control benefit until late season native perennials in the mix become established.*

- If the critical area to be seeded can be: easily accessed without causing any substantial damages to soil, slopes, or any remaining vegetative cover; adequately prepared (gently raked) for seeding; and where the seedbed can be covered (with soil, mulch or compost) to increase the likelihood and amount of planting success. Additionally, fertilizer and supplemental irrigation may further increase the chance of good success and quicker establishment of the planting as well as any weed control that might be necessary during establishment.
- If a grass planting would serve multiple objectives beyond soil protection of the area seeded such as: Controlling runoff and sediment and filtering/collecting ash and toxic debris from surface flows and erosion areas that exist or that become an issue on burned slopes that may exist above the planted area; reducing competition of non-native invasive plant encroachment especially if there was a pre-existing non-native plant issue; and/or if seeding grass will act as a buffer strip around and/or between neighboring homes, water supplies/courses, alongside important access routes (including driveways), and/or other valuable property improvements that may need extra attention.
- If seeding can be appropriately timed. For example, for late season wildfires that occur in December and even January, seeding may prove to be a complete waste of time and cause unnecessary disturbance to soil and slopes. In these cases, a cold season non-native annual such as sterile wheat or non-reseeding barley may be the only possible choice of plants provided only limited disturbance would occur. Mulching with or without seed will be an absolute necessity in later season plantings, although a good idea for earlier season plantings as well, as long as the depth of mulch is no greater than 2 inches.
- If seeding grass would not become a future fire hazard on the property.
- If the planting can be regularly monitored and maintained as necessary by the property owner to ensure success.
- If seeding grass does not give the property owner a false sense of security. Note: Property owners need to be completely aware that grass seeding for erosion, runoff and sediment control does not come with a 100% guarantee that grass alone will adequately protect their lands, waterways and/or high value property improvements from sustaining damage and/or reduce a threat to life in the first or even future winters following wildfire.
- If seed selection is site specific and the recommendation is made by a licensed and/or certified professional experienced in post fire restoration and/or plant ecology and whereby the grass species selected are native and/or are short lived non-invasive annual grasses.

\*The main conclusion of a Northern Arizona University study released in 2011, by Fule, Beyers, Sieg, Hunter and Peppin (Collaboration for Environmental Evidence) entitled, “Does seeding after severe forest fire in Western U.S.A. mitigate impacts on soil and plant communities?” The review was based on 94 studies (23 of which were related to post-fire seeding for erosion control) conducted between 1970 and 2009. The review also noted that studies that occurred after the year 2000, were more rigorous indicating stronger evidence that post-fire erosion control seeding was ineffective.

*“This review suggests that post-fire seeding does little to protect soil in the short-term, has equivocal effect on invasion of non-native species, and can have negative effects on native vegetation recovery with possible long-term ecological consequences. Erosion may be better reduced by mulching but care should be taken to ensure that mulching is free of non-native seed.”*