

Post-wildfire revegetation in southwestern ponderosa pine forest:

Native seeds versus annual ryegrass

2006 Accomplishments

In 2005, nearly 900,000 acres burned in wildfires in Arizona and New Mexico. Severely burned areas of large wildfires are often seeded with the goal of establishing quick cover and reducing erosion. The Forest Service spent nearly \$10 million on seeding wildfires in this region between 2000 and 2005. Non-native annual species are usually used in seeding projects due to their low cost and the perception that they will not persist. Unfortunately, non-native annuals do sometimes persist for more than one year after seeding and may impede natural revegetation of native species. Native seed is often more expensive, can be difficult to procure in large quantities, and data on native species performance are limited. Further, seeding, whether with non-native or native species, can unintentionally introduce undesirable invasive species. The goal of our research was to compare the competitive attributes of a suite of native species with non-native species commonly seeded on wildfires. Our approach involves 3 initial screening tests followed by experimental seeding on areas severely burned in wildfires.

We selected 27 species native to southwestern ponderosa pine forests and 2 non-native species (annual ryegrass and barley) for initial screening in the first 3 phases. We assessed viability in an incubator and germination and production in both a greenhouse and an outdoor planter. Our preliminary results suggest that 5 native species have comparable or better belowground production than the non-natives.

We selected a subset of 6 native species and 2 non-native species for seeding two 2006 wildfires in northern Arizona. On the Potato Fire, we established 15 replicates of three treatments: seeding with a non-native (wheat), seeding with a native seed mix, and an unseeded control. On the Warm Fire, we established 15 replicates of 4 treatments: seeding with wheat, seeding with annual ryegrass, seeding with a native seed mix, and an unseeded control. In total we established 105 plots, and applied 1554 pounds of non-native seed and 151 pounds of native seed on a total of 55 acres. We will quantify persistence of seeded species, as well as establishment of non-native invasive species and recovery of native species in 2007 and 2008.



Germination and production of 27 native species and two non-native species were tested in the RMRS greenhouse.

Year Awarded: 2006

Project completion: 2009

Report number: 1 of 3

Expenditures:

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Partners/Contractors/Coop:

Northern Arizona University

- \$87,000.00 (USFS Agreement #: 06-CS-11221615-127)
- Dr. Peter Z. Fulé, Ken Stella, and Barbara Satink Wolfson

**Apache-Sitgreaves National Forest
Kaibab National Forest**

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We established seeded and unseeded plots on severely burned areas of the Potato Fire on the Apache-Sitgreaves NF and on the Warm Fire on the Kaibab NF.



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