

## SCARIFICATION OF BASALT MILKVETCH (*Astragalus filipes*) SEED FOR IMPROVED EMERGENCE

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### Introduction

Basalt milkvetch (*Astragalus filipes*) is a forb (non woody perennial) native to western North America. Basalt milkvetch is a legume forb species of interest for revegetating rangelands of the intermountain northwest; it can contribute high quality feed, valuable seed for wildlife, and nitrogen fixation to help maintain range productivity. Basalt milkvetch has a hard seed coat that makes the seed impermeable to water and difficult to germinate. Low seed germination can contribute to low plant stand when seed is used to plant areas for seed increase. This trial tested basalt milkvetch emergence in response to seed scarification intensity.

### Materials and Methods

Basalt milkvetch seed was collected from a highly productive plant that was planted at the Malheur Experiment Station. A scarification device was built by attaching two pieces of car tire inner tube to opposing sides of a drill bit. The drill bit was inserted into a cylinder made of 3-inch-diameter PVC. The cylinder was lined with 220-grit sandpaper. The inner tube pieces were long enough to rub the sandpaper. The drill was rated at 2,500 RPM, but testing measured 2,050 RPM. The seed was placed in the cylinder and submitted to four treatments of scarification (Table 1).

After the scarification treatments, 188 seeds were hand counted and planted manually in each plot at 0.25-inch depth on December 6, 2006. Each plot was 1 row 6.25 ft long. The plots were arranged in a randomized complete block design with four replicates. The plots were sprinkler irrigated to keep the soil surface moist from early April to early May 2007. On June 18, 2007, the emerged plants in each plot were counted.

### Results and Discussion

The shortest scarification treatment of 7.5 seconds resulted in the highest emergence, 10.8 percent (Table 1). The unscarified seed or seed scarified for 15 or 30 seconds resulted in significantly lower emergence than the seed scarified for 7.5 seconds. Emergence was low for all treatments.

When examined under a microscope, the seed was found to have many uneven edges. Scarification appeared to smooth some of the edges to different degrees, depending on the duration.

Table 1. Emergence of basalt milkvetch (*Astragalus filipes*) seed in response to scarification duration. Malheur Experiment Station, Oregon State University, Ontario, OR, 2007.

| Scarification duration<br>seconds | Emergence<br>% |
|-----------------------------------|----------------|
| no scarification                  | 4.0            |
| 7.5                               | 10.8           |
| 15                                | 5.3            |
| 30                                | 3.5            |
| LSD (0.05)                        | 2.3            |