Handbroadcast Analysis

**Overview of project and data collection:**

I established 144-4 m2 restoration plots at the EWU Prairie Restoration Site in January 2021. To account for aspect and terrain, the following blocks were established: north-facing, south-facing, west-facing, east-facing, top of a hill, and bottom of a hill. In January 2021, two perennial seed mixes were hand broadcast on plots at a rate of 200 PLS (pure live seeds) per square foot including a low diversity mix of 14 species and a high diversity mix of 21 species, both with grass to forb ratio of 70:30. Prior to hand broadcasting, PLS was calculated for all species using purity and germination from locally sourced seed collections.

A 2 m2 circle was created in the center of each 2x2m plot for annual seed addition treatments, which were hand broadcast over the perennial seed mixes. Treatments included either added annual seeds or added perennial seeds (using the appropriate low diversity mix or high diversity mix) at a rate of 20 PLS/sqft to maintain a total hand broadcast seed addition rate of 220 PLS/sqft in the treated circles. Annual species were selected based on availability and presence near the site (Table 1). Seeds were broadcasted between two snow events to protect seeds from predators and to provide the necessary cold stratification period for germination.

In spring and late summer, the center 1x1m of each plot was surveyed for percent cover, species present, and soil moisture.

The difference in native and nonnative species richness and cover among the four treatments (low diversity mix with no annual seed, low diversity mix with annual seed, high diversity mix with no annual seed, or high diversity mix with annual seed) will be assessed using a mixed linear model that accounts for the blocked topography.

**What to analyze:**

* Native/Nonnative cover compared to Annual/Biochar/Aspect/Diversity/Season
* Native/Nonnative richness compared to Annual/Biochar/Aspect/Diversity/Season

**Key to datasheet:**

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| --- | --- |
| Title | Description |
| Survey | Survey number (1, 2, etc.), 1 is June 2021 and 2 is July 2021 |
| Plot | Plot number (1-144) |
| Code | Full code   * L or H- low or high diversity * A or NA- annual or no annual seeds added * B or NB- biochar or no biochar added |
| Full.Treat | Survey number with code added |
| Diversity | Low or high diversity perennial seed mix |
| Annual | Annual or no annual seeds added |
| Biochar | Biochar or no biochar added |
| Aspect | Aspect or terrain shape   * Bottom- bottom of hill, trough * Top- top of hill, ridge * North * South * East * West |
| SM | Soil moisture using a vegetronix meter, as a % |
| Column I-AT | Plant species percent cover/presence   * I-introduced * N-native * A-annual * P-perennial |