



SUCCESSION MANAGEMENT

BUILDING RESILIENCE WITH NATIVE “WEEDS”

Would a carpenter go to work without a hammer? Would a surgeon go into an operation without a scalpel? It’s possible that restorationists in the West are doing just that. The Intermountain region is faced with massive ecological degradation due to the invasion of exotic annual grasses and the subsequent fire feedback loop they create. But are we overlooking a tool that may prove to be extremely useful? Colonizing pioneer species are a natural component of a healthy landscape, but restorationists pay them little attention.

Following disturbance, semi-arid western plant communities naturally respond in a series of steps that develop over time. First to appear is a flush of colonizing or pioneer species - typically annuals or short-lived perennials that quickly establish and pave the way for more slowly establishing species. Over time, the “climax community” species re-establish from surviving root systems and soil seed banks. This process is known as plant succession. Our common restoration practices, however, tend to skip the colonizer step and attempt to establish climax species directly after disturbance.

WHEN IS A WEED NOT A WEED?

Unfortunately, our native pioneering species have developed an undeserved reputation for being weedy, because of their presence on disturbed roadsides and poorly managed range and pasture. These colonizers behave and grow similarly to many of the region’s exotic plant invaders, allowing them to be more competitive. Yet this group of plants hasn’t been used to its full potential, largely because of the perception that they are weedy. However, those “weedy” traits may be exactly what is needed. Manipulating succession may put us on the path to better ecosystem resilience and resistance to invasion.

KEY POINTS

- Restoration practices used in western rangelands typically attempt to restore mid- to late-succession plant communities.
- Succession management uses species of multiple successional stages in restoration plans and seed mixes to provide temporal diversity and bridge the gap between disturbance and stable climax conditions.
- “Weedy” pioneer natives establish quickly and occupy disturbed soils, reduce erosion, and provide food for wildlife. Additionally, many of these species have been shown to reduce exotic weed growth and seed production.
- Despite their benefits, native “weeds” have poor representation in restoration. Planners should consider succession management as they develop seed mixes and management strategies.



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WHAT IS SUCCESSION MANAGEMENT?

The notion of increasing resilience through species diversity is well understood. A site can be more resistant to invasion when it is filled with plants of various size and shape, both above and below ground.

Succession management uses plants of multiple successional stages to occupy niches in time. Pioneer, early seral, species fill an important niche, reducing post-disturbance erosion potential and offering food sources for pollinators and other wildlife until later species become fully established. They also alter soil biology and chemistry in ways that favour transition to the climax community.

Our current practice of seeding climax species seed mixes in post-disturbance landscapes may create an undesirable gap in time between the removal or control of invasive weeds and the establishment of the desired native plant community. This gap in time creates a vacuum in which invasive species may quickly colonize or re-establish themselves where they once were.

WHAT SPECIES FILL THIS ROLE?

Several colonizing native species have been identified, many of which have been misbranded as weeds due to their ruderal nature. Some species in this group include bottlebrush squirreltail, slender wheatgrass, curlycup gumweed, sand dropseed, common sunflower, and rubber rabbitbrush.

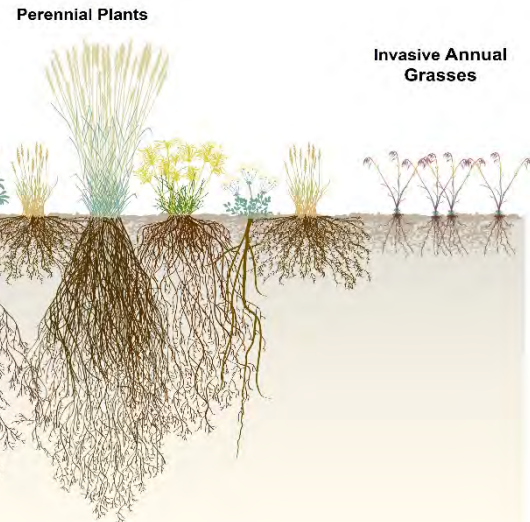
CONCLUSION

Planners should consider succession management as they develop seed mixes and management strategies. For more information, see Idaho Plant Materials Technical Note 79: [Succession Management for Rangeland Seedings](#) or contact the PMC.

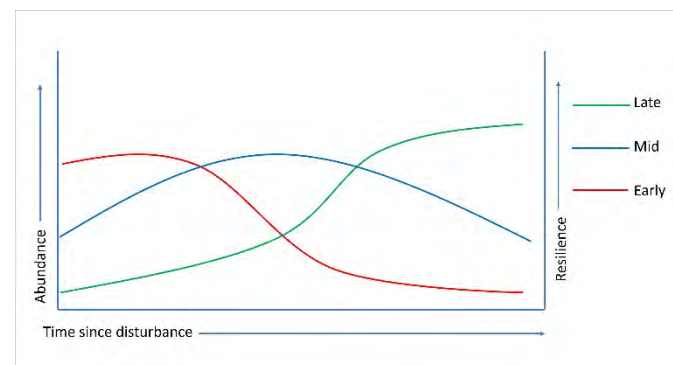
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Web site: [Plant Materials Program - Idaho and Utah | NRCS](#)

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Above and below ground diversity of growth forms and root structures fills spatial niches and increase resilience against invasion. Image courtesy of Jeremy Maestas and Maja Smith, Sage Grouse Initiative.



Following disturbance, early seral species quickly establish providing initial resilience. The early seral species then decrease in abundance as mid-seral perennial species increase, over time giving way to the late seral "climax" community.



Early seral natives like curlycup gumweed can occupy post-disturbance sites and compete with invasive weeds while longer-lived climax species become established.



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