

## Low-Water Use Agriculture

# Native Grass Hay Production for Multiple Benefits at the Cobra Ranch



The Cobra Ranch is situated in Klondyke, Arizona upstream from where Aravaipa Creek emerges as a perennial desert stream that hosts a lush riparian ecosystem with seven native fish species, two of which are endangered.

The Cobra Ranch is part of The Nature Conservancy's 9,000 acre Aravaipa Canyon Preserve which is managed in conjunction with surrounding public lands. The ranch and its associated public land grazing leases sit over the aquifer that feeds Aravaipa Canyon and were donated to The Nature Conservancy in 2007.



## KEY ISSUES ADDRESSED

The Cobra Ranch includes floodplain areas where sacaton grasslands were historically converted to agriculture, which has been subsequently abandoned. Fallow agricultural fields remained relatively barren. The combination of degraded floodplains and uplands has increased runoff and decreased infiltration that would otherwise be absorbed into the aquifer.

In 2008, The Nature Conservancy began restoring these abandoned agricultural fields on the Cobra Ranch property by growing native grasses with the initial goal of simply establishing ground cover. The project has grown to encompass multiple objectives related to ecosystem improvement beyond the agricultural fields.

## PROJECT GOALS

- Establish ground cover in abandoned agricultural fields
- Develop economically viable alternatives to water intensive feed crops
- Active restoration of native grasslands on-site
- Increase water infiltration and aquifer recharge
- Promote sustainable grazing practices

## WILDLIFE BENEFITS

Unharvested native grass provides habitat and forage for wildlife and birds, including the Botteri's sparrow and rufous-winged sparrow, species that were once nearly extirpated.



Native Seedling Planting

## PROJECT HIGHLIGHTS

**Native Hay Production:** Native grasses produced at the site are harvested and baled to produce native hay as a low-water use alternative to traditional feed crops. The Nature Conservancy sells the hay to neighboring ranchers and feeds a the small herd of cattle at the Cobra Ranch. Cattle consuming the hay disperse native grass seed, contributing to passive restoration of uplands.

**Aquifer Recharge:** Restoring abandoned agricultural fields in floodplain areas like the one at Cobra Ranch can increase water infiltration, helping to recharge the aquifer and support shallow groundwater dependent species.

**Adaptive Management:** The experimental nature of this project allowed adaptive management to adjust revegetation techniques and achieve broader objectives than just agricultural land revegetation.

**Economic Resilience:** Native grass hay presents an economically viable feed crop will be resilient to warmer and drier conditions projected for the future in the desert Southwest.

### Collaborators

- US Bureau of Land Management
- Interns from Americorps
- Aravaipa Watershed Conservation Alliance
- The University of Arizona
- Sky Island Alliance

### Funding Partners

- US Fish and Wildlife Service: Partners for Fish and Wildlife
- US Bureau of Land Management
- National Fish and Wildlife Foundation

## LESSONS LEARNED

Farming native grasses saves up to 80% of the water needed for traditional feed crops and increases irrigation schedule flexibility.

Using native grass hay for feed encourages passive restoration of uplands because cattle disperse seed across the property.

The ranching community is interested in native grass hay production, with some limitations. Specifically, there is currently little incentive for growers to use less water, particularly when traditional feed crops have higher annual production.

Farming native grasses requires overcoming a lack of knowledge on how best to grow native plants. A combination of planting strategies yields best results, particularly between species. Dense planting can reduce establishment of undesired plants. As for traditional crops, irrigation levels can be decreased after plant establishment.

## NEXT STEPS

- Develop a long-term strategy to promote interest in growing native grass by commercial farmers.
- Work with Aravaipa Watershed Conservation Alliance and local ranchers to incorporate native grass seeding into range management practices.
- Partner with University of Arizona researchers to study carbon sequestration in soils where native grass fields are established.

## PROJECT RESOURCES

For more information on this project, contact Mark Haberstich: [mhaberstich@tnc.org](mailto:mhaberstich@tnc.org)

For additional project resources and case studies, visit the Desert Landscape Conservation Cooperatives *Management Toolbox* at: [WWW.DESERTLCC.ORG](http://WWW.DESERTLCC.ORG).



Established Native Grasses