



RESTORING OAK FORESTS IN THE WESTERN HIMALAYAS

In the Indian state of Himachal Pradesh, oak is a valuable component of the forest. Himachal has cold winters, and oak provides high-quality firewood to keep houses warm and serves as fodder for livestock. Acorns are also an important source of food for wild animals in the area. Historically oak was prevalent, but due to growing human populations, the species' slow growth, and its vulnerability to biotic disturbances like forest fire and grazing, today it is in short supply. There has also been an under-emphasis on planting oak, and so techniques for doing so are slow to develop. A quick look at the roads in Himachal Pradesh and the high demand for oak as fodder becomes apparent. Most of the accessible oaks have had their branches lopped back heavily. The issue thus at hand is how to help oak make a comeback.

Although everyone in Himachal area wants more oak, the barrier until now has been finding a way to do it. USAID's Partnership for Land Use Science Program (Forest-PLUS) has found a way by teaching low-cost direct seeding techniques that both forest officials and community members can use. The Himachal Pradesh Forest Department and communities have committed to replicating the direct seeding technique in more areas in the hill state.

USING A SIMPLE AND LOCALLY APPROPRIATE INNOVATION — DIRECT SEEDING

There is a robust culture in the area of conifer planting for forestry and for horticulture. Establishing oaks requires a different approach than establishing conifers. Acorns are large and prone to damage from weevils and other insects, making them hard to store; oak seedlings concentrate resources on their roots first, making growing them in a nursery and then out-planting to the forest a delicate

business. Seeing the need and these challenges, Forest-PLUS demonstrated and refined techniques for direct acorn sowing. Acorns are planted directly in the site where they are desired in a consistent, low-intensity approach that complements the time-sensitive and intense activity associated with the agricultural and conifer out-planting calendar.

To sow acorns directly, they are collected and graded at the time of masting (when acorns ripen and fall) by community members that choose oak trees with a desirable form and size. This can be done any time between January and April. Acorns are efficiently checked for viability by immersing them in a bucket of water to see which float; those that do are discarded. The seeds can then be stored with sand in gunny bags for a few months until planting season. The process of sowing is straightforward—make a small hole with a stick or a local tool, plant two or three acorns, and cover lightly.

Direct seed sowing can be managed at under one-tenth of the cost of raising trees in a nursery. Seedlings do not need to be raised in a nursery for a year thus saving time and money, nor do these seedlings need to be later transported to the plantation sites. Most of the native species' seeds carry considerable stored reserves that enable them to germinate and grow in a variety of sites. Even though the mortality in field conditions is higher than under controlled nursery conditions, the field-grown seedlings were shown to be better adapted to local site conditions and thus have a higher chance of success than nursery-grown seedlings.

ACCLAIM AND UPTAKE

The Forest Department of Himachal Pradesh appreciated this low-cost direct seed sowing method, and is promoting planting indigenous native species that help maintain ecosystem services. Involving community in this process augments their stake in the forests, thereby improving forest-people relationships for ensuring sustainable forest management.



OVERHARVESTED OAK TREE | PHOTOGRAPH: FOREST-PLUS