



*A newer variety, Honeycrisp, ready for picking at the Miller apple orchard west of Laramie September 2013.*

# WYOMING APPLE PROJECT

## attempts to save Wyoming's diverse apple cultivars

*By Steven Miller*

For thousands of years, the cultivated apple has woven itself through the fabric of human history.

From its origin in the wild apple forests of the mountainous regions of Kazakhstan, Kyrgyzstan, Tajikistan, and Xinjiang, China, humans have carried this prized crop with them across mountains, deserts, and seas to new lands. After journeying through the

centuries to Europe, witnessing the rise and fall of empires along the way, the sweet apple eventually travelled across the ocean to our shores. Arriving in North America with settlers from England and Western Europe, the apple was quickly established in the eastern half of the United States and then traveled west.

Eventually, this highly adaptable tree crop made its way to the

relatively treeless plains and valleys of Wyoming and became a critical resource during settlement. One of the earliest recorded orchards was planted in Wyoming in 1870 (the Ed Young orchard near Lander). At that time in Wyoming, fresh fruit was not readily available at stores, and fresh apples of many varieties were widely grown on homesteads and highly prized. This is no wonder given that the apple is a tasty, convenient,

*State Experimental Fruit Farm orchard near Lander. Courtesy Sinks Canyon Center*



Alexander the Great is credited with finding dwarfed apples in Asia Minor in 300 BC; those he brought back to Greece may well have been the progenitors of rootstocks used today to produce dwarf apple trees.

nutritious food source. It is rich in vitamin C, can be stored throughout winter, is easily transported, and even when completely dried, it loses little of its original food value.

For the pioneers, farmers, and ranchers, however, the utility of the wide array of apple varieties that were developed over time was much greater than just for fresh and dried fruit; some varieties provided a source of cider – both sweet and hard (alcoholic), a source of pectin to thicken jam and jelly, some were good for animal feed, and vinegar made from other varieties was used as a preservative, tonic, medicine, and household cleaner.

### **Lander Orchard had 3,000 Trees**

Owing to the plethora of uses and the different growing conditions around the state, the diversity of apple varieties in Wyoming during

these golden years of apple growing was quite high. The Ed Young orchard near Lander had more than 3,000 producing trees near its peak in 1898. The State Experimental Fruit Farm, also near Lander, boasted 1,700 trees and more than 170 cultivars. In addition to named cultivars from elsewhere in the world, this number included many novel cultivars developed specifically for the cold, drought-prone, high-elevation climate of Wyoming by superintendent John Steinbreck.

Examples of the hardy cultivars developed at the State Experimental Fruit Farm include “Brechsteinia”, “Margaret”, “Fremont”, and “Poposia”. The best of these were further tested and graded at the Cheyenne Horticultural Research Station near Cheyenne. Of these, “Brechsteinia” and “Margaret” made it into their list of top 10 cultivars.

Sadly, many of these highly desirable apple cultivars for Wyoming have now apparently been lost.

### **Saving Wyoming's Apple Diversity**

Wyoming has reached a critical milestone regarding the apple. Many old apple trees in Wyoming have reached or surpassed the century age mark. The typical apple tree, even under favorable climatic conditions and with routine care, rarely lives to be a hundred. In addition, many of the orchards established early in the history of Wyoming have been abandoned or the land use has changed. Consequently, Wyoming is also experiencing a loss of apple diversity. The last remnants of 19th century plantings often struggle to survive in isolated, nearly forgotten, or abandoned orchards of Wyoming. The fact they have survived for this long under harsh conditions and are still producing an abundance of highly desirable fruit makes these trees extremely valuable.

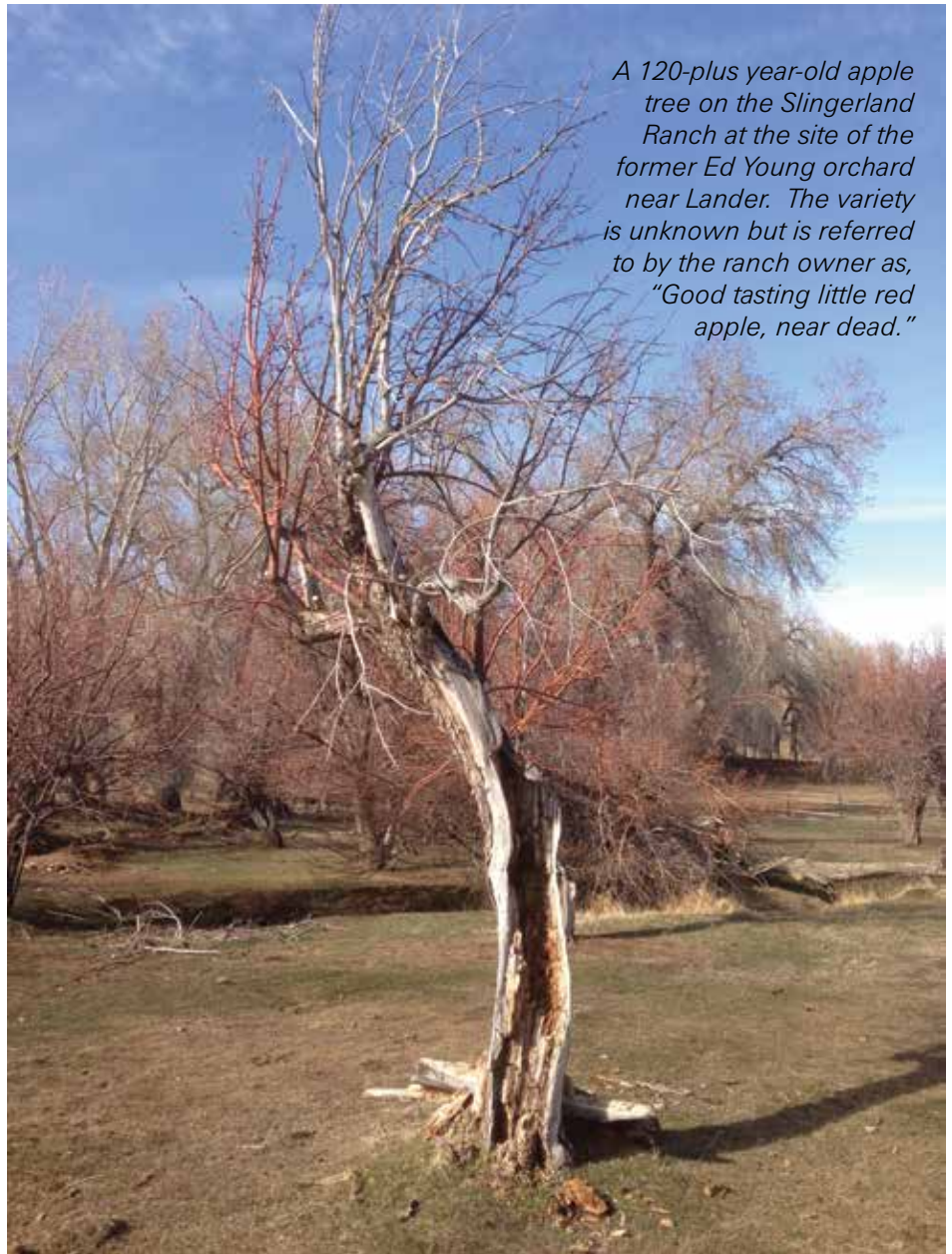
How better to choose which apples to grow than to pick from trees that have grown nearly unattended for half a century or more?

At this critical point, how do we try to save some of Wyoming's apple diversity? With funding from the Specialty Crops Program of the Wyoming Department of Agriculture, I have initiated the Wyoming Apple Project to find and save the diversity of apple cultivars in the state.

The Wyoming Apple Project has several objectives. The main goal is to save as many of the apple trees as possible before they are lost forever. To this end, I am visiting orchards and orchard remnants in Wyoming collecting scionwood from these trees and grafting them onto hardy rootstock. In this way, the old broken trees are made young and healthy again. These

## **APPLE CULTIVAR NUMBERS DECLINING**

The apple, like many other fruit and vegetable crops, is experiencing a severe loss of cultivar diversity. Of the 15,000 to 16,000 apple cultivars likely grown and eaten in North America, only about 3,000 cultivars remain accessible to American orchard keepers. An estimated 80 percent of apple cultivars unique to North America have been lost from commerce. Of the remaining 20 percent, 81 percent are now "endangered" in the marketplace, with only one to three nurseries offering these cultivars for sale to growers.



*A 120-plus year-old apple tree on the Slingerland Ranch at the site of the former Ed Young orchard near Lander. The variety is unknown but is referred to by the ranch owner as, "Good tasting little red apple, near dead."*



## MOLECULAR TECHNIQUES USED FOR IDENTIFICATION

Steve Miller has recently launched a project aimed at using molecular techniques to identify apple cultivars found in the orchards and orchard remnants.

“I use a comparative approach where genetic markers from unknown trees in historic orchards or from individual trees remaining in historic farmsteads around Wyoming will be compared with those from known, documented, and named trees obtained from a variety of sources representing heirloom and historic cultivars that were likely present in the region near the turn of the 20th century,” says Miller.

These known trees have been documented to be clonally propagated from cuttings and so the genetics of the leaves will be “true” to the cultivar, he notes.

now rejuvenated young trees are being planted back into the donor orchards if the owner is interested in apple growing and into a new orchard at the Sheridan Research and Extension Station. They are also being planted into the new Wyoming Apple Orchard at the Wyoming State Fairgrounds in Douglas where they will be maintained in perpetuity serving as a storehouse of the state’s apple diversity.

### How You Can Help

I know from my fieldwork, and from discussions with farmers and ranchers and participants of grafting workshops, there are many other orchards or orchard remnants yet to be sampled. Locating the trees and finding and contacting the owners for permission to gain access is often a

time-consuming process. If you know of a farmstead, ranch, or house with an old orchard, orchard remnant, or individual tree that is still alive, please contact me. The exact locale or address, the owner’s name, and any information or documentation about the orchard or tree along with characteristics of the fruit would be extremely helpful.

One bright spot in the Wyoming Apple Project came recently at an apple-grafting workshop at the Powell Research and Extension Center. Apple cultivars in development at the Experimental Fruit Farm and Cheyenne Horticultural Research Station were occasionally provided to farmers, ranchers, or individuals to see how they fared in different parts of the state. When shown

a plat written out on a piece of old cardboard of an orchard that was planted near Powell in the 1930s, I was excited to recognize the names of two “lost” cultivars. These were new cultivars that had also been tested at the Cheyenne Horticultural Research Station and made it into the top 10 cultivars for Wyoming. I am in the process of grafting pieces of these trees onto young, hardy rootstock so they will never be lost again. I am hopeful that this same story will repeat itself many times in the next several years as more orchards and orchard remnants are investigated.

I admit that my interest in this work is simple and completely self-ish. I want to be able to go to farmers markets anywhere in the state and eat good-quality, fresh apples.

*When not sampling farmers market apples, **Steve Miller** is a professor of botany at the University of Wyoming. He can be reached at (307) 766-2834 or at [fungi@uwyo.edu](mailto:fungi@uwyo.edu).*