

**Heirloom Seeds of Tennessee:  
Seeds and Their Stories**

A Thesis Presented for the  
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Degree  
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## **ABSTRACT**

Heirloom seeds continue to be grown in home gardens of Tennessee, an area of high agrobiodiversity, but are rapidly declining in local communities. Individual seed savers in communities have been replaced by formal networks that include seed swaps and national and regional seed saving organizations. Seed saving organizations grew out of an increased interest in heirloom vegetable production over the last forty years as a result of the expanding local food movement and concerns of loss of biodiversity. This study uses a multidisciplinary approach in plant and social sciences to document seed saving, the motivation of seed savers, and the role of heirloom seeds in agriculture. Through ten in depth interviews, 99 varieties of heirloom vegetable seed selections varieties of seeds were documented being saved with beans being the predominant seeds saved (61%), comparable to an earlier study in western North Carolina. Ten local varieties were repeated in multiple collections, including the regional variety ‘Turkey Crow’ bean, which appeared in four collections. Seed savers focused on the following areas for their motivation: preserving unusual forms or rare seeds; perceived taste preferences; concern of loss; and, the ability of the varieties to adapt to local environmental conditions. Seed savers keep minimal records on the local varieties with much of the knowledge being shared person to person. The study also examined primary historical documents from early settlement to 1860 to reinterpret assumptions of economic and agricultural isolation as it relates to the movement and introduction of edible plant varieties in Tennessee’s agricultural history. Though primary documents, such as farm journals, gave insight to early agricultural methods, little specific variety documentation is available.

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# **CHAPTER I INTRODUCTION TO THE STUDY**

## **Introduction**

Heirloom vegetables emerged in the national mainstream in the last forty years through specialized seed companies and the local food movement. Historically, in Tennessee, heirloom vegetables were always grown and the seeds shared through informal networks in families and local communities. This study used a multidisciplinary approach to record the families and communities in Tennessee that preserve the seeds from these vegetables, their motivations, and the opportunities that heirloom vegetables offer for local agriculture.

In this chapter, heirloom seeds are defined and compared to other types of seed; the role of seeds in recent agricultural history is discussed; an overview of the process of seed saving is provided; and, their use in plant breeding is outlined. In Chapter II, Literature Review, current literature is reviewed regarding: site selection in Tennessee and a brief history of agriculture in East Tennessee illustrating the difficulty in capturing specific vegetable and foodways history, as well as examining long held cultural assumptions about the region; growth in popularity of heirloom vegetables; and, documentation of heirloom seeds. In Chapter III, Materials and Methods, the methodology of the study is outlined including: qualitative methods, field research, historical documents, taxonomy of heirloom vegetables, and limits to the study. In Chapter IV, Results and Discussion, the results of the field research and research of primary historical documents is presented, including the seeds documented and the motivations of individuals that continue these seeds. In Chapter

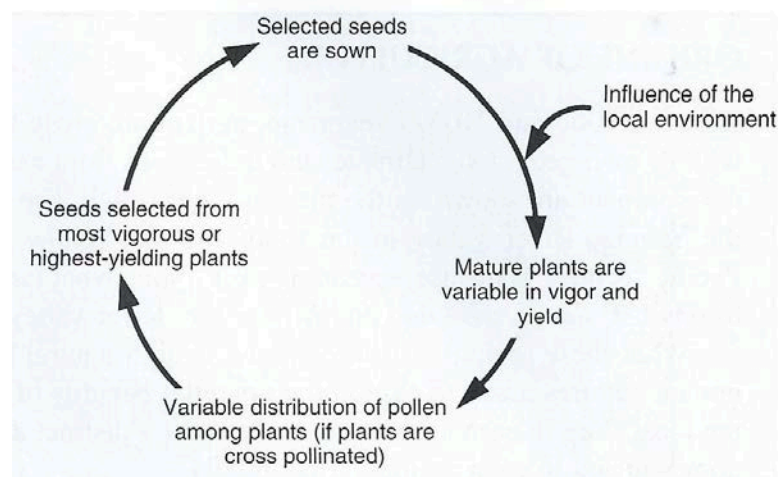
V, Conclusion and Recommendations, the opportunities offered by heirloom seeds will be outlined and discussed.

### ***Heirloom seeds defined***

Heirloom seeds are usually defined by three elements: 1. seeds are open pollinated, 2. seeds are at least 50-60 years old, and 3) seeds are grown historically in a community and have an associated 'story'. In plant science, the term is also applied to flowers and fruit such as apples, but the focus of this study was on vegetables. Other terms used when referring to heirloom seeds include: traditional, folk, heritage, indigenous, farmers' varieties, native, and ole-timey.

Plants that are open pollinated reproduce in a natural 'open' setting versus controlled pollination and produce traits that are relatively fixed within a range of variability. Open pollinated plants produce seeds that are selected and replanted the next season by humans or by nature. Open pollinated seeds include self or cross-pollinated crops. Self- pollinated crops have both male and female parts on the same flower and include vegetables such as peppers, tomatoes, and beans. Cross-pollinated crops have both male and female plants and pollination occurs by wind (e.g. corn) or insects (e.g. broccoli) (Ashworth, 2002). Variants from open pollinated parent plants can occur several ways, including on purpose for plant breeding or by natural 'crosses'. Natural crossing occurs when different varieties are planted within a certain distance (distances depend on the type of vegetable) from one another to allow for the movement of pollen. If you are only harvesting fruit, and not seeds, these distances – referred to as isolation distances – are not important. If you are saving seed and want the seeds to retain the characteristics of the

previous generation, isolation distances are very important (Ashworth, 2002). In traditional agricultural systems world wide, open pollinated varieties have been used since the beginning of agriculture and seeds saved from each crop for planting the following season. Open-pollinated varieties can change over time through human selection and local environmental conditions. For instance, a 'Brandywine' seed selected year after year from the best tasting, earliest ripening fruit in hot, humid Tennessee would be different than 'Brandywine' selected in hot, dry Northern California (Wszelaki, 2013, personal communication). Fig. 1 illustrates the cycle of open pollination.



**Figure 1. Method of selecting desirable characteristics maintains adaptations to local conditions and allows for maximum genetic variability (Gleissman, 2007).**

In contrast, a hybrid seed is a cross between two open pollinated seeds that create new visible characteristics (phenotype) and a new genetic makeup (genotype) with characteristics such as drought tolerance or disease resistance (Cleveland and Soleri, 2002). The first generation of the cross is referred to as F1 hybrid. The genetic makeup of

the F1 generation is not stable enough yet to be able to plant seeds from its plant to produce 'true to type' characteristics, but can be very productive due to heterosis or 'hybrid vigor' (Ashworth, 2002; Gleissman, 2007). Because of the time it takes to stabilize the new variety in traditional plant breeding, by continually crossing the parents to produce the same characteristics over several years, F1 hybrids are often sold as seed each year. Seeds from this F1 hybrid generation will not be consistent; producing plants with a range that includes plants that are the same as the parent plant, plants that are the same as one of the parents, and other genetic combinations.

### ***Recent agricultural history and seeds***

The age generally accepted for the definition of heirloom seed reflects the evolution of modern agriculture and significant changes that occurred in the early and mid-20<sup>th</sup> centuries that reduced the use of open pollinated seeds in agricultural settings (Navazio, 2012). Agriculture has sought to create new varieties of vegetables since its earliest days and modern plant breeding programs among scientists and universities developed in the early 20<sup>th</sup> century following the understanding of genetic principles. Subsequently, socio-economic developments such as increasing urbanization, world wars, and federal programs altered the shape of agriculture in the first half of the century (Navazio, 2012). Post World War II, scientific developments were applied to agriculture to increase productivity through mechanization and chemical inputs, and supported efficiencies of monoculture and larger, industrialized farms. Until the mid-20<sup>th</sup> century, many seeds used by farmers were grown and saved locally. However, after the mid-century farmers began to shift to seed that had been grown and developed elsewhere geographically (Navazio, 2012).

Increasingly, vegetable breeding focused on varieties that were bred for yield, uniform appearance, uniform harvest times, resilience to mechanical harvest and long transportation and supply changes, and disease resistance; and could perform consistently using external inputs in a wide range of conditions (Cleveland and Soleri, 2002). In contrast, heirloom vegetables that were used for local consumption might have unusual shapes, inconsistent appearance, thin skin, and other characteristics that were not conducive to being shipped longer distances. Many heirloom vegetables were relegated to mostly home and hobby gardens or disappeared (Fowler and Mooney, 1990). Open pollinated seeds that are grown over time in local environments adapt to changing conditions such as climate due to increased genetic diversity. But the seed and plant breeding was narrowing its focus, “By the 1980s breeding new crop varieties for larger farms in climates favorable for the respective crop became the order of the day. As these farms began to rely on more and more external inputs and a greater degree of mechanization, the new crop varieties were shaped to fit these systems” (Navazio, 2012). One of the main concerns with narrowing the genetic diversity of vegetable plants and being dependent on few varieties is genetic vulnerability. The example of genetic vulnerability most often cited is the Irish Potato Blight in the mid-1800s, where a disease, Late Blight, caused by the fungus *Phytophthora infestans* spread quickly and easily through the two potato varieties that had been exclusively cultivated in Ireland, resulting in overwhelming crop loss and contributed towards starvation of many people (Gleissman, 2007).

The seed industry and plant breeding began to significantly change its business model when legal challenges in the 1980s allowed for patents for sexually reproducing

plants. Prior to this time, seed business profits primarily depended on quantity of seed sold and a reputation for quality seed (Navazio, 2012). As intellectual property issues increased, global pharmaceutical/chemical businesses with extensive patent holdings and experience acquired seed companies resulting in fewer varieties of seed being offered and consolidation of regional and national companies (Howard, 2009). As a result, there has been a decline in agrobiodiversity geographically and genetically in many sectors of the food system, including vegetables. Among seeds, ten agribusiness firms control one-third of the worldwide market and in vegetable seeds; five firms control 75% of the market (Gleissman, 2007).

### ***Seed saving***

Seed saving is the process whereby seeds are harvested from mature fruit to be planted the following season. As discussed, seed saving from open pollinated seeds was the primary way that seed was produced until developments in hybridization and genetically modified organisms in the 20<sup>th</sup> century. The knowledge that “seed savers” have is local in nature regarding specific soils, microclimates, and disease issues and the seeds that they have maintained are the focus of this study. When saving seed there are several characteristics that must be understood about the crop: life cycle, isolation distances, population information, and methods of harvest and cleaning seed (Ashworth, 2002; Navazio, 2012).

## ***Life cycle***

Vegetable plants are either annual (e.g. tomato) and perennial (e.g. asparagus), where they go through their life cycle from planting to seed in one year, or biennial, where this process occurs over two years with seeds set in the second year. Examples of biennial crops would be many of the Cole crops, such as cabbage and cauliflower. In order for a biennial crop to flower in its second season, it must go through vernalization – the length of time that the crop must be at or below a critical temperature (measured in weeks). Length of vernalization and temperature requirements differ from species to species, crop types within species and within varieties. An example of the variation in length of vernalization is shown by carrots that are divided into two crop types: 1. adapted from the subtropics (two to four weeks) and, 2. Western types (average eight weeks). Within Western carrots, there are two variety categories: older ‘true’ Nantes (six weeks) and Northern European (ten weeks) (Navazio, 2012). Biennial crops must be overwintered, and this can be done two ways – in the field (either where planted or covered by soil in pits) or by storing propagules in a controlled environment such as a root cellar. The term used for root crops that are stored for replanting to produce a seed crop is called a steckling. Stecklings must be prepared properly by cleaning of soil (avoiding water), and trimming the taproot and petiole with a knowledge of apical bud location (Navazio, 2010).

## ***Isolation***

When saving seeds - whether a few plants, or hundreds - it is important to maintain the integrity of the variety which is done primarily through isolation. Isolation may be from other varieties of the species or from wild plants, and can be characterized as spatial

or temporal isolation (Ashworth, 2002). For organic seed growers, isolation distance requirements are usually increased 2-3 times recommended distances because of concern over genetic ‘pollution’ (Navazio, 2012). Though isolation techniques may be utilized “there is no such thing as perfect isolation” (Navazio, 2012). Events that can lead to pollen mixing include: wind gusts, clothes of people in the field, animal fur, and water. Timing of pollination can be controlled by hand pollination and mechanisms such as screen cages to limit the movement of insects. However, environmental factors such as heat, humidity, physical barriers such as hills, forests, and rock formations, all influence pollination (Ashworth, 2002; Navazio, 2012). For self-pollinated plants such as beans, spacing between varieties of 150 feet is recommended. For cross-pollinated plants, the usual recommendations have historically been a half to one mile. However, these isolation distances have been passed along historically without any distinction between wind and insect pollinated plants or varieties (Navazio, 2012).

### ***Population***

To keep the seed line ‘genetically healthy’, there must be a large enough population of plants from which to select seed. For instance, it is not recommended that all collected seeds come from one or two plants; it is recommended that a minimum of 20 to 200 plants be grown for seed saving (Navazio, 2012). Again, the number of plants recommended varies among species and varieties and this number assumes plant loss. However, no matter how careful someone is with isolation distances and growing a sufficient population to collect seed, variants can occur. There are four ways a population can change: off-types, which reflect the original genetic makeup; outcrosses that share pollination with domestic

or a wild form of the species; seed is mixed through human error; or genetic drift as changes occur over time in response to the local environment (Navazio, 2012).

### ***Focus of the study***

This multi-disciplinary study seeks to document the heirloom vegetable seed and genetic diversity in Tennessee being maintained by home and market gardeners, primarily in the mountain regions and adjacent areas. This study is similar to a study conducted in West North Carolina in 2005 that documented heirloom seed varieties in selected counties.

### ***Research questions***

The following research questions guided this study: (1) what vegetable varieties are still available that were grown historically, (2) who is growing these vegetables (3) why are these varieties valued, (4) what are the unique botanical characteristics of these varieties, and (5) what is the relevance of regional heirloom vegetable production to growers in East Tennessee?

### ***Significance***

There has been little research to date on heirloom vegetables in Tennessee. Most of the work to date has been conducted in the mountain areas of North Carolina and Arkansas (Veteto, 2005; 2010). Several publications include heirloom seeds from the collection of Tennessee seed saver, John Coykendall (Veteto, 2011).

Heirloom seeds offer an opportunity to: (1) document variety diversity, (2) document local agricultural knowledge, (3) educate growers who want to produce

vegetables for a niche market and (4) provide an educational resource for landscape restoration or historic interpretations at historic house museums and farms.

## **Chapter Summary**

Heirloom seeds have no legal definition, rather generally agreed upon assumptions. These open pollinated varieties were at the heart of plant breeding for thousands of years until agriculture underwent significant shifts in the 20<sup>th</sup> century such as: increased use of hybrids, legal changes in plant intellectual property, and consolidation of seed companies. These shifts led to the reduction in the number of varieties in production today. Scholars believe this lack of genetic and geographical diversity could make our food system vulnerable to disease and environmental impacts, such as climate change. Seed saving is not a complicated process, and has been occurring for thousands of years; however, there are important factors to acknowledge such as: the life cycle of the plant, the method of pollination, isolation distances, and methods of collecting and processing seed.

## **CHAPTER II LITERATURE REVIEW**

### **Introduction**

This literature review examined the following areas in regard to this study: (1) geographic area of inquiry, (2) the growth in popularity of heirloom vegetables in the U.S., (3) and, the value of heirloom vegetables to agriculture.

### **Region of Inquiry**

The primary region where this study was conducted is the Central and Southern Appalachia area of Tennessee. This region's food and culture reflect a blend of many cultures, like so many geographic regions of the U.S., and its beginnings lie in settlement patterns, topography, and climate. Appalachia is believed to have one of the highest agrobiodiversity levels in North America due to the topography of the mountain ranges and community isolation creating environmental niches, including microclimates, isolated biodiversity and cultural autonomy (Veteto, 2010).

By the late 1780s, Western Europeans and second generation Americans were moving into the Southern Appalachian mountain region defined as Southwest Virginia, Eastern Kentucky, Western North Carolina, and Eastern Tennessee. With the end of the Revolutionary War, treaties were either redrawn or ignored and farms were expanding into the "West". The first wave of settlers (late 1700s to early 1800s) to Appalachia descended primarily from English, Scottish, Irish, Germans, and Scandinavians, and

brought seeds with them with origins in Northern and Western Europe (Davis, 2000).

These settlers also found crops left by Spanish explorers, such as peaches, sweet potatoes, and watermelon that were cultivated by Native Americans (Davis, 2000). Orchards were commonplace and peach pits have been documented in archaeological sites from the early 17<sup>th</sup> century in Western North Carolina and Southeastern Tennessee (Davis, 2000). Early settlers introduced apples, onions, turnips, and cabbages and integrated Native American corn, gourds and pumpkins into their gardens (Davis, 2000). Food histories of the region emphasize the diversity of vegetables grown and how Appalachian foodways differ from other Southern regions (Hilliard, 1972; Sohn, 2005). However, within the literature available it is difficult to determine the specific varieties of vegetables that were historically grown.

The prevalence of heirloom seeds in Tennessee, as part of Central and Southern Appalachia, is often characterized by historically isolated communities and subsistence farming. However, by taking a fresh look at primary sources and research in sociology, archaeology, geography and history, connections are found between Tennessee communities and the larger world market economy from early settlement through the eve of the Civil War. The ideas of ‘isolation’ and ‘subsistence’ are challenged when reviewing agricultural history, the crops and livestock that were grown for a national market, and through the diversity reflected in homegardens and orchards.

### ***Stereotypes***

The farmer in Appalachia was portrayed as a stereotype in popular 20<sup>th</sup> century literature, radio and television as a “feuding and whiskey-running hillbilly” (Williams,

2002). Stereotypes were included in agricultural works such as Lewis Cecil Gray's 1933 two-volume work on "History of Agriculture in the Southern United States to 1860." This weighty tome includes descriptions of peoples throughout the region including the Mountain South. Gray (1933) describes current agricultural output,

Moreover, extensive areas, such as Appalachia and the large stretches of pine lands of coastal plain, because of physical isolation or unfavorable natural environment, failed to develop beyond the pioneer economy.

Gray continues under the caption of "Highlanders":

The poor whites should be sharply distinguished from the mountaineers, or highlanders, with whom they have sometimes been confused... Both classes were poor, both lived the rude self-sufficing life of the pioneer, and both were handicapped by isolation and ignorance. In most cases the life of the mountaineer was characterized by less squalor and less filth....His idleness and laziness, in many cases, were not results of listlessness and inertia, but rather an absence of compelling motive.

Gray also discusses a "yeoman" group that he characterized as more ambitious and successful at farming than the highlanders, but beneath the planter class. These yeoman are described as having a few slaves and farming mostly in the valleys.

The idea of a lack of a market economy is furthered more than ten years later in Clark's "The Tennessee Yeoman" (1942):

In East Tennessee, far removed from markets, there was no urge to produce more than could be produced at home...the lands of East Tennessee were the least valuable.

In later years, historians would differentiate the agriculture in the Mountain South.

Salstrom (1997) portrays three Appalachias – divided by geography and time of settlement.

He poses that the prime farmland - and most accessible – was along the valleys in Virginia, West Virginia, Tennessee, and was settled first, referred to as "Older Appalachia". The

second area or Intermediate Appalachia was along the Blue Ridge (western North Carolina and northeastern Georgia) and the Newer Appalachia was in the Cumberland Plateau, Eastern Kentucky, and the western part of West Virginia. Hsuing (1997) separates the regions by levels of connectedness, displaying “Two Worlds” – one of the farmers in the valley areas, the other being the mountain and narrow hollows.

### ***Isolation***

Historically, Appalachia was often depicted as isolated or cut off from the modern world due to the perceived lack of market economy and the natural environment (Grey, 1933; Clark, 1941; Hilliard, 1972). However, several scholars in recent decades demonstrate the fallacies of these widely held ideas (Groover, 2003; Hsuing, 2006; Faulkner, 2008).

An in-depth study of Washington County in Upper East Tennessee, Hsuing (2006) demonstrates that from the earliest days of settlement in the 1770s, individuals and communities were connected, though to varying degrees and in different realms. One source of connectedness was the court system, serving 2500 residents in Washington County in 1778. The court records shows an active and far-reaching network with depositions taken as far as away as Charleston, South Carolina. Indian activities and war with England further bound individuals and communities together with the Battle of Kings Mountain laying the groundwork for future government leaders of Tennessee. In addition, a road system existed, though to varying degrees of ease of travel. Over 161 different roads in Washington County were listed in official documents as being surveyed, cleared, and overseen from 1778 to 1800. Hsuing argues for looking at isolation through various

viewpoints – political, social, economic, and geographical realities as well as perceptions.

However, ease of transportation and “relative isolation” continued to vary over the next 50 years with the railroads only coming to East Tennessee and the Cumberland Plateau a few years before the Civil War. Writing to a friend in 1848, Adrian Chavannes (1848) records the journey from Europe to the Cumberland Plateau to reach a new settlement for Germans and Swiss in Wartburg, Tennessee. Chavannes details the long journey by boat to New York in her journal. After a brief stay in New York City, the family continued by boat to Charleston, South Carolina. From Charleston, the family boarded a train to Dalton, Georgia (the end of the train line). From Georgia, the Chavannes travelled by cariole to Chattanooga, steamboat to Kingston and over land to their final destination of Wartburg. Upon arrival, the Chavannes, discovered that the promised community was less than expected.

Archaeological evidence also disputes the idea of an isolated Appalachia. Archaeological excavations at the Gibbs Farmstead and Ramsey House in Knox County provide evidence of connectedness to a world economy. Nicholas Gibbs was German-American and settled in North Knox County on 450 acres in 1792. The original log house of Nicholas Gibbs is still in existence and substantive archaeological research has been done at the site. Based on ceramics and kitchen items found, it was concluded from the earliest dates of settlement the family was able to purchase tea ware, pewter, and printed ceramics (Groover, 2003). Relative to the Gibbs family, the Ramseys were more affluent during the early days of East Tennessee. In 1817, the Nicholas Gibbs holdings were worth \$176 and the Ramsey estate was valued at \$1,052 in 1821 at the settlement of Francis A. Ramsey’s estate (Groover, 2003). Ramsey settled in east Knox County in the 1780s from

Pennsylvania and by 1797 had constructed a two story stone home with decorative interior and exterior woodwork. Extensive archaeology at the site by historical archaeologist Charles Faulkner and analysis of ceramics and other goods show that the Ramseys “enjoyed most of the same conveniences and fashions enjoyed on the Eastern seaboard” (Faulkner, 2008).

Newspapers at the time also confirmed these connections. As early as 1792, the *Knoxville Gazette*’s advertisements showed David Deaderick’s stores in Jonesboro and Greenville bringing goods from Baltimore and Philadelphia. Available items included: “Pewter Dishes, Planters, and Basins, Peruvian Bark, Glauber’s Salts, Coffee, Tea, Pepper, Allspice, Ginger, Allum, Cinammon, Cloves, Nutmeg, Raisins” (Knoxville Gazette, 1792). Other items listed in advertisements that year included loaf and brown sugar, chocolate, coffee, salt and mustard.

### ***Subsistence***

While the stereotype of early “pioneers” reflects a subsistence lifestyle, growing everything they consumed, a more complex system of surplus producers emerges when looking at historic records, in which East Tennessee had trade networks extended throughout the U.S. (Groover, 2003).

Hilliard’s book title “Hogmeat and Hoecake” and sayings such as ‘Hog and Hominy state’ reflect antebellum Tennessee’s importance in growing corn and providing hogs throughout the U.S. and the world. In 1840, Tennessee was the top producer of corn in the nation (Hilliard, 1972). However, corn and hogs were only part of the story. Records show field crops of wheat, rye, oats, and potatoes; and production of butter, wool, flax, and

tobacco produced for a market economy.

### ***Foodways***

Despite several popular books on mountain cooking and Appalachian recipes, historical archaeologist Charles Faulkner states, there is “virtually no historic information exists about daily diet in frontier Knoxville” (Faulkner, 1998).

In an early agricultural history of Tennessee, sample counties across Tennessee, including East Tennessee, were used to assemble data from general and U.S. Agricultural Census records from 1840 to 1860 to compare and contrast agriculture and productivity across the state. In using Agricultural Census data, not only is an early, long time period ignored, but also much of what people ate on a daily basis is obscured (Clark, 1942). The U.S. Agricultural Census, formalized in 1840, lists mostly commercial crops with a value over \$100. This focus on commodities means that that very little “official” data was collected on what people ate, especially in terms of vegetables. The result is that many times there is conflicting and contradictory and generalized information available. For instance, one of the few scholarly works on southern mountain foodways often cited, states:

The tomato, a favorite of the twentieth-century southerners, was used very little as a vegetable during antebellum times. It was regarded primarily as an ornament and was more often found among flowers than in a vegetable garden (Hilliard, 1972).

However, in an issue of the *Tennessee Farmer*, a periodical published first in Jonesborough, Tennessee in 1837 and 1838, a recipe for ‘Tomatoe Catsup’ is shared from Baltimore, Maryland (Emmerson, 1836). Much like today, this early 1800s catsup calls for tomatoes, salt, vinegar, cloves, allspice, black pepper, and cinnamon.

Hilliard's work provides further contradictions, especially when he states, "Buckwheat, rye, oats, and other cereal grains have never been particularly liked and seldom were used" (Hilliard, 1972). However, when looking at original newspapers from the earliest days of settlement and personal diaries of farmers in the 1840s-50s, these crops are frequently listed along with wheat and corn. For instance, in 1791, the Knoxville Gazette included an advertisement for John Sommerville & Co., "A New Store on German Creek" located in Jonesborough that stated the following, "Wanted immediately, a quantity of rye, corn, and fodder for which a generous price will be given (Knoxville Gazette, 1791)."

### *Homegardens and orchards*

The challenge when researching vegetables in homegardens and orchards in Tennessee is the general lack of information in secondary resources beyond cash-valued field crops from 1840-1860. Even when vegetables are mentioned in primary or secondary sources, the specific varieties are rarely noted,

A major problem in tracing the introduction of peas and beans into the southern Appalachian region is the obscurity of the available description in the historical record (Davis, 2000).

Davis credits the Spanish for several introductions of vegetables and fruits to East Tennessee through Spanish exploration and trade with the Cherokees such as peaches, sweet potatoes, field peas, and watermelons (Davis, 2000). Even as early as the establishment of the State of Franklin, in the 1780s, one method of payment allowed for taxes and salaries included peach or apple brandy suggesting established orchards (Finger, 2001).

The first settlements certainly brought seeds with them, but it is challenging to discover what they were planting specifically in homegardens. This complication may be due to the fact that women may have been the primary caretakers of the “Garden” and few written records from women exist for antebellum Tennessee.

In current studies, field crops, archaeological evidence, and 20<sup>th</sup> century foodways are used to construct foodways from the 18<sup>th</sup> and 19<sup>th</sup> century. These assumptions focus on corn and pork in the diet, and while these were certainly important foodstuffs, they neglect the hundreds of varieties of vegetables that were available historically. If East Tennesseans had access to ceramics and luxury goods from Baltimore, Richmond, and Philadelphia, and Charleston, it reasons that they could purchase seeds from established nurseries in these areas as well.

A review of a few primary documents challenges many assumptions about foodways and gardens in the South and in East Tennessee. These sources include newspaper advertisements, an early agricultural periodical, and the farm journals or diaries of three men in East Tennessee: Drury P. Armstrong, Samuel McCammon, and William Caswell. Armstrong, McCammon, and Caswell were contemporaries – all born within a ten-year period and all farming in Knox County in the 1840s and 1850s. Each kept records on their farming efforts that were reviewed as primary historical documents as part of the study.

The agricultural periodical reviewed was the *Tennessee Farmer*, published in Jonesborough in 1837 and 1838. While the publication has little original information from Tennessee, instead ‘cutting and pasting’ content from other U.S. and European agricultural publications, it provides evidence of connectedness to the world through sharing agricultural information. The index of the two volumes lists the following edible plants

that were referenced and would have been familiar to farmer in Tennessee (Emmerson, 1838).

|                             |                                |                |
|-----------------------------|--------------------------------|----------------|
| Apple Trees                 | Artichoke, Jerusalem Asparagus | Barley         |
| Beets                       | Bene Plant (Sesame)            | Cabbages       |
| Carrots                     | Corn                           | Grapes         |
| Mulberry                    | Oats                           | Onions         |
| Parsnips, as a "field crop" | Peas                           | Potatoes       |
| Pumkins                     | Ruta Baga                      | Salsify        |
| Strawberry                  | Sunflower "feed"               | Sweet Potatoes |
| Tomatoes                    | Top Onions                     | Turnips        |
| Water Melons                | Wheat                          |                |

Also in the *Tennessee Farmer*, a Montgomery Nursery near Clarksville, Tennessee lists the following for sale:

50,000 apple trees, over "one hundred kinds"  
 11 kinds of Grapes "the most celebrated for the table and for wine which have proved suitable for our climate"  
 22 kinds of Strawberries  
 64 varieties of Pears  
 30 sorts of Plums  
 47 of Peaches, French, English and American Varieties  
 14 of Cherries  
 4 of Necterines  
 4 of Apricots,  
 3 of Almonds  
 3 of Mulberries  
 4 of Quinces  
 5 of Figs  
 44 kinds of Gooseberries  
 14 of Currents  
 6 of Raspberries  
 2 of Medlars  
 5 of Filberts  
 100 Varieties of Tulips  
 50 of Hyacinths  
 25 of Chrysanthamum  
 51 of Roses  
 16 of Dahlias  
*Also listed are:* Peonies, Crown Imperial, Polianthus Narciasus, Lillies  
 Gladiolus, Crocus, Iris, &c in great variety  
 8 kinds of Firs and Pines, Arbor Vitae, French Tamarix, Silver Leaf Poplar,

Buffaloe Berry, Chinese Ailanthus or Tree of Heaven, White and Purple Fringe Trees, Scotch Roan, Magnolia, &c, &c. Catalogs available.

This wide range of varieties available at an established Tennessee nursery in the 1830s suggests an early demand and market for edible and ornamental gardens. This variety is demonstrated despite Hilliard's assertions that "On the whole, orchards and vineyards in the South were not outstanding at least in relation to the areas of commercial production elsewhere" (Hilliard, 1972).

Further evidence exists of extensive orchards and homegardens in Drury Armstrong's detailed diary that he kept from 1842-1849 and his contemporary Samuel McCammon, whose diary was kept from 1846-1854. Both farmers had multiple business interests and both of their homes still stand today. Armstrong's home still stands on Kingston Pike in Knoxville, now named Crescent Bend, and serves as a historic house museum and wedding location. McCammon's home also still remains on Riverside Drive in Knoxville heading east from downtown and houses a heating and plumbing company. Lewis Gray would have considered these men more "successful" yeoman farmers, and their records indicate sophisticated and diversified farming operations. Extracting all edible references, the two diaries include the following vegetables, crops, and livestock:

**Table 1. Comparison of edible references in two antebellum Tennessee farm diaries.**

| Category             | Item                         | Variety                     | 1842-1849<br>Armstrong | 1846-1854<br>McCammon |
|----------------------|------------------------------|-----------------------------|------------------------|-----------------------|
| Fruit                |                              |                             |                        |                       |
|                      | Apple                        |                             | X                      |                       |
|                      |                              | Swar                        | X                      |                       |
|                      |                              | Baldwin                     | X                      |                       |
|                      |                              | Ladies Winter               | X                      |                       |
|                      |                              | Green<br>Newtown<br>Pippen  | X                      |                       |
|                      |                              | Yellow<br>Newtown<br>Pippen | X                      |                       |
|                      | Cherry                       |                             | X                      |                       |
|                      | Grape                        |                             | X                      |                       |
|                      | Peach                        |                             | X                      |                       |
|                      | Pear                         |                             | X                      |                       |
|                      |                              | Sickel                      | X                      |                       |
|                      |                              | Bartlett                    | X                      |                       |
|                      | Plum                         |                             | X                      |                       |
|                      | Dried Fruit                  |                             |                        | Purchased             |
| Fish                 |                              |                             | X                      |                       |
|                      | Buffalo                      |                             | X                      |                       |
|                      | Catfish                      |                             | X                      |                       |
|                      | Eel                          |                             | X                      |                       |
|                      | Sturgeon                     |                             | X                      |                       |
| Crops -<br>self/feed |                              |                             |                        |                       |
|                      | Barley - Emir<br>or Egyptian |                             | X                      |                       |
|                      | Blue Irish<br>Potatoes       |                             | X                      |                       |
|                      | Buckwheat                    |                             |                        | X                     |
|                      | Cabbage                      |                             | X                      |                       |
|                      | Clover/Hay                   |                             | X                      | X                     |
|                      | Corn                         |                             | selling                | X                     |
|                      | Cotton                       |                             | X                      |                       |
|                      | Flax                         |                             | X                      | X                     |
|                      | Irish Potatoes               |                             | selling                | X                     |
|                      | Millet                       |                             |                        | X                     |
|                      | Oats                         |                             | X                      | X                     |
|                      | Punkin                       |                             | X                      |                       |
|                      | Rye                          |                             | X                      |                       |
|                      | Straw                        |                             |                        | X                     |
|                      | Sweet Potatoes               |                             | X                      | X                     |

**Table 1. Continued.**

| Category  | Item         | Variety | 1842-1849<br>Armstrong | 1846-1854<br>McCammon |
|-----------|--------------|---------|------------------------|-----------------------|
|           | Watermelon   |         | selling? 50<br>hills   | Purchased<br>25       |
|           | Wheat        |         | X                      | X                     |
|           | Yams         |         | X                      |                       |
| Livestock |              |         |                        |                       |
|           | Cow - milk   |         | X                      |                       |
|           | Geese        |         |                        | X                     |
|           | Hogs         |         | X                      | purchased<br>shoats   |
|           | Sheep        |         | X                      |                       |
|           | Steer        |         | X                      |                       |
| Garden    |              |         |                        |                       |
|           | Beets        |         | X                      |                       |
|           | Cabbages     |         | X                      | X                     |
|           | Lettuce      |         | X                      |                       |
|           | Onion        |         | X                      |                       |
|           | Parsnips     |         | X                      |                       |
|           | Peas - late  |         | X                      | X                     |
|           | Peper grass  |         | X                      |                       |
|           | Radishes     |         | X                      |                       |
|           | Snap beans   |         | X                      |                       |
|           | Strawberries |         | X                      |                       |
|           | Sweet peas   |         | X                      |                       |
|           | Turnip       |         | X                      | X                     |
| Other     |              |         |                        |                       |
|           | Bee Stands   |         | X                      |                       |
|           | Cider        |         |                        |                       |
|           | Cream        |         |                        | X                     |
|           | Coffee       |         | Rcvd. On<br>account    |                       |

McCammon references a “Mr. Clark & Co. of Ohio” coming to Knoxville and grafting “100 apple trees” in March of 1847. However, despite the detailed records, few references are made in either diary to the vegetable garden. However, McCammon refers to workers “paleing Garden”, having “engaged some vegetables,” and having “went to John Owens for

cabbage plants.” Armstrong’s diary covers a longer period of time and is more detailed, but both provide a detailed description of year round activities on farms in mid-19<sup>th</sup> century Knox County, Tennessee. In one of the few entries on specific varieties, Armstrong details the apple tree order that he received in January 1846,

Opened a box of fruit trees from David Landrith’s of Philadelphia Penn. containing Sickel Pears, Bartlett Pears, Newtown Pippin – Green, Newtown Pippin – Yellow, Baldwin Apple, Sewar Apple, Ladies Sweetning. I am grafting twigs of each of the above varieties.

The diversity available to East Tennessee farmers becomes even more apparent in later years. In the account book kept by William Caswell from 1836 to 1862 in Knox County, he lists the cash and trade transactions, annual estate value, and other information commonly found in such records. However, in his later years (1849-1860), Caswell used available pages to plan and document his farm, landscape, and provided detailed planting information and varieties of grapes, apple, peach, and plum trees, roses, flowers, raspberries, gooseberries, blackberries, herbs, and more. The detailed information contained about this early edible and decorative planting is exhaustive and provides sufficient information for an independent project. Initial analysis reflects varieties and new hybrid rose introductions that would be the equal of any garden in America at the time. For instance, the rose ‘Geant Des Battailles’ is listed and was only introduced in 1846 (American Rose Society, 2013). This document contains important information regarding Southern garden history and provides plant lists and information that is lacking among current records. The document would serve to establish early Knox County and East Tennessee having strong connections and commerce in the nursery industry.

However, it is important to note, that these journals reflect the farmers in ‘Old

Appalachia' in the valleys. Other pictures emerge, during the same time period in 'New Appalachia.' In 1848, the new Swiss settler Adrienne Chavannes wrote from Wartburg, Tennessee,

What our friends must bring are seeds. They are so lazy here that they plant only cabbages and beans, which are very fine. I forgot cocolettes [green bean variety from Lausanne,] and spinach. I would like very much to have them. We have a great many blackberries and other berries. Every day the children pick them for our supper (Chavannes, 1848).

### ***Summary***

While the records of Armstrong, McCammon, and Caswell in Knox County all represent an elite group, all were contemporaries in antebellum Tennessee, and their records provide a detailed record that in some cases contradicts generalizations about Tennessee and Appalachian agriculture in secondary sources.

By 1850, the three individuals were ages 51, 42, and 40. Armstrong died in 1856, Caswell was murdered under suspicious circumstances surrounding disagreements about secession in 1862, and McCammon would die in 1865. Two of their three homes still remain, one of which is open to the public as a historic house museum. Caswell's home, Glenita, with his detailed planting plan, no longer exists but is believed to have been in East Knox County "near the railroad tracks there at Spring Place Church, where Love's Creek and that park with the 'spring water' are now, to the northeast of the church, tracks, and Rutledge Road, probably sort of up on the hill. Caswell could see the church from his porch and watch the trains and the road as well" (Cotham, 2012, personal communication).

This section illustrates that primary resources should be revisited to challenge assumptions in agriculture history, foodways, and homegardens and orchards in antebellum East Tennessee. People and goods, such as seeds, were moving throughout the

region from early settlement, painting a more complex and diverse picture of farming and gardening and demonstrate a connectedness to existing markets and cities throughout the United States. While the isolated, subsistence ‘hillbilly’ farmer is a part of popular culture; these terms and ideas should be challenged based on historic facts. While seeds came in to a community initially with settlement, they were not necessarily ‘frozen in time,’ but rather being ordered from existing seed companies and shared among informal networks.

Historical research provides limited documentation of the diet of early Appalachia through resources such as: estate inventories (e.g. cider mill and cooking equipment), soil and faunal analyses, personal letters and diaries, sources of seeds available, and historic agricultural publications (Faulkner, 2008). Another approach to document historic foodways is through interviews and oral history with home gardeners and market gardeners to document seeds that have been grown historically. The results from interviews from Tennessee seed savers will be discussed in Chapter V.

### **Growth in Popularity of Heirlooms in the U.S.**

Heirloom vegetables have long been grown by farmers and home gardeners, but the interest in them grew rapidly in the last 40 years as a result of simultaneous events in the 1970s and 80s: concerns about biodiversity, the growth in the number of farmers markets, Slow Food, and organic farming (Jordan, 2007). These factors led to increased interest in heirloom vegetables and fruits in popular publications such as books, magazines, and newspapers in the 1990s. Sociologist Jennifer Jordan coded the number of times ‘heirloom tomato’ appeared in the New York Times and the San Francisco Chronicle from 1989 (the first mention) to 2005, and documented the sharp rise of the phrase from 1997 to 2005.

‘Heirloom tomato’ most often appeared in restaurant reviews, demonstrating the rise from obscurity in rural homegardens to elite restaurants. The perceived authenticity of the phrase ‘heirloom’ is believed to be a cultural response to industrial farming and genetic engineering (Jordan, 2007).

### ***Biodiversity***

It is estimated that the U.S. has lost 97% of the vegetable varieties that were available in 1903 (Fowler and Mooney, 1990). In the late 1970s and 1980s there was a growing awareness of the loss of genetic diversity and those concerned reacted with two types of preservation – *ex situ* and *in situ*. *Ex situ* preservation drove the worldwide development of seed banks as germplasm repositories. This method of preservation was the predominant global response to concerns about the loss of diversity and dominated the “first wave” of efforts to conserve genetic diversity (Brush, 2004). Evaluations of seed banks highlight the strengths and flaws of existing *ex situ* seed preservation programs. For instance, in a study of the authenticity of old varieties of lettuce, there were many issues with accession records, duplicates, and misidentification (van de Wouw, 2011). In addition, seed banks did not generally document local or indigenous knowledge associated with the seeds (Engle, 2007). These seed banks also cease the environmental adaptability of these seeds as they are removed from natural conditions.

*In situ* preservation encourages the continuation of varieties in the community or region where they have been historically grown and allows for ongoing regionally adapted selection and evolution (Brush, 2000). *In situ* preservation in the U.S. has led to the interest in regional seed collections, such as the Southern Seed Legacy at the University of North

Texas. Southern Seed Legacy was created at the University of Georgia by anthropologists Virginia Nazarea and Robert Rhodes. With Rhodes' death, the Southern Seed Legacy and its collection moved to the University of North Texas in 2011 under the direction of James Veteto, a student of Rhodes. Other regional collections include David Bradshaw's at Clemson University in South Carolina, and Bill Best's in Kentucky. Bill Best has formed the Sustainable Mountain Agriculture Center to perpetuate his collection.

A combination of *in situ* and *ex situ* preservation occurs in the U.S. with the growth in organizations dedicated to the continuation and preservation of heirloom seeds. Some of the organizations include: Seed Savers Exchange (SSE) in Iowa, Baker Creek Heirloom Seeds in Missouri; and Southern Exposure Seed Exchange in Virginia. All three of these seed organizations contract with growers in regions of the U.S. to grow seed each year that allows for continuing selection and adaptation for environmental factors and provides income to growers. Additional seed companies offer heirloom seeds, or open-pollinated seeds, as the demand has continued to grow.

Historic homes and farms also serve as a source for maintaining heirloom vegetable collections, the most notable of which is Monticello, which maintains vegetable gardens based on the historical records of President Thomas Jefferson. Smaller museums grow demonstration gardens with varying degrees of success and are largely dependent on individuals with an interest in gardening or the input of local garden clubs. The range of authenticity and interpretation of these gardens varies greatly.

In addition to seed saving organizations, local seed swaps have emerged in the last dozen years, hosted by organizations to encourage sharing and acquiring heirloom seed and provide an opportunity for *in situ* agrobiodiversity conservation (Campbell, 2012). In

Knox County, Tennessee, at least two organizations have annual seed swaps: Ijams Nature Center and Beardsley Community Farm. Two regional seed swaps held annually include the Appalachian Sustainable Development's Annual Heritage Seed Festival in Bristol, Tennessee (Fig. 2) and Bill Best's annual gathering at the Sustainable Mountain Agriculture Center near Berea, Kentucky. These are mostly informal affairs with tables set up in gyms or large rooms. Seeds are packaged in paper envelopes and plastic bags seed and then traded for other seed, sold, or distributed for free.



**Figure 2. 4th Annual Appalachian Heritage Seed Festival hosted by Appalachian Sustainable Development in Bristol, TN, December 2, 2012.**

### ***Local Food***

The increase and interest in heirloom vegetable production coincided with the growth of the local food movement that included an increase in farmers markets, growth of the Slow Food organization, and increased emphasis on food heritage as a community

development tool. The number of farmers markets in the United States has increased significantly over the last sixteen years, from 1994 (1,755) to 2012 (7,863) (USDA-AMS, 2013). As part of the local food movement, the social movement and organization Slow Food was created in 1986 in Italy as a response to increasing industrialization of food and standardizing of taste (Slow Food, 2013). Today, the organization currently has over 200 chapters in the U.S. that work to educate members and communities about local food and its 'Ark of Taste' is dedicated to documenting culturally significant foods from geographic regions. One of the food items included is the Turkey Crow bean, an heirloom bean variety believed to be culturally significant in Tennessee, North Carolina, and Virginia and documented in this study.

The interest and recognition of local food as a community development tool in the Appalachian region has emerged through several organizations in recent years. The Appalachian Regional Commission has made local food systems part of their mission of economic development through conferences, funding, and reports (Haskell, 2012),

One area that received enthusiastic attention was Appalachia's agricultural heritage and local food economy. Identified assets in Appalachia included an ongoing tradition of small farming and home gardening; the Region's vast food diversity, knowledge of seed saving and cultivating heirloom varieties of local food; an emerging infrastructure of farmers markets, food processing facilities, shared-use kitchen incubators, and community canneries; a growing trend for chefs using locally grown ingredients in their menu offerings; a rich heritage of culinary foodways and of craft, music, storytelling, literature and custom related to food; and some of the nation's most respected leadership in the local food movement.

Other projects such as the University of Virginia's 'Central Appalachian Food Heritage Project' and North Georgia College and State University's 'Saving Appalachian Gardens and Stories' both focus on documenting food heritage in local areas (University of Virginia, 2013; North College and State University, 2013).

## **Documenting Heirloom Seeds**

Academic studies of heirloom seeds have been taking place primarily in the Global South in the fields of anthropology, sociology, and geography. These studies include: traditional agricultural practices and farmer decision-making (Brush, 1991 and 2004); local knowledge and cultural memory for biodiversity (Nazarea, 2005 and 2006); sustainable agricultural practices (Cleveland, et al., 1994); and, genetic biodiversity, food security, climate change and local control (Zimmerer, 2010).

In the United States, documentation of heirloom vegetables in academic settings has been minimal and primarily in the field of anthropology. Heirloom seeds were documented in the mountain regions of North Carolina and the Ozarks through oral histories and surveys and findings of motivations for saving seed included: perceptions of superior taste and nutrition, uniqueness of appearance and flavor, and connections to the past (Veteto, 2010). Other studies have focused on the cultural impacts of Native American collections in the Cherokee Nation and the Southwest U.S. (Veteto 2010 and 2011; Nabhan, 1985 and 1992). A dissertation in environmental studies documented heirloom seed savers in Vermont and found that motivations for saving seed depended on age - older seed savers were primarily interested in cultural continuity and younger people focused on political resistance (Nickerson, 2006). One theory given for this lack of research on heirloom seeds in the U.S. is an assumption that heirloom seeds have all been replaced with modern hybrids (Jarvis, 2011).

In Europe, a different approach has been taken, with foods given legal status that have historic and geographical significance. For instance, in Spain there are 19 vegetables

with legal protection, such as a specific striped eggplant, documented through genetic markers and traits (Muñoz-Falcón, 2008).

A study in Australia sought to raise awareness of heirloom vegetables and fruits (primarily of British origin) for agriculture and horticulture and came to the conclusion that a listing of local names would not be sufficient for long-term documentation and that documenting the genetic markers would be necessary for a comprehensive long-term study (Gowans, 2009).

## **Chapter Summary**

Tennessee, as part of Appalachia, offers an opportunity to document heirloom seeds that represent the agrobiodiversity of the region. Though it is difficult to find named varieties in historic documents, oral history has been used by researchers to document varieties grown in communities. Academic studies have been limited in the U.S., but interest in heirloom vegetables continues to grow as an outgrowth of concern over the loss of biodiversity, the expanding local food movement, and interest in food heritage or foodways as a tool of economic development.

## **CHAPTER III MATERIALS AND METHODS**

### **Introduction**

This study utilized a multidisciplinary approach, including sociological inquiry, historical research, and plant science to gather and analyze data in order to understand the role of heirloom seeds to growers and local agriculture.

In this chapter, qualitative methodology will be reviewed because of its nontraditional use in plant sciences. The use and application of grounded theory, qualitative interviews, and memory banking will be explained. Further, the specific methods and procedures in this study will be discussed, including interviews, participant observations, and historical documents. The data collected included: interview transcripts; field notes from interviews and participant observation; and primary and secondary historical material. Finally, strategies for collecting the data and the role of taxonomy in data collection will be outlined.

### **Qualitative Methods**

This study is based on qualitative methodology that includes: grounded theory, interviews, and includes aspects of memory banking.

#### ***Grounded theory***

Grounded theory is a process of working from information to establish patterns and theories from the ground up, rather than working with a hypothesis that the researcher is trying to prove or disprove. In contrast to quantitative studies, “a grounded theory is

reproducible in the limited sense that it is verifiable” (Corbin and Strauss, 1990). The process for this study followed accepted principles of grounded theory. The first step was to read through all of the interviews and field notes and use open coding, which is looking for key words and concepts that occur throughout, as well as recognizing what was not included. The next step was to group these items to look for themes or patterns that emerged from these concepts depending on frequency or emphasis. The themes/patterns were tested against the interviews, while examining comparisons.

### ***Interviews***

The goal of qualitative interview research is “to unveil the distinctive meaning-making actions of interview participants” and establish patterns (Warren, 2002). Because of this goal, specific respondents were sought that fit into this study, rather than a survey design that takes a sample of the population. Many studies use ‘snowball sampling’, where one interview would lead to another known person that, in this case, collects heirloom seed. While that opportunity existed for a few of the interviews, all the interviews conducted came as a result of inquiries through different channels of communication that are explained in detail in a later section.

However, oral histories should not be viewed as raw sources of information but rather as analytic documents structured with complex codes and achieved meanings (Smith, 2002). The literature recommends analyzing interviews for consistency, other sources, and within context of the broader historical setting (Smith, 2002). Agricultural historians use qualitative interviews, as follows:

...fill in the blanks in documentary history through interviews with farm people.  
Oral history interviews are useful for helping us to understand the daily experiences

of farm people, their motivations for action, and the meanings they gave to the larger structural forces transforming their lives (Walker, 2000).

### ***Memory banking***

Memory banking was proposed by anthropologist Virginia Nazarea, as a system of documenting cultural information to complement the genetic information that was being collected by seed banks for traditional varieties of seeds and crops (Nazarea, 1998).

Nazarea outlined protocols in her research documenting sweet potato varieties in the Phillipines, recognizing that local agricultural knowledge was not being formally documented in preservation work of local vegetable varieties. Memory banking protocol includes tools such as life history, interviews, and participant observation to capture local cultural and economic information related to a crop. Cultural information would include practices related to the planting and harvesting of a crop, such as land preparation and pest control; when and how a crop is harvested; and, any social or community traditions related to the crop. Issues such as gender, tools, timing, maintenance, storage, and farmer decision making are recorded when possible. Economic information includes whether a crop is used for home consumption or sold in a market system and poses questions such as the source of planting materials. The interview questions in this study were constructed to gather cultural and economic information about the crops documented.

## **Methods and Procedures**

### ***Interviews***

Ten in-person interviews were conducted with 17 participants (several of the interviews had multiple family members present during interview) between May and October 2012. The criteria for the interviews included:

1. The individual and/or family had to be growing an edible seed/plant, that had been grown in their family for at least two generations;
2. And/or, the individual had to be growing seeds that they collected in their local community that had been historically grown; and,
3. Seeds that the individuals were known to have purchased from seed companies such as Seed Savers Exchange, were not included.
4. Geographically, the interviews were within counties of the Central or Southern Appalachian region (as defined by the Appalachian Regional Commission), or in nearby counties.

Participants for interviews were obtained through several methods including: inquiries through outreach programs at the University of Tennessee Institute of Agriculture, individuals at Farmers Markets, and events at historic non-profits. The UT Master Gardener program is a statewide, county-based program that educates home gardeners to assist in teaching and training science based gardening in their communities. The state coordinator of the Master Gardener program distributed an email throughout East and Middle Tennessee that resulted in three interviews (PJ, LK, and SP/RP). Two of these participants were Master Gardeners and one was an acquaintance of a Master

Gardener who arranged the interview. The UT Extension program exists in all Tennessee counties to assist individual with a variety of programs from agriculture to home economics. The UT Vegetable Extension Specialist distributed an email to county agents that resulted in one interview (AM). The UT Organic and Sustainable Crop production program hosts educational events and an annual Field Day (open house with formal presentations) at the UT Organic Crops Unit in Knox County. The researcher provided a presentation on heirloom seeds at the 2012 Organic Field Day and included a request for contacts (verbally and in the day's proceedings booklet) for individuals that collect heirloom seeds. As a result of the UT Organic Field Day in 2012 and a 2011 UT Organic public program, two interviews were scheduled (LL/ML/CL and EF). Through making inquiries of area growers and farmers markets, two interviews were scheduled (JW and ST). Word of mouth and engagement at the Museum of Appalachia's annual Homecoming and the annual meeting of the East Tennessee Historical Society led to two interviews (RA and MG/EG). All interview subjects were initially screened through emails or multiple phone calls. Several potential interviews were not conducted because of being unable to connect due to time constraints or lack of interest on either, or both, the part of the investigator and potential interview subject.

### ***Interview location***

Limited published information exists on methodology for fieldwork specific to heirloom vegetables or home gardening in the United States. However, methodology on research of homegardens used for studies in Austria, Mexico, and Indonesia has been

documented (Vogel et al., 2004), as well as methodology used for theses and dissertations (Nickerson, 2006; Veteto, 2005; Veteto, 2010).

In one study, the importance of the physical place where interviews are conducted is highlighted because the location is believed to influence the direction of the conversation. The study demonstrated that when interviews were conducted in the garden, the interview focused on the plants, but interviews conducted in the kitchen focused more on food processing or the culinary history of the plant (Vogel et al., 2004).

All interviews in this study were conducted at the participants' homes, with the exception of one (RA). Of these interviews at the participant's home, at least part of the interview was conducted in the garden, except one (AM).

### ***Participant observation***

Participant observation provides additional data with which to compare and triangulate concepts and themes. Field notes were included as part of the research data from the following events:

**Table 2. Heirloom seed events attended by researcher in 2011 and 2012.**

| Date       | Event                                                                                 | Location            |
|------------|---------------------------------------------------------------------------------------|---------------------|
| 9/12/11    | UT Organic Workshop: John Coykendall                                                  | Rogersville, TN     |
| 1/28/12    | Ijams Seed Swap                                                                       | Knoxville, TN       |
| 4/3-4/12   | Appalachian Regional Commission:<br>Growing the Appalachian Food Economy              | Asheville, NC       |
| 4/10/12    | John Coykendall/Fiona McAnally: Seed<br>Saving Workshop at Three Rivers Market        | Knoxville, TN       |
| 4/26/12    | UT Organic Crops Field Day; John<br>Coykendall, keynote speaker                       | Knoxville, TN       |
| 5/17/12    | Southern Food Writers Conference                                                      | Knoxville, TN       |
| 6/1-3/12   | Southern Garden Historical Society<br>Annual Meeting                                  | Richmond, VA        |
| 6/10-22/12 | Historic Landscape Institute                                                          | Charlottesville, VA |
| 8/11/12    | Seed Saving Workshop: JW                                                              | Gray, TN            |
| 10/13/12   | Museum of Appalachian Homecoming                                                      | Norris, TN          |
| 10/14/12   | Author Reading - Janisse Ray: The Seed<br>Underground                                 | Knoxville, TN       |
| 12/2/12    | Appalachian Sustainable Development:<br>4 <sup>th</sup> Annual Heritage Seed Festival | Bristol, TN         |

### ***Historical documents***

Research was conducted at the UT Special Collections Library and the McClung Collection of the Knox County Library from primary resources. Through databases and conversations with archivists, the farm records of three pre-Civil War farm operations in Knox County were uncovered. While these documents have been used occasionally in political-economic history studies, they have not been utilized in agriculture history of the

region. In addition, early newspapers, a personal journal, and a letter provided information relevant to the study. These documents were located with the assistance of archivists and database searches by the researcher.

## **Data Collection Strategies**

All interviews were recorded and transcribed except one, which was with a Mennonite farmer that asked that technology not be used due to religious beliefs (AM). Over 17 hours of interviews were recorded on a Sony digital recorder ranging from one to five hours, per interview. One interview (LL/ML/CL) required two visits due to the large variety of seed in the collection.

The interviews were transcribed between January and April 2013. All interviews that were recorded were transcribed. The digital recordings were transferred from the recorder to the computer. The software Express Scribe and a foot pedal were used to manage the transcription of the interview. Over 181 pages of single spaced transcripts were created from the interviews. Field notes were taken and written up following all interviews.

Photographs were taken of interview subjects. Photographs were also taken of most of the seeds included in the study using a macro lens. In several cases, seed samples were provided.

Questions for interviews were developed (Appendix A) to capture the following information:

- Farm/home garden information: acreage, farm history

- Gardener: gender, age, profession, level of education, motivation for gardening, seed saving
- Cultural information: history of seed, planting, growing and harvesting traditions

While these questions were guidelines, the interviews were open and flexible as consistent with qualitative interviewing (Adler and Adler, 2002).

## **Taxonomy**

One of the most challenging aspects of documenting heirloom varieties is the lack of a standard method of categorizing or a formal taxonomy which can result in confusion and duplication of varieties. The taxonomy for plants is based on the Linnaean System developed in the 1700s and is used today by the International Code of Botanical Nomenclature. Vegetables are categorized by binomial nomenclature using the genus and species and depend on variety and regional names for identification within species. For instance, within beans (*Phaseolus vulgaris*) there are thousands of varieties only delineated by = local names such as Cades Cove, Case Knife, etc. This lack of formal documentation relies on generally accepted characteristics of varieties and leads to confusion, duplication and regional differences. In one case, a ‘Turkey Crow’ bean was also referred to as a ‘Jim Gully’ bean (LL), and the same bean, in the same community was referred to as both a ‘Valentine Day’ bean and a ‘Little Red’ because two men married sisters (from whose family the bean had been grown). When collecting information on heirloom varieties, it is recommended to record the name exactly as stated by the gardener and take as much taxonomic information as possible through pictures and cuttings to ensure correct identification (Vogl et al., 2004).

The system of naming heirloom vegetables deserves attention because it is part of the agricultural history in the community. In a study by Herman (2007), heirloom vegetables were divided into the following categories:

- Iconic resemblance (Moon and Stars watermelon)
- Region of origin (Catawba Valley corn)
- Identity/family ownership (Jim Cox okra)
- Ethnic attribution (Cherokee Purple tomato)
- Narrative salience (Turkey Crow bean)

This categorization of folk taxonomies is proposed as an interdisciplinary approach that contributes to mapping cultural relationships.

## **Limits to Study**

### ***Interviews***

During the interviews, several observations on mechanics were observed that could be of assistance in future studies. Though the intention of the interview – to collect information on heirloom seeds – was expressly described in phone calls and in writing for interview subjects, several of the interview subjects wanted to provide family background and history in great detail before getting to specific discussions of seeds. One example of the investigator attempting to turn the conversation to the specific inquiry is as follows:

FM: You know when you are doing this research, do you ever come across any personal notes or diaries. One thing I'm really interested in what people were eating and growing back then. It's so hard. People didn't record like....

EF: I've got some of that I think you'll find interesting. We'll get into that...I'm not in any hurry. I've been digging on this stuff for years and it's interesting to find someone else that's interested in knowing a little about it.

In another case, the interview had been going on for about two hours when the interview subject led the investigator to the basement where an entire freezer had been dedicated to an heirloom seed collection (LL).

One question that emerged for the researcher during the interview process was would the interview have been more focused if questions had been sent in advance or a formal survey had been conducted with specific questions? After reviewing the interviews, it is believed in depth personal interviews were the best approach. One interview subject stated in an email and over the phone that they had one heirloom onion that they continued to grow; however, during the in person interview, several additional heirloom vegetables emerged where they were saving seed (SP):

Yeah, I do save the garlic. We probably save more than we think we save. We saved dill seeds last year too. Cause we mixed them in with zinnias.

Data collection could also be improved in interviews by: limiting the number of people in the room; less talking and sharing of stories by the investigator; and listening more carefully and following up on lines of questions by the investigator.

In one interview, three family members and one family friend were present which caused difficulties in obtaining information. The oldest generation in the room was 93 years old and fully cognizant, but when she began to share a story or talk, her daughter would take over the conversation.

Mother: And she wasn't brought up to work. They had plenty...  
Daughter interrupts and takes over narrative: Before the Civil War...the Civil War just about wrecked them. (ML/CL).

In another conversation, a woman was taking care of her four-year old grandson for the day and he kept interrupting the conversation and requiring attention (LK). Even when

only two adults were present, one would dominate the conversation (MG/EG). Multiple people present also became a problem sometimes during transcription because when more than one person was talking it became difficult to understand what was being said.

Additional information could have been gathered if the investigator had talked less and followed up on specific statements or ideas. However, there was a need to establish credibility and encourage a level of trust. For instance, demonstrating that despite being from an urban area and at a university, the investigator had a background of growing up on a family farm, spending time with grandparents, and preserving vegetables (EF). One way to deal with this challenge would have been to transcribe the interviews within a few weeks of the interview and have follow up telephone interviews or in person interviews to clarify and expand on certain points.

In addition, the investigator was unable to get as much botanical or cultural information about the varieties as planned. In order to get standard botanical information that was originally envisioned, the seeds would need to be grown out by the researcher using traditional trial protocols. Home gardeners and even growers that grow for market keep few botanical records. In addition, there was an assumed level of agricultural knowledge that the public would possess or in other cases, the knowledge had been forgotten or lost within a community. For instance, when asked to list vegetables that were grown in his grandparent's garden, the interviewee responded, "Just the usual vegetables, you know." Several exchanges would go as follows, when trying to get cultural information (LL):

FM: It's a beautiful bean. And um...when you all typically plant them?

LL: You plant them...about the same time you plant beans.

FM: Just like, sometime in May?

LL: Yeah, sometime in May.

The cultural information such as planting, harvesting, and storage processes, as outlined by Nazarea's memory banking protocol, was challenging to gather. These limitations were also recorded in another study in Appalachia and was explained by the researcher that the information was more readily available in developing countries where traditional agricultural methods are still widely practiced (Veteto, 2005).

While photographs were taken of all interview subjects (except the Mennonite farmer), additional photographs of the gardens and individual plants would have been useful references. It was challenging to manage a digital recorder, take notes, and take photographs while touring gardens. Requesting time alone to photograph the garden could have been an option, in retrospect.

Additional interviews could have been conducted if the time and resources had been available. All interview subjects were asked for additional contacts in their region, with two specific names provided.

### ***Transcription***

The process of transcribing increased in speed over time, but overall was time consuming. One issue encountered was the subtleties lost without the additional context of tone, inflection and body language.

Varying levels of education, grammar and colloquialisms from the Mountain South were part of the communication in many of the interviews, as seen in this example:

I'm sure there's somebody somewhere may know, but most of my people has gone that knew it and grewed up with it and so forth. (MG)

There was also recognition of how a Mountain South accent appears in recordings:

...a guy at work, well he was a Yankee and he was making fun of the way we talk and I said, 'I know I sound like a hick, I've heard myself on the tape recorder but I said if you judge me by the sound of my voice instead of the content of what I say, I said, 'doesn't that make you a lot more stupid than I am?' and he said 'gosh, I ain't never thought of it that way. (LL)

### ***Field notes***

Field notes should have been written within hours of completing the interviews. Failure to do so (PJ and SP/RP) made for less rich data collection. There is a distinct difference between field notes recorded immediately and ones written days or weeks later.

### ***Data collection***

In the East Tennessee region, John Coykendall is considered one of the primary heirloom seed savers, but he was not interviewed for this study due to time constraints. Coykendall's role as a collector is included in this study through field notes from participant observations and from documented resources. Four of the interview subjects had provided seed or were acquainted with Coykendall.

### ***Bias***

When critically examining the validity of qualitative studies as compared to quantitative research, it is found, "...qualitative researchers use a lens not based on scores, instruments, or research designs but a lens established using the views of people who conduct, participate in, or read and review a study" (Creswell and Miller, 2000). With this in mind, the bias of the researcher must be examined. While all of the interviews were analyzed through an objective process, it should be acknowledged that the researcher values heirloom seeds and perceives them to be important at the onset. With this

acknowledged bias, it is critical to read, and reread the interviews for information that disagrees with this assumption. For instance, in one interview (ST) the statement was made:

It might have had good nutritional qualities, good flavor, this that and the other but if it, you know... you got to make a showing, you got to get some weight, you got to get some product and a lot of this stuff is really marginal. It's just like the heirloom tomatoes. I love them, but financially, maybe grafting them will put them over the edge, but unless you are an extremely diligent tomato grower they just don't produce. Most of them, like a Vincent Watts, a fabulous tasting tomato, but in an acre I don't think it will make a third of what just a good hybrid, like a Celebrity or one Big Beef, Early Girl will out produce it. Some of them are better than others. That Mr. Stripey is a fairly good producer and Cherokee Purple is a fair producer but still you combine disease resistance, this that and the other. Most people I know in market farming that have dabbled in this heirloom business, most of them are moving away from them back into a good hybrid cause there are good flavored hybrids.

## **Chapter Summary**

In this chapter, the qualitative methods used to collect and analyze data in regard to this study were reviewed. These qualitative methods of data gathering included interviews, participant observation, and historical documents. The information created from the interview data was then analyzed using principles of grounded theory to provide results. Memory banking and folk taxonomies were utilized when collecting and analyzing the seed varieties documented. Throughout the study, the bias of the researcher towards a preference for heirloom seeds was considered. Additional limits of the study included lessons learned in interview techniques, transcribing, and the importance of field notes. While not utilized often in agricultural studies, the researcher believes qualitative methods may serve to “fill in the blanks” for researchers when understanding the cultural values behind adopting and rejecting scientific agricultural methods.

## **Chapter IV**

### **Results and Discussion**

#### **Introduction**

Heirloom seeds are maintained in homegardens in communities across Tennessee and this study documents the types and number of seeds and where they are still being grown; what motivates people to continue growing heirloom seeds; and why they choose to save these seeds when given relatively inexpensive alternatives of hybrids and commercial varieties.

In this chapter, the motivations of seed savers will be identified and discussed, along with the importance and responsibility they have assumed in continuing these varieties. The role of loss – whether with earlier generations or with seeds – and how it relates to seed saving will be explored. The names of seeds and what they indicate about the cultural information of a seed will be discussed as well as highlighting several family heirloom seeds that are unique to this region.

#### **Results**

This study documented 113 seeds and 99 unique named varieties of heirloom vegetables being saved through ten formal interviews with families in Central and Southern Appalachia, primarily in East Tennessee (Appendix B). Through multiple channels, as outlined in ‘Chapter III: Materials and Methods’, contacts were made with heirloom vegetable seed savers in East Tennessee and adjacent counties. Rutherford

County was the only county outside of East Tennessee, with two seed savers willing to be interviewed. One interview took place in Scott County, Virginia that borders Tennessee on the north. The seed saver interviewed in Virginia has collected seeds in both Northeast Tennessee and Southwest Virginia. Interviews were conducted in the following counties: Hawkins County (1), Knox County (2), Rutherford County (2), McMinn County (1), Roane County (1), Sevier County (2) and Scott County, Virginia (1) (Appendix C).

The seeds were characterized by: the common name; the type of vegetable and the county where the seed is currently located (Appendix D). Beans were the most common seed in the collections, making up 61% of the seeds, followed by tomatoes at 14%. The reasons for the number of beans that continue to be saved could be due to several reasons including: 1. beans are self-pollinating, 2. beans are relatively easy to save and preserve, 3. bean seeds can be stored both as seed and as food, providing a source of protein in the diet, and 4. distinctive characteristics are visible in bean seeds (as opposed to seeds from vegetables such as tomatoes), and 5. beans were part of historic foodways in the region. Ten seeds were documented in multiple collections, with the Turkey Crow bean appearing most frequently in four collections. Other seeds appearing in more than one collection included: six beans, two tomatoes, one onion, and 'Vining Okra'. Vining Okra (*Luffa cylindrica*) produces a vine and creates a vegetable that is edible when small. However, its primary use is to dry the fruits after they mature and use them as a sponge.

### ***Motivations to grow and save heirloom seed***

The reasons for saving seed given in interviews included: unique characteristics; preference in taste; concern about loss of varieties; and, the ability of local varieties to acclimate to the local environment.

The primary motivation to grow heirloom varieties among these seed savers is the uniqueness – due to rarity or unique appearance (RA, EF, LK, SP/RP, JW). In one case, a rare type of tomato was being grown (EF),

These tomatoes from here to the end are a variety I'm pretty excited about. They're the Yellow German Queen. As far as I know, there's nobody else who has some seed of them.

JW became interested in saving seed when a tomato variety he had grown (Hogheart) the previous year was no longer available from a seed company (JW).

Whether something grows taller, bigger, smaller, or in an unusual formation provides incentive for many seed savers. In the case of the RA family, an old pepper that had been developed by family ancestors gave way to the aptly named 'Peter' pepper. This pepper was the beginning of several decades of a home-based seed business. RA's father continued experimenting, producing the 'Country Girl' pepper and the 'Kisser' pepper, both bred over many years, selecting for appearance. RA said,

It's like when my wife come along, when I met her and everything, she says, "The only thing about your dad is he grows red okra and purple beans and a black tomato. She says, "Why can't we have red tomatoes, and green beans, and green okra?" He wanted the unique.

Preference in taste over commercial or hybrid vegetables was also given as a strong reason to grow and save heirloom varieties (EF, PJ, JW, MG/EG). In some cases the taste comparison was based on currently available varieties (EF, MG/EG), while for others, taste

comparisons were for varieties they could no longer locate (PJ) or did not measure up to memory (MG/EF).

The ability to adapt to the local environment was also given as a reason local heirloom varieties might be preferred. EF explained environmental adaptation as follows,

I think the more you maintain stuff like that the more acclimated it gets to your area too if you just keep selecting for the ones that do better you get things that get work better for your situation...something that you just order from out of state seed company.

Interestingly, several participants mentioned why heirlooms were not desirable to grow or sell including: toughness, strings in the beans, smaller size, color changing when cooked (beans), yield for market gardeners, and disease susceptibility (LL/ML, ST).

National or global influences in the seed industry, such as consolidation of seed companies, genetically modified seeds, or the role of agribusiness in farming only came up in two interviews. In one case the Green Revolution of the 1960s was discussed, not by name, but by concept (LL). And only one interview participant raised the issue of genetic manipulation of seeds, in this case with a negative connotation (EG).

### ***Continuity of heirloom seeds***

Informal trade was the traditional way that many study participants obtained their seed. In the last twenty years, however, the community network of informal seed trade has declined or disappeared altogether and has been replaced with formal seed swaps and seed companies focused on heirloom varieties. All of the seed savers in this study acquired some of their seed during their lifetime through informal trade at work or with neighbors. However, the consensus was that these informal networks of trade were decreasing, or had disappeared, and the study participants were the primary people in their community that

saved seed. Only two additional names of seed savers were obtained through these interviews (EF and AM). All of the seed collectors referenced heirloom seed companies such as Seed Savers Exchange, Southern Exposure Seed Exchange, Monticello, or other heirloom seed organizations as sources of seed. None of the seed obtained through these formal sources were documented for this study.

The seed savers in this study saw their role as crucial to the continuance of the seed (LL, JW) and acknowledged that the seed would be lost from the community if they did not personally continue to grow the variety,

...you know, when the old folks are gone, these seed will be gone because most of the people my age don't grow a garden and the next generation younger than me, they don't even know what a garden is (LL).

In a few cases, the seed savers are primarily acting as collectors by actively seeking seed (LL, JW, ST) and have become repositories in their communities. LL built a collection in the 1980s and 1990s primarily from the factory where he works, TRW Automotive. JW collects seed at the farmers markets where he sells goat cheese at in Norton, Virginia and in Jonesborough, Tennessee. In both of these cases, LL and JW referred to the fact that they did not eat many of the varieties they grew, but were primarily growing to continue the seed. Both LL and JW have participated in formal seed swaps but both cited time constraints for continuing varieties they had collected. Additionally, JW and AM grow heirloom seed varieties (not documented in this study) for Southern Exposure Seed Exchange as a source of external income.

Several of the study participants described a sense of responsibility to continue these seeds, passing them along to other family members (PJ) or a younger person (JW). This desire to continue these seeds is described as follows (MG),

I'd like to see the seed continued to be grown. Like you say, if you don't keep it going, it will wither down to nothing.

Several of the participants have acted as plant breeders (using the term 'experiment') through accidental or purposeful crosses. These experiments with seeds were often genetic mutations that appeared and were selected and grown out (or intended to be grown out in the future) as well as purposeful crosses to develop new varieties (RA, LL).

### ***Loss of knowledge about seeds and agricultural knowledge***

The concept of loss was a catalyst among many seed savers – loss of a family member and/or a loss of seed. In several situations, the loss of a family member who had mentored the individual in farming or gardening led to the goal of continuing to save a family seed or ignited interest in heirloom seeds (LL, EF, PG).

In several cases, families would “lose” seed or let them “run out” and would attempt to regain the seed through collectors or relatives, as illustrated by LL,

These are an old...see, there's a boy at work that gave me these...his name was Donnie Lawson but his nickname is Gomer so we just... I just put Gomer on there so I'd know. His mother grew these beans for years and they're called October Tender Hull, they're a pole bean. Well, he let me have these or he brought me some seed and I grew them and he came to me a few years later. I can't tell you how many...his mother had passed away and they'd let the beans run out. And he said...[...]...do you have any of those beans I let you have. And I said, yeah. He said can I have some back? He said, we let them run out. You know, they'd lost them....Yeah and you know, if I hadn't have grown them that bean would be extinct now. It would be gone so it tickled me we saved that one, this particular bean.

Seeds are lost in communities too when too many years have elapsed between harvest and planting, decreasing the rate of germination. In one case, LL was given a freezer full of heirloom seed and was not able to get any of the seed to germinate because too many years

had elapsed since the seed was grown out. In addition to seeds being lost, the cultural information is also lost. While many seeds carry stories with them, some stories had been lost, the name changed, and most of the time there is no way to substantiate the history of the seed except through oral tradition.

In most interviews, there was an underlying assumption that people had basic knowledge about growing vegetables and saving seed, which made it difficult to record any botanical or cultural information. When asked what vegetables his grandfather grew, EF replied 'Just the usual garden vegetables, you know.' Or when asked when the Cades Cove bean was usually planted, LK responded, 'In the spring' and despite additional questioning, remained vague. AM echoed many of the comments when he said, 'we learn by experience.' It is suggested that in areas with less influx of population, cultural knowledge is maintained to a greater degree. For instance, JW participates in two farmers markets, one in Norton, Virginia and one in Jonesborough, Tennessee. The market in Jonesborough draws many new residents that have moved into the area because of employment with East Tennessee State University. He illustrates this difference in knowledge between the communities, both rural, as follows,

These are people that grew up in the country [Norton, Virginia] and they know what they are looking for. They don't just want a green bean, they want a particular green bean. If they want okra, they know what kind of okra. They know exactly what they're gonna do with it. Whereas you bring okra to Jonesborough, people say how do I prepare it, what do I do with it, you know. It's almost two different cultures.

However, despite the assumed knowledge, many study participants expressed regret at not acquiring more agricultural knowledge from older generations of family (LK, ST, MG/EG).

### ***Heirloom seed names***

The term 'heirloom' was used by many of the participants but they also identified varieties as 'old seed' or 'old timey.' The naming protocol that was used by participants was consistent in that they tried to keep the name associated with the seed intact. In cases where the seed did not have a specific name, they used the name of the family that was the source (EF),

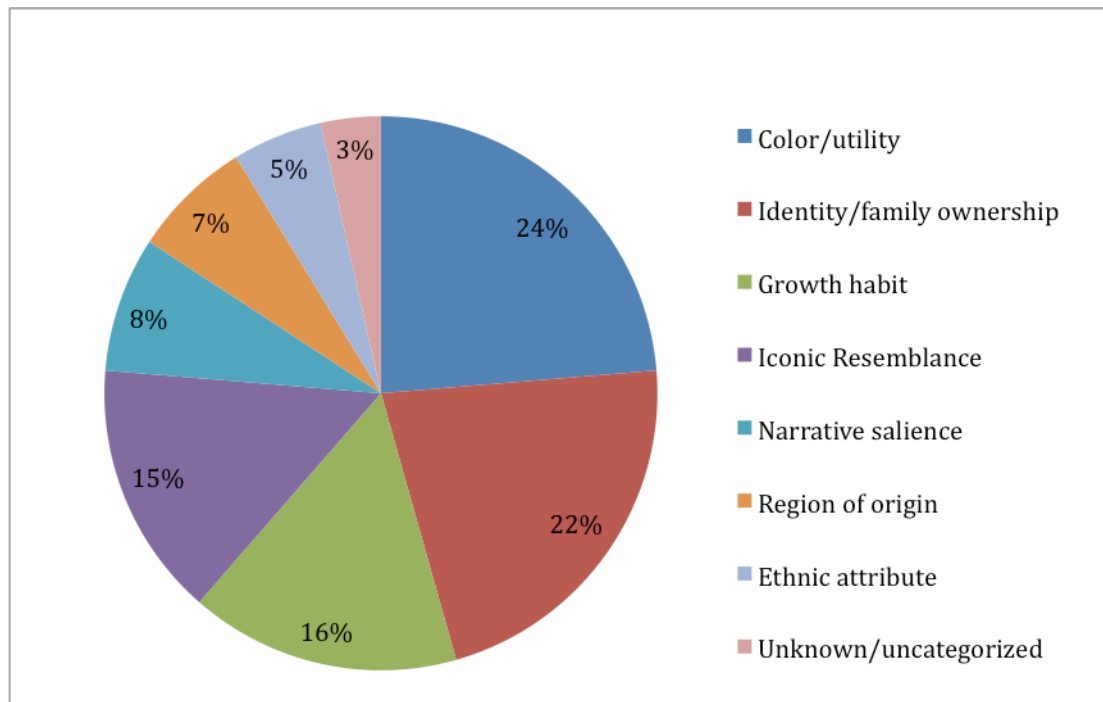
I call them a Watson bean. I got them from a friend Walt McFalls and he got them from a man named Watson down around Cleveland, Tennessee that lives up in the mountains down there.

It was acknowledged that seeds with different names might often be the same seed, grown by different families. However, each named seed was grown and saved separately by the seed saver. For instance, LL has two beans – one called a 'Little Red Bean' and the other 'Valentine' bean. Because of his knowledge of the community and that the two men that gave him these beans had married sisters, he assumed they were the same bean, but continued to grow them separately. JW echoes this sentiment (JW),

I guess there's people that don't do that but I feel that's the thing to do, cause if they grow it for a number of generations, it's their bean, it's different from every other bean. It's become acclimated to their garden, their climate and they've probably picked it at a certain time of year, every year, to make sure that they pick it at the peak of the season, or the end of the season, or the beginning of the season, to pick out whatever qualities they want and that makes it their bean.

The naming of heirloom vegetables has been characterized by the following categories (Herman, 2007): iconic resemblance (Moon and Stars watermelon); region of origin (Catawba Valley corn); identity/family ownership (Jim Cox okra); ethnic attribution (Cherokee Purple tomato); and, narrative salience (Turkey Crow bean). Since several varieties documented in this study did not fit into Herman's categories, three additional

categories were added: color/utility (White Half Runner), growth habit (Cornfield bean), and unknown/uncharacterized (gourd). In this study, almost half of these seeds were named based on color/utility (24%) or family name (22%). Iconic resemblance and growth habits were the next most common way that seeds were identified (15% and 16% respectively) as seen in Fig. 3.



**Figure 3. Naming Characteristics of Heirloom Seeds Documented.**

### ***Bean terminology***

Because beans were dominant in the study, it is important to note that varieties of beans have names that reflect cultural characteristics. For instance, beans can be picked at various stages – green, shelly, or dry - and have different growing characteristics – cut-short, greasy/creaseback, bunch, half runner and pole. Again, these terms were used as a

matter of course in interviews and references to early or late beans, cultural information that was passed along with the seeds when they were obtained. In some cases, the name is explanatory, such as a Tender October Hull bean would be thought to be a late bean that ripens in October. While many beans are picked green, many are left to become 'shellys' and are served mixed with green beans which reflects the various stages of maturity at one time on a plant (ST),

We grow them till there's about 5-10% shellys when the hulls are turning yellow in maturing and the beans about ready to get dry, but it's in a shelly form and we'll shell out 5-10% of them and then pick the rest down.

Some types of seed are harvested to be dried and can be later eaten or saved for seed. On one jar of Lady Pea seed (a field pea), SP's parents had clearly marked 'Do not eat' (Fig. 4).



**Figure 4. Lady Pea seeds, photographed July 23, 2012.**

While terms like cut-short, greasy, and creaseback are used to describe seed characteristics, they often become integrated into the name or become the name of the bean. 'Cut-shorts' usually refer to the fact that the seeds grow in the pods tightly forming

squares of the ends of the seed as they butt up against one another, but it was acknowledged that in some regions, any short bean is referred to as a cut-short (JW). Greasy beans reflect the slick or shiny appearance of the pod. Crease-back usually refers to a crease that is imprinted on the seed from the pod because of the tightly packed seeds.

Pole, half-runner and bunch beans refer to the growth habits of the bean plant. Pole beans will send out long runners and must be 'stuck' or grown with a trellis system up to eight or nine feet high. Half-runners send out runners but do not tend to 'run' as long as pole beans, and can be trellised or not. Bunch beans do not send out runners and are known as 'bush beans' outside of this study.

### **Family Heirloom Seeds**

Within this study, family heirloom seeds (grown by more than one generation) were documented in eight of the ten interviews, as follows:

- o RA: RA Peter Pepper (Knox County, Tennessee)
- o MG/EG: Thompson Prolific Corn (Roane County, Tennessee)
- o PJ: Savage Bean (Rutherford County from Louisiana)
- o LK: Potato Onion, Winter Onion (Sevier County)
- o LL/ML/CL: Bessie Bean, Pole Butter Bean, Turkey Crow, Gourd, Crooked Neck Cushaw, Willard's Pink Pumpkin (Hawkins County)
- o AM: Nebraska Wedding tomato (McMinn County from Nebraska)
- o SP/RP: Walking Onion (Rutherford County)
- o ST: Red Stick Bean, White Half Runner (Knox County from Morgan/Scott Counties)

The two people that were not cultivating a family seed were EF and JW, who collected heirloom seed in their community. While EF had deep roots in the community, JW relocated to the area about 20 years ago. The following describes several of these family seeds in more detail.

## HA peppers

RA's father, HA, had a home-based seed company in Knoxville and was known for his 'Hot and Unusual' peppers, which he sold throughout the U.S. by mail order catalog (Fig. 5) alternately as Peter Pepper Seeds and A. Seeds from the 1960s through the 1980s. HA was best known for finding and propagating an old family seed, the A. Peter Pepper. The pepper was so named because of its unique appearance that resembled the male anatomy (Fig. 6). A. bred two additional peppers that he became known for – the County Girl pepper (Fig. 6) and the Kissor (Fig. 7).

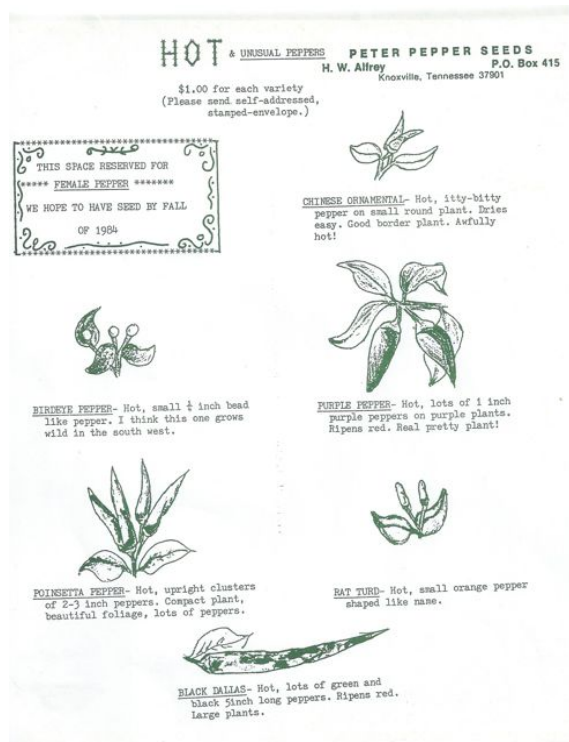


Figure 5. Peter Pepper Seed catalog, Knoxville, TN, date unknown; before 1984.

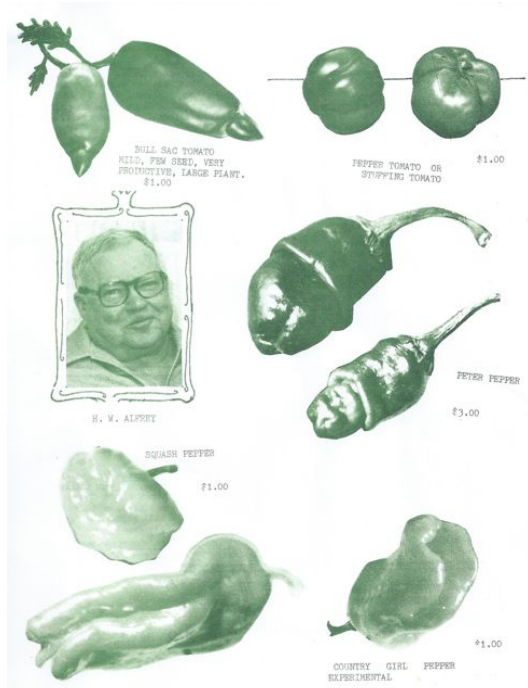


Figure 6. 'Peter' pepper and 'Country Girl' pepper, A. Seeds, date unknown.

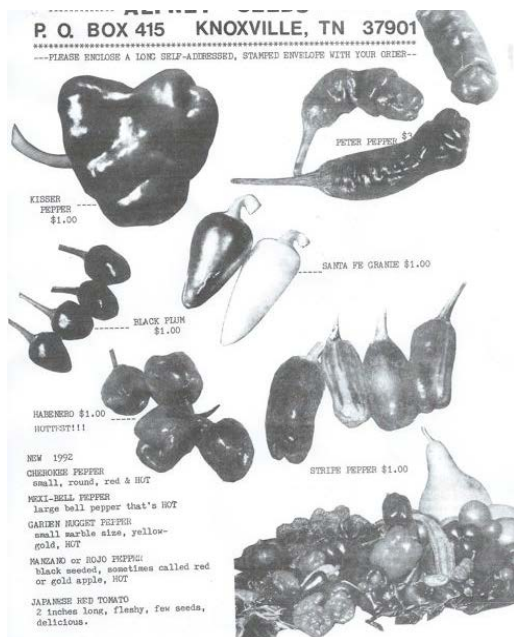


Figure 7. 'Kisser' pepper, A. Seeds, date unknown.

### ***Lauderback pole butterbean***

The LL/ML/CL family in Hawkins County has farmed in the community known as Persia, since the 1790s. Family tradition, provided by ML (age 93), says that the bean came from Germany with Johann Louderbach as he settled in Pennsylvania and subsequently migrated to East Tennessee. The family has always referred to the bean as the 'pole butterbean' (Fig. 8).



**Figure 8. Lauderback pole butterbean, photographed October 19, 2012.**

### ***SP Walking onion***

The Walking onion has been grown by SP's grandparents, parents, and by SP/RP, who grew the onion in Knox County before retiring to their family home in Rutherford County (Fig. 9). SP's grandfather moved from Perry County to Rutherford County in 1946, due to persistent flooding at their home of Linden, bringing the family onion with them to their 100-acre farm. A walking onion is also referred to as an Egyptian onion and a tree onion due the way it propagates. The onion grows bulblets on the top of the onion, which then bend to the ground. Once the bulblets come in contact with the ground they begin to grow new plants. Green onions are generally available year round with this plant.



**Figure 9. SP Walking Onion, photographed July 23, 2012.**

### ***Thompson's Prolific corn***

Thompson's Prolific Corn was developed and grown for seed by MG's great uncle, James Milo Thompson, in Rhea Springs, Rhea County, now underwater with the development of the Tennessee Valley Authority's Watts Bar Lake (Fig. 10). MG/EG continue to grow the corn that comes in both a white and yellow variety in their home garden. The corn is found in agricultural publications from the early 20<sup>th</sup> century (Fig. 11).



**Figure 10. Thompson's Prolific Corn, photographed October 22, 2012.**

It will be interesting to compare the yields on the bottomland soil with those of the same variety on the upland soil. The two tests were made within 300 yards of each other. It will be found that Patton, which made the lowest yield on the upland soil, led all others in yield on the bottomland soil. The four highest yielders on the bottomland soil were: Patton, Selection 77, Bradburry's Improved, and Boone County White, while the four highest yielders on the upland soil were: Thompson's Prolific, Boone County White, Cock's Prolific, and Hickory King.

**Figure 11. Excerpt from the Biennial Report of William Graham, Commissioner of Agriculture, Raleigh, NC. January 1, 1911.**

### ***T Red Stick Bean***

ST grows the Red Stick bean in Knox County that his family grew for several generations in Morgan and Scott Counties (Fig. 12). The bean came from the Carolinas in the 1800s, though whether it was before the Civil War or afterwards is of some disagreement within the family.



**Figure 12. Red Stick Bean, photographed February 21, 2011.**

### ***Turkey Crow bean***

The Turkey Crow bean was documented in four of the interviews and is recognized for its prominence in the East Tennessee, Western North Carolina, and Southwest Virginia region by organizations such as Slow Food's Ark of Taste. The story behind the Turkey Crow (Fig. 13) here as related by LL,

FM: Where'd you get the Turkey Crow from?

LL: Ahhh...we've had them all my life. I don't really know. The story behind the Turkey Crow that we know is there was a man across the mountain, Clinch Mountain, and he was turkey hunting and he killed a turkey and when he killed a turkey and cleaned it, he cut the crow open and these, there were some of these beans in the turkey crow and that's how they got their name, turkey crow. Now, that's the tale I've always heard. Now, this bean's also known as the Jim Gully bean in Bulls Gap, and that's because Jim Gully give somebody in Bulls Gap some beans and we call them Turkey Crows but they call them Jim Gully.



**Figure 13. Turkey Crow Bean, photographed October 19, 2012.**

## Profiles of Seed Savers

Ten interviews were conducted with multiple family members for a total of 17 participants. Of the ten families, four sold produce locally through wholesale or retail markets and seven had historical family ties to the region. Within the group, the primary interview participant was male in eight of ten interviews. Two of the interview subjects (LL and LK) were not married. In the eight interviews with married subjects, three spouses fully participated and in four additional interviews, spouses were present intermittently, but only talking occasionally. In the remaining interview with a married subject, the spouse was out of town.

Education levels varied among participants – from high school to advanced college degrees. Professional experience varied as well. With the small size of the sample, it would be difficult to make observations or conclusions regarding education and work experience. All of the participants were in their 50s or older, with little evidence of children or grandchildren interested in heirloom varieties. However, in four interviews, multiple generations were residing in the household and gardening with the older generation. Two of the subjects grow seeds for national heirloom seed companies. Additional detail on the interview subjects is provided below:

Name: RA

Interview Location: Knox County, TN

Interview Date: 8/31/12

Profession: Maintenance, UT Indoor Football practice facility

Education: N/A

Age: 50s

RA is the son of HA, who operated A\_\_ Seeds (also called Peter Pepper Seeds) in Knoxville, Tennessee. The business was a mail order business from HA's home in the 1970s and

1980s that sold primarily peppers, but also tomatoes and gourds. RA and his wife maintain a home garden and he and his son are attempting to find the strain of the Peter pepper that has been lost from their family.

Name: EF  
Interview Location: Sevier County, TN  
Interview Date: 5/25/12  
Profession: Builder/Contractor  
Education: B.S. in Botany, University of Tennessee  
Age: 60s

EF descended from the Ogles that originally settled and farmed the area around Dudley Creek in Sevier County, now located within the Great Smoky National Park. His family had extensive apple orchards and took apples by wagon to Knoxville to sell at Market Square. EF collects area heirloom seeds and maintains a home garden and beehives. He also has several apple trees saved by the late heirloom apple collector, Henry Morton.

Name: MG/EG  
Interview Location: Roane County, TN  
Interview Date: 10/21/12  
Profession: Retired, Facilities at Oak Ridge  
Education: N/A  
Age: 60s

MG/EG live in Roane County, Tennessee. MG's great uncle developed Thompson's Prolific corn, a corn variety in the early 20<sup>th</sup> century and the family grows the corn for meal. The family farm in Rhea County is now under Watts Bar Lake as part of the Tennessee Valley Authority dam network. MG/EG maintain a home garden, beehives, chickens, and several fruit trees.

Name: PJ  
Interview Location: Rutherford County, TN  
Interview Date: 7/23/12  
Profession: N/A  
Education: Middle Tennessee State University, Agriculture  
Age: 60s

PJ moved to Rutherford County from Louisiana and maintains a family bean that her mother grew, the Savage bean. PJ maintains a home garden, but it has become smaller each year due to her and her husband's health and age.

Name: LK  
Interview Location: Sevier County, TN  
Interview Date: 7/17/12  
Profession: Woodcarver

Education: N/A

Age: 50s

LK is descended from several of the families that settled Sevier County, including the Huskeys. She maintains a home garden, including several heirloom seeds she has collected in the region and a flower that had been passed along in her family, Mother's Tears (*Achimenes*).

Name: LL/ML/CL

Interview Location: Hawkins County, TN

Interview Date: 7/3/12 and 10/19/12

Profession:

ML – retired from Eastman-Kodak, schoolteacher

LL – automotive parts plant

CL – retired schoolteacher

Education:

ML – B.A., Education, East Tennessee State University

LL – High School

CL – Masters, Education, East Tennessee State University

Age: ML – 93, LL – early 50s, CL – early 60s

ML is the mother of LL and CL. At the time of the interview, ML had recently turned 93 and was still gardening, canning, and making sauerkraut. LL became interested in heirloom seeds in the 1980s after reading an article about Seed Savers Exchange in Decorah, Iowa. He began collecting seeds at the automotive parts plant where he works, gathering over 50 area seeds. His collection is preserved in a freezer, but not currently being grown out due to time limitations.

Name: AM

Interview Location: McMinn County, TN

Interview Date: 7/19/12

Profession: Farmer/Market Gardener

Education: N/A

Age: late 40s

AM is a member of the Mennonite community that expanded from Polk County to a farm near Athens. The order does not use any modern technology such as electricity. All farming is done using horses, mules, and by hand. AM had grown up in South America, but has ties to Missouri and grows seed stock for Baker Creek Heirloom Seed Company. AM uses organic methods (though few of his community do) and cultivates extensive gardens to provide food for the family, community, and a public store on the property.

Name: SP/RP

Interview Location: Rutherford County, TN

Interview Date: 7/23/12

Profession: Retired, City Engineer  
Education: B.S., University of Tennessee  
Age: late 60s

SP/RP lived in Knoxville for most of their lives, but retired to SP's father (and grandfather's) farm in Rutherford County. They continue to cultivate a walking onion that moved from Perry County with his grandparents in the 1940s. They have a home garden and grow several heirloom varieties.

Name: ST  
Interview Location: Knox County, TN  
Interview Date: 8/12/12  
Profession: Market Gardener  
Education: B.S., Forestry, University of Tennessee  
Age: early 50s

ST sells produce at area farmers markets and wholesale to restaurants and grocery stores. He grows several heirloom varieties of vegetables including family beans such as the Red Stick bean from Morgan and Scott Counties. He recently began growing seed for Southern Exposure Seed Exchange.

Name: JW  
Interview Location: Scott County, VA  
Interview Date: 8/24/12  
Profession: Retired, Cheese maker  
Education: N/A  
Age: late 50s

JW and his wife raise goats and produce many types of goat cheese that they sell at area farmers markets and wholesale. Jack collects heirloom seed at area farmers markets and from neighbors and grows seed for Southern Exposure Seed Exchange. He also is active in the regional seed saving community and lectures on seed saving.

The common theme among the participants was age, all of which were over 50, which along with the lack of additional seed saver contact names available, would suggest that seed saving of heirloom vegetables is declining in Tennessee. Additional areas that could be explored in future work could include home gardening in people under 50 and class distinctions in gardening, seed saving, and foodways.

## Discussion

Through interviews with seed savers in this study, the number of individuals that save seeds in communities in Tennessee appears to be decreasing. Even among the seed savers that are still actively growing heirloom seeds, smaller gardens due to age or time constraints threaten their current seed collections. Many of these changes have appeared to take place in the last 20 to 30 years, as informal networks of seed trade have moved to a few annual seed swaps and an increasing reliance on heirloom seed organizations in other states. Interview subjects lamented the loss of people that save seeds in their communities and only two additional people, outside of the study, were identified as heirloom seed savers.

While all of the participants were informed in writing and on the phone that the study was specifically about heirloom seeds, several individual spent significant time discussing family genealogy, local history, and historic agricultural methods before the first seed was mentioned. All of the participants whose families had lived in the local communities for many generations shared physical documents that supported their place or role in the community – from an original early 19<sup>th</sup> century land deed that was brought out from a back bedroom, to an ancestor’s photographs with a prize cow, to a tour of the original home place and slave graveyard. These families’ roots were deep in the community and they saw these heirloom seeds as having a similar connection, in what John Coykendall calls an “unbroken link in the chain of history” (Coykendall, 2011).

Historic events shaped these families lives, whether directly or indirectly. The New Deal programs of the Tennessee Valley Authority flooded the farm and community where

Thompson's Prolific corn was developed and the Great Smoky National Park moved many farmers into valleys that no longer were suitable for the huge numbers of apple orchards that had grown on slopes of the mountains. EF's great-grandfather Ogle had 360 apple trees on his farm on Dudley Creek when it was sold to become part of the 'Park' in 1928.

In addition, significant information on foodways and folklore was shared by the interview subjects on everything from hog butchering to folk remedies. When discussing foodways, it raised many peripheral issues that were outside the scope of this study, but could be used in later work.

### ***Comparison to other studies***

In 2005, James Veteto documented 134 variety descriptions of heirloom vegetables in 12 counties in Western North Carolina through ten full-length, formal interviews and nine telephone interviews (26 people) in a master's thesis. The study was primarily an inventory of seeds and did not include motivations. The results from this study support Veteto's findings that only "one or two individuals in a community are maintaining significant numbers of heirloom varieties" and that similar to this study, beans were the predominant crop (62%), followed by tomatoes (18%) (Table 3). In later doctoral dissertation research (2010), Veteto explored motivation, and found that in the Ozark region of Arkansas and Central Appalachia, cultural reasons for saving heirloom seed included: perceptions of superior taste and nutrition, uniqueness of appearance and flavor, and connections to the past (Veteto, 2010).

**Table 3. Heirloom Vegetables Documented as Compared to Veteto Study (2005) in Western North Carolina.**

| Vegetable            | McAnally Study<br>(10 interviews) |                     | Veteto Study<br>(19 surveys/interviews) |                     |
|----------------------|-----------------------------------|---------------------|-----------------------------------------|---------------------|
|                      | Number Documented                 | Percentage of total | Number Documented                       | Percentage of total |
| Bean                 | 60                                | 61%                 | 83                                      | 62%                 |
| Tomato               | 14                                | 14%                 | 24                                      | 18%                 |
| Gourd/Pumpkin/Squash | 7                                 | 7%                  | 9                                       | 7%                  |
| Corn                 | 6                                 | 6%                  | 7                                       | 5%                  |
| Pepper               | 3                                 | 3%                  | 1                                       | 1%                  |
| Onion                | 2                                 | 2%                  | 0                                       | 0%                  |
| Watermelon/melon     | 2                                 | 2%                  | 0                                       | 0%                  |
| Okra                 | 1                                 | 1%                  | 0                                       | 0%                  |
| Field Pea            | 1                                 | 1%                  | 0                                       | 0%                  |
| Potato               | 1                                 | 1%                  | 4                                       | 3%                  |
| Sweet Potato         | 1                                 | 1%                  | 2                                       | 1%                  |
| Other                | 1                                 | 1%                  | 4                                       | 3%                  |
| Total                | 99                                | 100%                | 134                                     | 100%                |

## Chapter Summary

Among the ten families interviewed for this study, the number of heirloom seeds being saved ranged from one family seed to over 55 seeds in one collection. These seeds came from informal networks within communities that are rapidly disappearing as the number of heirloom seeds maintained locally decreases. This trend of fewer individuals saving seed locally confirmed a similar study conducted in Western North Carolina in 2005, as well as supporting beans as the dominant seed that was saved. The motivations for the individuals maintaining these varieties are: unusual forms or rarity, taste preference,

concern for loss of varieties, and the ability of these seeds to adapt over time to the local environment.

The sense of responsibility to continue and share these varieties is deeply rooted in a sense of local history and continuity for these seed savers, as they look for ways to continue seeds that would otherwise be 'lost.' The preoccupation with loss - of local agricultural knowledge and individuals of previous generations that understood what each variety of vegetable was best suited for - underscored many of these interviews. However, many of the names identify some of the history of the region - from the tale of the Turkey Crow bean to family seeds such as Aunt Bessie's bean. Finally, this list is not meant to be an exhaustive inventory of heirloom seeds in Tennessee, rather to illustrate what is currently being grown and the role of seed savers in their communities.

## CHAPTER VI

### Conclusions and Recommendations

This study set out to answer the following research questions: (1) what vegetable varieties are still available that were grown historically, (2) who is growing these vegetables, (3) why are these varieties valued, (4) what are the unique botanical characteristics of these varieties, and (5) what is the relevance of regional heirloom vegetable production to small-scale commercial growers in East Tennessee? Addressing each of these questions in order:

There is very little descriptive information about vegetable varieties in local historic documents, which makes it difficult to determine what was being grown historically in the area. Oral history and family heirloom seed can provide some insight to varieties that have been grown for multiple generations, such as the Lauderback pole butterbean, but it is difficult to confirm the stories. There are additional resources that could be explored, given time, including: the East Tennessee State University's Center for Appalachian Archives, the southern garden history repository at the Atlanta History Center, and the historic collections of the National Park Service. For this study, documents before the 1860s were researched. More information and details might be available in primary resources from the late 1800s through the 1900s.

From all accounts, growing and saving heirloom seed is declining in communities across Tennessee. All of the seed savers interviewed were over 50 and knew of few, if any, people in their community that also collected and saved heirloom seeds. Those that are growing heirloom seed; however, feel a responsibility to continue seed that would

otherwise be lost. The theme of loss – whether through specific seeds or a disconnection from general agricultural knowledge – was significant in interviews with seed savers. At the local level, formal seed swaps have replaced informal networks of sharing seed. At the regional and national level, several organizations have developed that are committed to the preservation of heirloom seeds, but they do not necessarily represent all of the varieties still being maintained.

Specific botanical characteristics were challenging to document in this study. Most seed savers kept minimal records beyond the local variety name and the source of the seed. Photographs were taken whenever possible, but the local variety name given to seeds are subject to confusion, loss, and human error when growing each year.

While levels of disease resistance and high yields are not always as favorable as hybrid varieties, heirloom vegetables have a role for growers that want to provide a unique product for their customers at farmers markets. In addition, income can be earned by growers by growing heirloom seed for seed companies.

Heirloom vegetables are fashionable, but is that enough to guarantee their continuance? One role for heirloom vegetables in agriculture is the potential to provide characteristics to improve seed available for growers, focusing on regional characteristics such as drought resistance that has developed over time due to adaptation.

Recommendations for future research include: continue to expand historical research to establish plants lists for specific periods of history in Tennessee; collaborate with geneticists to establish markers for specific varieties in the region; and, to conduct trials for heirloom varieties, documenting botanical information to determine standards for varieties. In addition, Veteto's research called for the need for a regional seed saving

organization focused on Appalachia. This idea was repeated at a conference on local food systems, hosted by the Appalachian Regional Commission. This concept has merit if there continues to be increased focus on local food systems and food heritage in the region.

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MG/EG. 10/21/12. Roane County, Tennessee.

PJ. 7/23/12. Rutherford County, Tennessee.

LK. 7/17/12. Sevier County, Tennessee

LL/ML/CL. 7/3/12 and 10/19/12. Hawkins County, Tennessee.

AM, 7/19/12. McMinn County, Tennessee.

SP/RP. 7/23/12. Rutherford County, Tennessee.

ST. 8/12/12. Knox County, Tennessee

JW. 8/24/12. Scott County, Virginia

## **APPENDIX**

## APPENDIX A

### Interview Data Collection Form

Date:

Photo(s)\_\_\_\_\_

Name(s):

Audio recording\_\_\_\_\_

Location/Address:

Phone/Email:

1. Tell me about your garden.

Possible prompts:

- a. When do you begin planting, end?
- b. How big, where?
- c. Fertilizer?
- d. How do you deal with insects and diseases?
- e. Water?
- f. Give away/share extra? Sell?
- g. Preserve any? Can/freeze/dry?

2. Tell me about your experiences in gardening.

Possible prompts:

- a. How long have you been gardening?
- b. Did your family garden or have a farm? Where?
- c. How did you learn about gardening – did someone show you?

3. Tell me about how you get your heirloom seeds.

Possible prompts:

- a. Store, catalog, other people?

- b. Any come from family or friends? (Use plant data sheets)
    - i. How long have you been growing them?
    - ii. What did they tell you about the seed?
    - iii. Contact information for source/family.
  - c. Do you know other people that are growing old seeds?
4. Tell me about how you save seed.
- Possible prompts:
- a. How much do you save?
  - b. When do you pick?
  - c. Drying methods?
  - d. Problems with bugs? How do you prevent? Freeze?
  - e. Storage? In what - bags, jars? Where?
  - f. When you plant, how do you keep plants from crossing with others?
    - i. Timing of planting?
    - ii. Distance between plants?
  - g. What do you call these seeds – family seeds, ole-timey, heirloom?
  - h. What keeps you growing these seeds?
  - i. What do you like or not like about these seeds?
  - j. Do you share your seeds with others?
5. What have I missed or didn't ask that you want to tell me about your garden or seeds?

Gender:

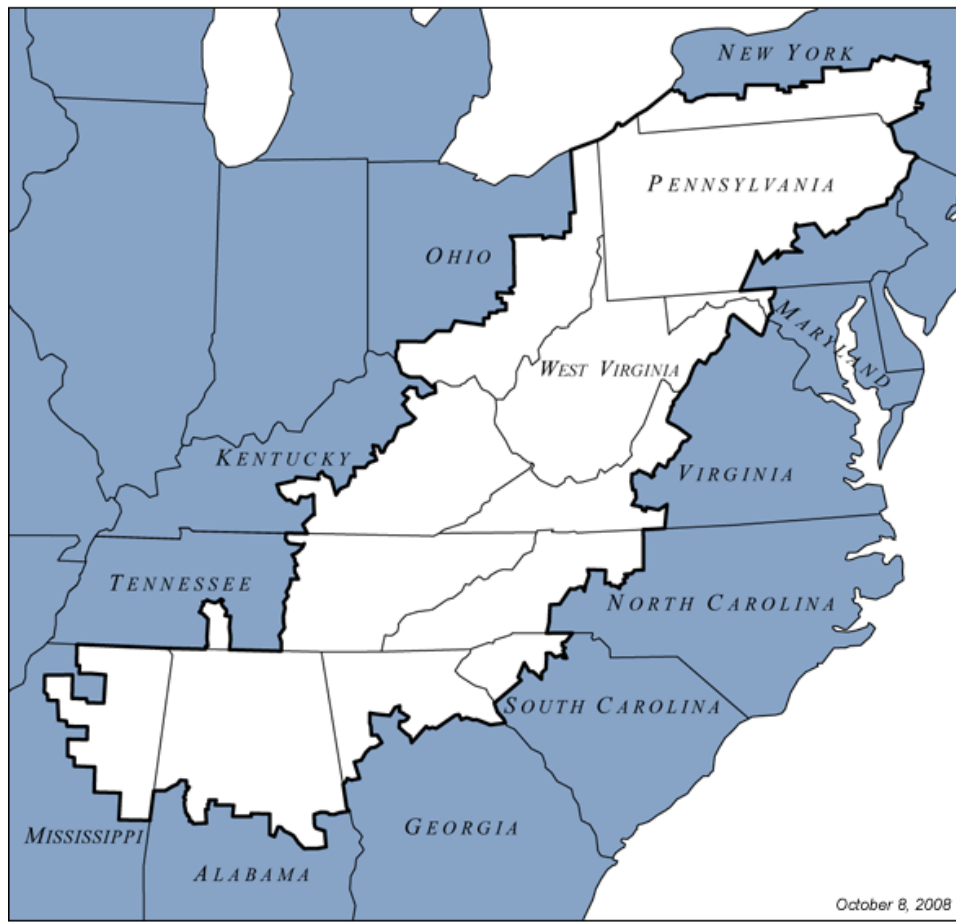
Age:

Education:

Profession:

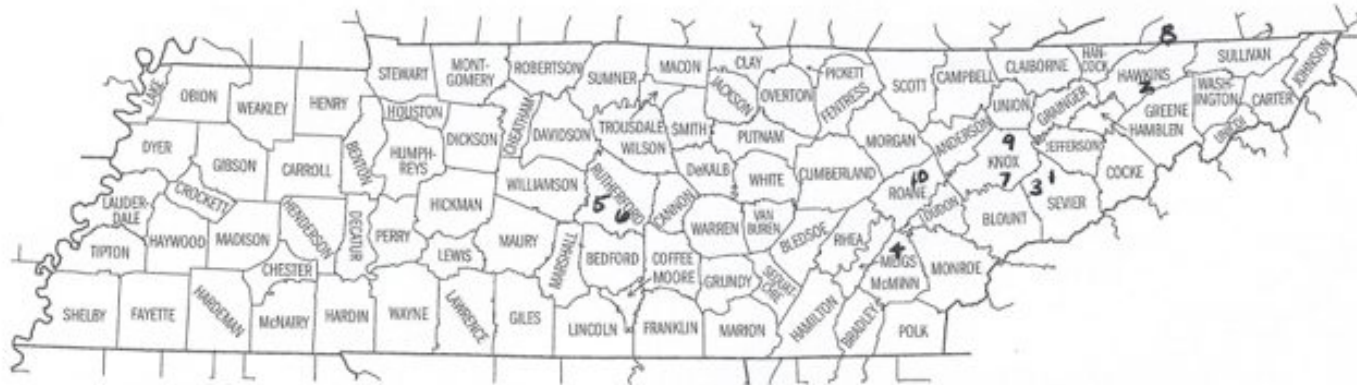
## APPENDIX B

### Map of Appalachia



## APPENDIX C

### Locations of Seed Saver Interviews



In order of interview:

1. EF, Sevier County
2. LL/ML/CL, Hawkins County
3. LK, Sevier County
4. AM, McMinn County
5. SP/RP, Rutherford County
6. PJ, Rutherford County
7. ST, Knox County
8. JW, Scott County, VA
9. RA, Knox County
10. MG/EG, Roane County

## APPENDIX D

### Heirloom Seeds Documented in this Study

| Name                        | Vegetable | Botanical Name            | County           |
|-----------------------------|-----------|---------------------------|------------------|
| 10 to 1 (1000 to 1)         | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| 100 year Bean               | Bean      | <i>Phaseolus vulgaris</i> | Knox             |
| Asparagus Bean              | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Bea Brow                    | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Bessie Bean                 | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Black Stick                 | Bean      | <i>Phaseolus vulgaris</i> | Knox             |
| Black Turkey Crow           | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Blue Beans                  | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Brown Half Runner           | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Cades Cove                  | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Cades Cove Bean             | Bean      | <i>Phaseolus vulgaris</i> | Sevier           |
| Case Knife Bean             | Bean      | <i>Phaseolus vulgaris</i> | Roane            |
| Case Knife Bean             | Bean      | <i>Phaseolus vulgaris</i> | Knox             |
| Castor Oil Beans            | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Charlie Hall Cutshort       | Bean      | <i>Phaseolus vulgaris</i> | Scott County, VA |
| Cherokee Trail of Tears     | Bean      | <i>Phaseolus vulgaris</i> | Roane            |
| Cornfield 'Genuine'         | Bean      | <i>Phaseolus vulgaris</i> | Scott County, VA |
| Cornfield Bean              | Bean      | <i>Phaseolus vulgaris</i> | Roane            |
| Cornfield Bean              | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Cream Fall Bunch            | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| White Half Runner           | Bean      | <i>Phaseolus vulgaris</i> | Knox             |
| Granny Gowan Bean           | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Greasy Back                 | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Greasy Bean                 | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Half Runner                 | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| J. Carroll/Carroll's Calico | Bean      | <i>Phaseolus lunatus</i>  | Hawkins          |
| John Williams Greasy Bush   | Bean      | <i>Phaseolus vulgaris</i> | Scott County, VA |
| Lazy Housewife              | Bean      | <i>Phaseolus vulgaris</i> | Roane            |
| Little Black Bean           | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Little Red Bean             | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Logan Giant                 | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Logan Giant                 | Bean      | <i>Phaseolus vulgaris</i> | Scott County, VA |
| Melungeon Bean              | Bean      | <i>Phaseolus vulgaris</i> | Scott County, VA |
| Mountain Climbers           | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Mountain Climbers II        | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| October Beans               | Bean      | <i>Phaseolus vulgaris</i> | Roane            |
| October Tender Hull         | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Opal Bean                   | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Peanut Bean                 | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |
| Pink Tip                    | Bean      | <i>Phaseolus vulgaris</i> | Hawkins          |

| <b>Name</b>                       | <b>Vegetable</b> | <b>Botanical Name</b>       | <b>County</b>    |
|-----------------------------------|------------------|-----------------------------|------------------|
| Pole Butter Bean                  | Bean             | <i>Phaseolus lunatus</i>    | Hawkins          |
| Purple Hyacinth                   | Bean             | <i>Phaseolus vulgaris</i>   | Scott County, VA |
| Purple Pole Bean                  | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| Quail Head Bean                   | Bean             | <i>Phaseolus vulgaris</i>   | Roane            |
| Rattlesnake Bean                  | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| Red Stick Bean                    | Bean             | <i>Phaseolus vulgaris</i>   | Knox             |
| Royal Burgundy                    | Bean             | <i>Phaseolus vulgaris</i>   | Scott County, VA |
| Rush Beans                        | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| Savage Bean                       | Bean             | <i>Phaseolus vulgaris</i>   | Rutherford       |
| Short Cuts                        | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| Six Weeks Brown Bunch             | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| Six Weeks Brown Bunch II          | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| Spring City Bean                  | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| Stella's NC Bean                  | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| Striped Cornfield Bean            | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| Striped Half Runner               | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| Tender October                    | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| Turkey Craw                       | Bean             | <i>Phaseolus vulgaris</i>   | Sevier           |
| Turkey Craw                       | Bean             | <i>Phaseolus vulgaris</i>   | Roane            |
| Turkey Craw                       | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| Turkey Craw                       | Bean             | <i>Phaseolus vulgaris</i>   | Scott County, VA |
| Valentine Bean                    | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| Violet's Multi-Colored Butterbean | Bean             | <i>Phaseolus lunatus</i>    | Scott County, VA |
| Watson Bean                       | Bean             | <i>Phaseolus vulgaris</i>   | Sevier           |
| White Half Runner                 | Bean             | <i>Phaseolus vulgaris</i>   | Sevier           |
| White Half Runner                 | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| White Hastings                    | Bean             | <i>Phaseolus vulgaris</i>   | Scott County, VA |
| White Haston Pole (Hastings)      | Bean             | <i>Phaseolus vulgaris</i>   | Hawkins          |
| White McCaslan                    | Bean             | <i>Phaseolus vulgaris</i>   | Scott County, VA |
| Black Tomato                      | Tomato           | <i>Solanum lycopersicum</i> | Knox             |
| Black Tomato                      | Tomato           | <i>Solanum lycopersicum</i> | Hawkins          |
| Brandywine Pink                   | Tomato           | <i>Solanum lycopersicum</i> | Scott County, VA |
| Cherokee Purple                   | Tomato           | <i>Solanum lycopersicum</i> | Sevier           |
| Cherokee Purple                   | Tomato           | <i>Solanum lycopersicum</i> | McMinn           |
| Cowheart Tomato                   | Tomato           | <i>Solanum lycopersicum</i> | Hawkins          |
| Delano Green                      | Tomato           | <i>Solanum lycopersicum</i> | McMinn           |
| Golden Queen                      | Tomato           | <i>Solanum lycopersicum</i> | McMinn           |
| Grandfather Ashlock               | Tomato           | <i>Solanum lycopersicum</i> | McMinn           |
| Green Pineapple                   | Tomato           | <i>Solanum lycopersicum</i> | McMinn           |
| Habakers                          | Tomato           | <i>Solanum lycopersicum</i> | McMinn           |
| Nebraska Wedding                  | Tomato           | <i>Solanum lycopersicum</i> | McMinn           |
| Purple Tomato                     | Tomato           | <i>Solanum lycopersicum</i> | Hawkins          |
| Purple Tomato II                  | Tomato           | <i>Solanum lycopersicum</i> | Hawkins          |
| White Tomato                      | Tomato           | <i>Solanum lycopersicum</i> | Hawkins          |
| Yellow German Queen               | Tomato           | <i>Solanum lycopersicum</i> | Sevier           |
| Brown Field Pumpkin               | Squash/Pumpkin   | <i>Cucurbita maxima</i>     | Hawkins          |
| Crooked Neck Cushaws              | Squash/Pumpkin   | <i>Cucurbita mixta</i>      | Hawkins          |

| <b>Name</b>             | <b>Vegetable</b> | <b>Botanical Name</b>         | <b>County</b>    |
|-------------------------|------------------|-------------------------------|------------------|
| Little Square           | Squash/Pumpkin   | <i>Cucurbita maxima</i>       | Hawkins          |
| Sweet Potato Pumpkin    | Squash/Pumpkin   | <i>Cucurbita maxima</i>       | Hawkins          |
| Willard's Pink Pumpkin  | Squash/Pumpkin   | <i>Cucurbita maxima</i>       | Hawkins          |
| Gourd                   | Gourd            | <i>Lagenaria spp.</i>         | Hawkins          |
| Catawba Valley Red      | Corn             | <i>Zea mays</i>               | Scott County, VA |
| Catawba Valley White    | Corn             | <i>Zea mays</i>               | Scott County, VA |
| Henry Moore             | Corn             | <i>Zea mays</i>               | McMinn           |
| Indian Corn Mix         | Corn             | <i>Zea mays</i>               | Scott County, VA |
| Mini-Decorative Popcorn | Corn             | <i>Zea mays</i>               | Scott County, VA |
| Thompson Prolific Corn  | Corn             | <i>Zea mays</i>               | Roane            |
| Country Girl Pepper     | Pepper           | <i>Capsicum annum</i>         | Knox             |
| Kisser                  | Pepper           | <i>Capsicum annum</i>         | Knox             |
| Peter Pepper            | Pepper           | <i>Capsicum annum</i>         | Knox             |
| Potato Onion            | Onion            | <i>Allium aggregatum</i>      | Sevier           |
| Walking Onion           | Onion            | <i>Allium proliferum</i>      | Rutherford       |
| Winter Onion            | Onion            | <i>Allium proliferum</i>      | Sevier           |
| Plum Granny             | Melon            | <i>Cucumis melo</i>           | Sevier           |
| Yellow Watermelon       | Watermelon       | <i>Citrullus lanatus</i>      | Hawkins          |
| Jim Cox Okra            | Okra             | <i>Abelmoschus esculentus</i> | Sevier           |
| Lady Pea                | Field Pea        | <i>Pisum sativum</i>          | Rutherford       |
| White Elephant          | Potato           | <i>Solanum tuberosum</i>      | Hawkins          |
| Poplar Root             | Sweet Potato     | <i>Ipomoea batatas</i>        | Roane            |
| Dishwater Gourd         | Other            | <i>Luffa cylindrica</i>       | Hawkins          |
| Vining Okra             | Other            | <i>Luffa cylindrica</i>       | Hawkins          |
| Vining Okra             | Other            | <i>Luffa cylindrica</i>       | Scott County, VA |

## **VITA**

Fiona McAnally is from Loudon County, Tennessee. She received a B.A. in Political Science from the University of Tennessee in 1989. She subsequently worked in public policy, non-profit management, and operations before returning to pursue graduate work.