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JUST EAT PEAS AND DANCE: FIELD PEAS (*VIGNA UNGUICULATA*) AND FOOD SECURITY IN THE OZARK HIGHLANDS, U.S.

Brian C. Campbell¹

Field peas (Vigna unguiculata L. [Walp]) are recognized as an important agricultural crop throughout Africa and Asia for myriad reasons, ranging from their remarkably high nutrient content to their adaptability to marginal lands. In the early twentieth century, agricultural research stations investigated and advocated V. unguiculata for sustainable farming in the United States of America (U.S.) but such interest has all but disappeared in commercial agronomy. U.S.-focused agronomists perceive field peas as relatively incompatible with contemporary non-integrated agricultural systems, climate, and fast-food culinary habits; however, the species remains integral to the traditional cuisine of the southern U.S. With almost 18 million U.S. households experiencing food insecurity in 2011, a marked increase over the last decade, fresh strategies and time-tested species deserve research attention. This paper explores the role of field peas in hunger mitigation in the recent past in the Ozark Highlands, a marginal landscape unable to support large-scale industrial crop production, which currently endures some of the highest food insecurity rates in the U.S. Ethnographic accounts detail the importance of field peas during difficult times, and findings from an agrobiodiversity conservation project demonstrate the salience of field peas as a staple food and feed crop amongst older, traditional Ozark families. I conclude with a discussion of field peas' role in community food systems strategies for contemporary and future Ozark food security.

Keywords: Ozarks, Vigna, field peas, legume, food security

Los guisantes de campo (Vigna unguiculata L. [Walp]) son reconocidos como un importante cultivo agrícola en África y Asia por múltiples razones, que van desde su muy alto contenido de nutrientes a su capacidad de adaptación a las tierras marginales. A principios del siglo XX, las estaciones de investigación agrícola investigaron y promovieron el cultivo de V. unguiculata para la agricultura sostenible en los Estados Unidos de América (EE.UU.), sin embargo, en su mayoría dicho interés ha desaparecido en la agronomía comercial. Los agrónomos localizados en los EE.UU. perciben los guisantes como relativamente incompatibles con los sistemas agrícolas actuales, el clima y los hábitos culinarios de comida rápida. Sin embargo, la especie sigue siendo parte integral de la cocina tradicional del sur de los EE.UU. Con el marcado aumento en la última década de hogares estadounidenses que experimentan inseguridad alimentaria (casi 18 millones de hogares en 2011), nuevas estrategias y especies probadas con el tiempo merecen ser investigadas. En este estudio se explora la importancia que ha tenido los guisantes en la mitigación del hambre en el pasado reciente en el Ozark Highlands, caracterizado por un terreno marginal que no puede apoyar la producción agrícola industrial a gran escala, que actualmente tiene uno de los índices más altos de inseguridad alimentaria en los EE.UU. Los recuentos etnográficos detallan la importancia de los guisantes de campo durante los tiempos difíciles, y los resultados de un proyecto de conservación de la agrobiodiversidad demuestran la relevancia de los guisantes de campo como alimento básico y cultivo alimenticio entre las familias tradicionales del Ozark. Concluyo con una discusión de la importancia de los guisantes de campo en la comunidad y las estrategias de los sistemas alimenticios para la seguridad alimenticia actual y futura del Ozark.

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Interviewees: Lonnie and Asburn Avery

Interviewer: Vaughn Brewer

Date: September 6, 1979

Location: Stone County, Arkansas, Ozark Highlands, U.S.

VB: In the early part of your life when you were small boys, how did the older people get together to play their music?

LA: Well they had square dances...

VB: Just going from neighbor's house to neighbor's house, gather that way?

LA: Yes, that is right, from neighbor's house to neighbor's house.

AA: Yes, square dances.

LA: If it was bad weather and could not work, it was just every night one house to another...

VB: Somewhere about every night.

LA: They called it eating peas and dance.

VB: Eating peas and dance?

LA: That is right, that is what...

VB: Because of hard times?

LA: Just eat peas and dance. That is back when I was growing up. [That is] what you would hear them say.

VB: What they meant by "eating peas" was hard times?

LA: That is right.

Introduction

The preceding ethnographic exchange presents a bygone era in the Ozarks, the first third of the twentieth century to be exact, when the Avery brothers would ride into Mountain View, leave their horses at the livery stable, and watch and play music on the town square with gritty, talented folk musicians from the surrounding hills (Rackensack 1979a). They grew up in a culture that respected and prized musical talent; it provided a respite from the difficulties of living in a landscape of rocky hillsides that grow chert better than crops. Ozark homesteaders of the nineteenth century cleared some valley land in their "hollers"¹ to grow some corn, field peas, and perhaps some sorghum, squash and beans. They let their hogs run free range, and hunted, fished and gathered the remainder of their diet (Campbell 2009a; McDonough 1975; Otto and Burns 1981; Wilson 1959). The field peas ensured a reliable food source during extreme weather events and traditional Ozarkers love them with cornbread, greens, and just about any part of a hog (Massey 1978; Wilson 1959).

The Ozarks modernized at a relatively slow pace; the most remote regions housed people deeply suspicious of change, especially that promoted by outsiders with different cultural values and traditions (Rafferty 2001; Randolph 1931, 1955; Wilson 1959). The rural character of the region allowed long-standing subsistence traditions like seed-saving to persist despite dramatic technological change throughout the second half of the twentieth century (Brady 1990; Massey 1978; McDonough 1975; Nolan and Robbins 1999; Campbell 2009a, 2010). As the Ozark Highlands became more connected to mainstream U.S. society through television

and public school systems, younger Ozarkers' subsistence patterns became less distinctive (West 1945; Wilson 1959). Fast, processed food became more commonplace, and gardens housed fewer open-pollinated heirloom crops and more hybrid seeds or plants purchased at the feed store. Yet today, early in the twenty-first century, some multigenerational Ozarkers continue to grow and save family seed varieties that arrived in the Ozarks with their ancestors from England, Germany, Ireland, or Scotland via Appalachia (Blevins 2002; Gerlach 1976; Rafferty 2001).

Through an Ozarks agrobiodiversity conservation project,² I have documented a wide array of such family varieties, representing many species (Campbell 2010, 2012). The data for this research article come from qualitative interviews with contributors of family varieties of field peas (*Vigna unguiculata* (L.) Walp) at "Seed Swaps"³ and their home farms. Field peas stand out as one of the most common species that seed-saving multigenerational Ozarkers continue to grow and save. In this paper, I contextualize the discussion of *V. unguiculata* within growing concerns about food insecurity in poor, rural regions of the U.S., and introduce field peas generally in terms of agronomic characteristics, history, and nutritional content. I then present an ethnohistory of field peas in the Ozarks, with ethnographic accounts that explain their cultural salience and persistence. I conclude with a discussion of strategies to ameliorate food insecurity in impoverished rural areas like the Ozark Highlands, highlighting the agronomic and nutritional characteristics of Ozark field pea varieties that make them sustainable and potentially quite important within this cultural, biophysical, and sociopolitical context. Traditional crops have become marginalized in other parts of the world through acculturation and modernization as outsiders or colonizers' dominant food systems displaced local cuisines (e.g., cassava and millet in parts of Africa), and as commercial production and export replaced concerns with local sustenance (Finnis 2009; Romanoff and Lynam 1992; Shava et al. 2009). Upon more widespread and documented recognition of the marginalized traditional crops' superior adaptability and nutrient content, locally-driven and exogenous sustainable development projects have reestablished such locally-adapted, productive crops into subsistence food systems (Shava et al. 2009). Therefore, with community outreach and local motivation to combat undernutrition, field peas could also return to prominence in Ozark culinary practices.

Research Site: Ozark Highlands, U.S.

The Ozark Highlands region of northern Arkansas, southern Missouri, and northeastern Oklahoma constitutes a hydrogeological system known as karst, a landscape of limestone and dolomite dissolved through continuous erosion (Aley 1992; Rafferty 2001). The verticality and shallow soils make the Ozarks an especially marginal setting for intensive row-crop agriculture (Rafferty 2001). The Ozark Highlands were sparsely populated before the arrival of Europeans, and early Euro-American frontier settlers homesteaded the area to secure an isolated, self-sufficient property where they could avoid extensive contact with mainstream U.S. society (Sauer 1920). Through the mid-twentieth century, the more rugged interior Ozarks were populated by relatively self-sufficient homesteaders

who developed an intimate awareness of their Ozark locality through enculturation and experience (Brady 1990; Campbell 2009a; Nolan and Robbins 1999). Ozark farmers understood the limitations of the Ozark landscape and they anticipated drought. They paid close attention to wild species, their own animals, and other ecological features for signs of stress, blight, or other forebodings, and acted accordingly to prevent overexertion of their land or animals (Campbell 2009b). They depended on wild resources, in addition to their domesticated species, to sustain themselves and their animals (Campbell 2009b). Abundant fresh water allowed them to turn livestock out on the open range, but their mules and horses, which served as key sources of power and transport, were kept close to the farmhouse and fed field peas and other grains, in addition to residue from corn and sorghum crops as fodder (Campbell 2009b, 2010).

When small, kin-centered villages became established in the Ozarks, diverse community functions served as leveling mechanisms (Lee 1990). Besides the learned resourcefulness of most Ozarkers that enabled them to scrape up a wild meal, pie suppers and diverse religious gatherings ensured that the most impoverished, food insecure community members had access to food (Howard 1944; McDonough 1975). These events invariably included the sharing of food with the larger community, and women (and their families) gained prestige by displaying the tastiest and most generous meals (Howard 1944; Randolph 1955). Ozark folktales frequently employ such community functions (baptisms, camp meetings, revivals, *shivarees*⁴) as their setting, showcasing both Ozark hospitality and collective ethic, but also the improprieties of social degenerates who take advantage of such generosity (McNeil 1992). Randolph (1955:26) illustrates in a folk tale entitled "Yellow Bread": "One time there was a fellow ... come a-walking up to where the ladies was giving a dinner-on-the-ground at the Methodist Church. [He] was a ragged old peckerwood and pretty dirty, but you can't turn people away from a church sociable, no matter if he puts any money in the hat or not...."

Such Ozark generosity continues today, yet just as self-sufficiency has waned, so have community cohesion, reciprocal obligations, and food security. A 1960s study characterized Ozark communities as "rural ghettos" because of the impoverishment, lack of opportunity and community dissolution (Davidson 1996:54). In large regions of the Ozarks well over one-fourth of the population is now below the poverty level, and upwards of one-third rely strictly on transfer payments from the federal government for their total income (USDA 2011). The dependence on people outside of the community for help with food security stands in stark contrast with Ozark society of recent history. Today, a paucity of wage labor in many rural Ozark villages results in the out-migration of many people between the ages of 20 and 60 for employment. As jobs have declined and poverty has risen, traditional cultural safety nets have eroded, contributing to concomitant increases in food insecurity.

Food Insecurity in the Ozark Highlands

Food security refers to people at all times having "...access to sufficient, safe, nutritious food to maintain a healthy and active life" (World Health Organization

2012). The World Health Organization and scholars recognize that food security rests upon three key “pillars”: 1) food availability, which refers to “sufficient quantities of food available on a consistent basis”; 2) food access, “having sufficient resources to obtain appropriate foods for a nutritious diet”; and 3) food use, “appropriate use based on knowledge of basic nutrition and care” (Barrett 2010; WHO 2012). Recent USDA surveys indicate that food insecurity in the United States has increased significantly during the last few years, with a sudden spike from 2007 to 2008 during the economic downturn (Barrett 2010; USDA 2009). The Ozark Highlands represents one of the most food insecure regions in the country.

Arkansas and Missouri, which constitute the vast majority of the Ozark Highlands, demonstrated extreme increases in food insecurity relative to the rest of the United States, with both ranking in the top five food insecure states in 2011 (USDA 2012). According to a 2008 USDA survey, Arkansas experienced a sharp increase from 14.3% to 15.9% food insecurity from 2007 to 2008 and is now tied with Mississippi with the third highest incidence of hunger in the United States (USDA 2011). According to the most recent USDA surveys, food insecurity from 2009 through 2011 in the U.S. ranged from 7.8% in North Dakota to 19.2% in Arkansas and Mississippi, and rates of very low food security ranged from 3.1% in North Dakota to 7.6% in Arkansas. The USDA reported that 15.8% of Missouri households were food insecure in 2008, with 5.8% characterized as “very low food security,” meaning that they experience real hunger. Missouri’s food insecurity continues to grow at a comparatively rapid rate; the numbers from 2006–2008 were nearly 20% higher than 2003–2005 and 39% higher than a decade ago, from 1996–1998 (Rikoon et al. 2010). Missouri’s increase in food insecurity over the first decade of the twenty-first century rates among the highest five states, along with Arkansas. Arkansas and Missouri also rank among the five states with the highest rates of food insecurity for children under 18, with Arkansas at 24.4% and Missouri at 23.2% (Gundersen et al. 2011). Food insecurity exists throughout Arkansas, with slightly higher rates in the Mississippi Delta than the Ozarks; however, in Missouri, it is the Ozark region that has the highest concentration of counties classified as “most insecure” (Rikoon et al. 2010).

***Vigna unguiculata* Field Pea and Food Security**

Vigna unguiculata originates in Africa, has been in wide distribution and cultivation in Asia since 2300 BC, and was grown in Europe by the Greeks and Romans (Ng and Marechal 1985). Spaniards brought field peas to the New World in the late seventeenth century; additional varieties arrived from West Africa via the slave trade, and by the early nineteenth century they were grown in the southern United States (Wight 1907). In parts of the semi-humid tropics, *V. unguiculata* contributes a majority of the vegetable protein to human diets, serving as a key staple in severely impoverished populations (Rachie 1985). The efficient fixation of nitrogen allows field pea to supply a significant proportion of its nitrogen requirements, along with depositing fixed-N for succeeding crops, making it easier for farmers to grow a range of food and fiber crops (Mulongoy

1985; Rachie 1985). Field peas also require a relatively short time to produce (some varieties mature within 60–70 days) and succeed in poor soils and drought conditions (Rachie 1985).

Despite impressive nutritional and agroecological qualities, commercial agronomists have tended to overlook the contributions of field peas, and researchers describe it as “underutilized” in industrial agriculture (Ige et al. 2011; Singh and Rachie 1985; Sreerama et al. 2012:157). Traditional farming systems in Asia, Africa, and the southern U.S., however, have treated *V. unguiculata* as an integral component because of its diverse applications, nutritious and medicinal properties, and ease of storage (Singh and Rachie 1985). Field peas demonstrate high protein content (23–29%) that can potentially reach 35%, and the high lysine content makes them an “excellent improver of the protein quality of cereal grains” (Ige et al. 2011; Bressani 1985:354). In addition, all parts of the plant serve as either human or animal food. The seed (shelled green or dried), which comprises the most commonly used part in human meals, serves as a nutritional complement to cereals and animal proteins (Coetzee 1995). The leaves also can be consumed fresh as green vegetables; however, farmers more commonly use them as a nutritious livestock fodder (Singh and Rachie 1985).

Field peas prove especially advantageous in regions and situations where people cannot afford protein foods such as meat and fish because all the edible plant parts are nutritious and medicinal. Ethnic groups in West Africa consider *V. unguiculata* a sacred medicinal plant and diverse peoples have traditionally employed *Vigna* species to treat diabetes, hypertension, kidney stones, and obesity (Ige et al. 2011; Sreerama et al. 2012). Recent phytochemical analyses confirm such pharmacological effects (Ige et al. 2011; Sreerama et al. 2012). Field peas and other legumes and their flours are low in fat, high in protein and dietary fiber, and contain various micronutrients and significant levels of phenolic compounds, which promote human health via their antioxidant properties, enabling dietary control of diabetes and associated hypertension (Sreerama et al. 2012).

Vigna unguiculata once constituted a significant agronomic crop in the United States, and continues to be marketed as processed and dry peas, but it has been displaced by soybeans as the primary legume in commercial crop rotations (Ehlers et al. 2002; Fery 1985). Field peas have become more exclusively horticultural in the U.S., with home and truck gardeners in the southern U.S. growing them more extensively than commercial producers (Fery 1985). Field peas hold a significant place in southern U.S. culinary traditions; they constitute a key ingredient in Hoppin’ John,⁵ a dish which southerners eat on New Year’s Day for good luck (Ellner 2008). This tradition has various ethnic roots, but many attribute it to the substantial role that field peas played in the sustenance of indigent southerners during the U.S. Civil War. While Union troops (from the northern United States, where field peas were not typically grown) systematically stripped the landscape of stored and cultivated food, including livestock, and destroyed anything they could not bring along, their unfamiliarity with field peas meant they left them untouched under the assumption that they were only suitable for animal fodder (Greene 2009). Field peas, therefore, rescued many destitute southerners, including Ozarkers, in one of their greatest times of need, hence their symbolic association with good fortune (Ellner 2008; Greene 2009).

Field Pea in the Ozark Highlands

United States consumers know *V. unguiculata* by a range of names: acre pea; blackeye pea; crowder pea; field pea; southern pea; stock pea; and table pea (Fery 1985; Stephens 1996). While “southern pea” now predominates as the accepted designation (Stephens 1996; Veteto 2010), I use “field pea” throughout to indicate the generic umbrella term most recognized in my field site to subsume Blackeyes, Cream Peas, Crowders, Purple Hulls, Red Rippers, Rice Peas, and Whippoorwills, the most salient varieties documented in the Ozark Highlands. An excerpt from a 1979 interview (Rackensack 1979b) with Claudia Gertrude Gammill of Stone County, AR, exemplifies the traditional role of Ozark field peas:

CG: [We would]...plant two or three acres in peas [and a] sorghum molasses [sweetener made from *Sorghum bicolor*] patch, cane, to cut for hay for mules and stock to eat. We would pick them peas and set up at night and shell them you see. Pick them of a day and pour them out on a quilt spread in the floor in the big old house.

Interviewer: You are talking now about field peas?

CG: Yes. Whippoorwills and [inaudible], black-eyed. Yes, I raised all kinds.

Interviewer: Purple Hulls?

CG: Yes I raised all kinds of them. I would wait until they dry before I picked them you see and then they were ready to shell out that night...I would just put them in a sack and set them in the sun and the weevils [insect pest] would not bother them.

Researchers have classified *V. unguiculata* varieties into three general types: 1) Black-Eye; 2) Crowder; 3) or Cream (Fery 1985). All three are recognized by traditional Ozark farmers and gardeners. Yet, in the Ozarks, some of the most enduring and treasured varieties do not fit into these categories. As Fery (1985:131) concedes:

There are a number of cultivars popular with some American home gardeners and consumers that do not fit well into the simplified blackeye-crowder-cream classification. Many of these cultivars are derived from old agronomic types, e.g. Clay, Whippoorwill and Bluegoose, and are capable of producing good yields under a wide range of conditions....These peas are often referred to as ‘field peas’ in the American marketplace.

Stephens (1996:3), a horticultural scientist, goes well beyond this limited classification and presents twelve categories “based mostly on color of the seed and seed-eye, and the closeness of spacing of seeds in the pod...” which correspond with popular categorizations found in the Ozarks and beyond (Veteto 2010). Table 1 presents Stephens’ (1996:3–4) classification of *V. unguiculata* and the varieties I have documented in the Ozarks in the present.⁶

Farmers and gardeners regularly experiment with new crop varieties they encounter to improve upon their existing system, a process referred to as “repertoire enhancement” (Rhoades 1989; Richards 1996). Based on lifetimes spent testing out new varieties recommended and observed in neighbor’s fields, traditional Ozarkers who save field peas recognize these variations and subtle

Table 1. Classification and varieties of *Vigna unguiculata* in the Ozarks.

| Category | Description ¹ | Ozark varieties |
|---------------------|---|--|
| Black-Eye | White seeds, with black eyes, not crowded in pods. | Black-Eye, Skunk Pea |
| Black-Eye Crowder | Similar to Black-Eyes, but seeds crowded in pods. | Black-Eye Crowder |
| Colored-Eye | Whitish seeds with seed-eye coloring besides black, usually brown, tan, or pink, not crowded in pods. | Grandpa Pea, Pink Eye, White Big Pea |
| Colored-Eye Crowder | Same as above, except seeds are crowded in pods. | Arkansas Razorback, Calico Crowder, Holstein Cowpea, Spotted or Speckled, Antique Crowder |
| Black Crowder | The seeds are solid black when dry, purple when immature. Seed most always crowded. | Black Crowder, Black Pea |
| Brown Crowder | Most Crowders fit into this group, and most all brown seeds fit here. Some seeds are tan colored, with only slightly darker eyes. | Brown Crowder, Goose Pea, Granny Goolsby, Minnie Patterson, Penny Rile |
| Speckled Crowder | Speckled blue seeds are moderately crowded in pods. Have largest seeds of the Southern peas. | |
| Cream (Conch) | Seeds are light green or white, and relatively small. Cooking water comes out bright and clear. Since most Creams are uncrowded, most fit into this group. | Annie Lawrence Cream, Cream Pea, Lady Pea, Louisiana Pea, Rice Pea, Texas Cream, White Lady Finger Pea |
| Cream Crowder | Uncolored seeds, but crowded in pods. | Mississippi Silver Crowder, White Sugar Crowder, Zipper Cream Crowder |
| Purple Hull | Seed pods show purple coloring, at tip or all over. Seeds may be crowded. Usually white peas with buff, brown, or pink eyes. | Pink Eye Purple Hull, Purple Hull |
| Field and Forage | This group includes all those grown most usually for forage cropping and soil improvement. | Iron, Clay, Whippoorwill, New Era, Groit, Red Ripper |
| Long Pod | Extra-long pods, from over 10 inches up to 36 inches... on trailing, climbing vines reaching 9 to 12 feet in length, requiring trellising. Pods snapped instead of shelled. | Anna's Taiwan |

¹ Stephens 1996:3-4.

differences and they select and cultivate field pea varieties based on their use and application. Interviewees nostalgically recollected some particular variety that they remembered their parents growing that had somehow been lost. They conveyed inestimable joy when re-acquiring such seeds from me or other seed savers at seed swaps (Campbell 2012). An exchange I had with a talented farmer-musician illustrates:

Cream crowders are something that got lost, and I was so happy that you brought them here. I had not seen one in ages.... I love to see them when they're mature because there's nothing in there but peas with no space between them.... That's where the name came from – they're crowded in them...Crowder pea. My mom had a variety of Crowder that has been lost. I don't know what happened to it; it was really good eating. It was white in color, and it was wonderful, equal if not better than the Purple Hull.

Ozark farms and gardens have contained a range of different field pea varieties because they fulfill diverse functions, most importantly flavor, soil improvement, and resiliency in the face of poor soils and drought conditions. This excerpt from a 2012 interview with a 90-year-old Arkansas Ozarker, whose family has lived in Stone County, AR since the early nineteenth century, shows their ubiquity in Ozark subsistence:

Everyone grew peas. Two reasons: one, it made a good grazing crop for the cows and the horses after the corn stuff was brought in; of course we also ate the peas. And, it was also a good legume that helped loosen the ground up for you for the next year.

Interviewer: Do you remember any of the varieties of the field peas or the cow peas?

Only, well, one was a Cow pea - that was the name of it. And then we had the Black-Eyed peas and the Whippoorwills...and then we had a little tiny pea that looked like almost the size of rice. And they call that... the rice pea; it had an entirely different flavor and it was so small that it took forever to shell enough for the meal, but they were delicious.

Culinary

Ozarkers select and maintain varieties that suit their palate and their culturally defined meals. Field peas serve as an excellent accompaniment to cornbread, the archetypal traditional Ozark food (Massey 1978; McNeil 1992; Wilson 1959). The type of "gravy," "pot likker," or "soup" that a field pea produces when cooked constitutes a major factor in the use of the variety and its popularity (Veteto 2010). Interviewees preferred varieties that produce clearer "gravy" for inclusion in soup dishes (e.g., Sugar Crowder, White Crowder, Rice peas) and varieties like Whippoorwills, Purple Hulls, and Black-Eyed peas that produce a darker liquid, good for pouring over or dipping with cornbread. An exchange during an interview between one of my students from rural Arkansas and a 90-year-old Izard County, AR woman about her family varieties demonstrates both the culinary significance of field peas and the gastronomical disconnect between generations:

My sister brought me some little tiny; they're either Rice or Lady Peas ... that some of their family kept, his cousin kept, and he's older than I am. But they're just little tiny peas and she just gave me. His cousin brought him some; he lives up around Jonesboro... so, I've got some of those seeds. Student: So when you, since you guys have had these seeds, what all do you use them for? Like in what dishes, how do you use this seed?

Don't you eat peas? (laughter)...We eat them. You can put what we call a thickenin' in 'em. If you want to put bacon in them, or if you want to just eat 'em, season 'em and eat 'em. They're good, they're white. Their juice is not real dark. Now with Whippoorwills, you get brown juice. Or Purple Hulls will be a lot darker. Those don't make dark soup. You didn't grow up during the Depression. You might try one [type of peas] later, it [Depression] might be coming.

Many Ozarkers who grow the aforementioned Rice peas commented on their delicious flavor, stating that while the small peas are labor-intensive to shell, “they taste so good, that I don’t care about shellin’ ‘em. They’re light green when they’re cooked, and don’t make a brown soup.” The 82-year-old woman who made this comment discussed an array of different field pea varieties that she and her parents had grown and eaten throughout their lifetimes, and she explained that she now only saves the seeds of Rice peas and Sugar Crowders because: “The Black-Eyed peas and all those I just buy at the store and I can just go get some more...so I don’t keep the seed of those, I keep the seed of the ones that I can’t go get.” Middle-aged and older Ozarkers continue to grow field pea varieties because they love their distinctive flavor and most of them remain unavailable in the marketplace, but the youngest generation of Ozarkers do not cook and therefore eat more processed, fast-food meals that do not include *V. unguiculata*.

Agroecology

Field pea meshes with traditional Ozark agroecology because of the pea’s multifunctionality—serving as human and animal sustenance, improving poor soil, and controlling weeds for other key crops (Campbell 2010; Piper 1914). The cultivation of field peas varied according to the amount of livestock, land, and children that belonged to the household. Ozark farmers with substantial livestock to feed historically planted significant acreage (2–10 acres) in field peas so that they could either turn their animals out to graze or convert them into “pea hay” to use as feed later. Farmers planted varieties that they expected to “go all to vines” because they wanted fodder for their livestock. The added benefit was that through nitrogen-fixation and green manuring, the soil was improved for subsequent cultivation. As one farmer commented about the Red Ripper pea: “...my father planted it a lot more for ground cover than he did for an edible pea because it’s such a prolific viner.... It does grow really long, great long vines and it’s great if you want to chop it up in the fall and turn it back into your soil. It’s a good soil builder.”

Ozarkers dedicated garden and fertilized field space to varieties intended for the plate based on how many human mouths they needed to feed. The tastiest varieties received space at the end of their kitchen garden and amongst some of their corn (Otto and Burns 1981:175). An elder man recalled: “It was a fast crop. If you wanted to grow an early garden you could put some at the end of the garden and start on those” [sooner than those in the fields]. A general rule that I heard from several Ozarkers about the selection of land to plant field peas for human meals went like this: “Plant in the poorest soil you’ve got or they’ll go all to vines.” When planted in a manure-fertilized corn field, the extensive vines helped considerably with weed suppression and helped feed the nitrogen-demanding maize (Pandey and Ngarm 1985). An Ozarker noted: “Normally most of the peas was planted in conjunction with a corn. You’d plant corn and follow it as soon as the corn got up right alongside it with peas.”

Ozark Food Security

The poor soils and regular summer drought conditions of the Ozarks conspire to create inhospitable conditions for humans attempting a subsistence

lifestyle in the region, but Ozarkers have survived through ecological knowledge, tenacity and ...field peas (Campbell 2010). As numerous elderly Ozarkers have explained: "Whippoorwill peas allowed me to survive my childhood," or "Whippoorwills got us through the Depression," or as the title states: "Just eat peas and dance." Veteto (2010:146) conducted comparative research in conjunction with our Arkansas agrobiodiversity conservation project, and he documented similar remarks, such as this observation from a Searcy County, Arkansas resident: "I'm 78 years old—back when I was growing up, if you didn't have black-eyed peas, you literally starved to death. So these are [a family heirloom variety], well these are the Whippoorwill peas." Veteto (2010:146) notes that another field pea variety "...helped one Carroll County, Arkansas family survive the depression by providing a reliable protein source through times of widespread food shortages."

Besides the reliability and high nutrient content of the field pea, Ozarkers endured these precarious times because of the communal ethic of their rural society. The families who planted a lot of acreage to field peas for forage and soil conditioning shared with their neighbors. A 90-year-old Fisher, Arkansas woman, accompanied by her daughter, recounted her Depression-era experiences:

Back when I was a kid, when we lived way down there in the field, my daddy grew... a bunch of Whippoorwill peas and [another variety] 'Blue Era' is what we called 'em. The neighbor people came in, brought cotton sacks, and [took] what they could carry. Most of them didn't have cars.... They picked 'em [and took them away] on the horse.... He had plenty, they picked them. That's what we grew up on that winter, to keep from starving, the whole neighborhood out here, not just us.... I could tell you some pretty bad stories about the Depression, but you don't need to hear them.... Down there where we grew, and my dad grew 'em, the neighborhood come and picked all they wanted so they'd have peas through the winter.... The Whippoorwills was mainly [eaten by] the people during the Depression, and this was a close knit neighborhood. Back then I think everybody knew everybody, because we all went to all the churches and play parties and whatever the community had together. And they divided everything they had.

Daughter: The Whippoorwill peas were more drought resistant. Yes they were really a field pea or hay pea.

Many older interviewees recount the obligations of reciprocity and general communal spirit that existed in the Ozarks before modernization, citing rock haulings, log rollings, barn raisings, etc., which included and concluded with commensal gathering and not infrequently some banjo and fiddle pickin' and singing (Massey 1978; McDonough 1975; Rackensack 1979a).

The varieties that Ozarkers cite as key to their survival are not Black-Eyes, Crowders, or Cream peas. Rather, they almost invariably belong in the "field or forage" grouping (see Table 1), which locals generally refer to as "field" or "hay" peas. In the quote above, she referenced both Whippoorwill and Blue Era; the latter of which may be a mistake or a local name used to refer to some derivative

of the popular “field and forage” variety New Era.⁷ These varieties may be planted primarily to feed livestock, but in times of food insecurity they save human lives. These field peas may not top the list in terms of flavor, but they remain prolific in poor soil, and have proven invaluable for humans in the Ozarks.

Discussion

Field peas have provided necessary sustenance for humans throughout the world and represent one of the most common early domesticates (Piper 1914; Singh and Rachie 1985). Agronomists in the early half of the twentieth century highly regarded and advised cultivation of the field pea in the U.S., celebrating its adaptability and referring to it as a “splendid restorative crop” (Duggar 1902; Piper 1914:494; TenEyck and Call 1909). Piper (1912) documented 220 field pea varieties and found that a considerable number of U.S. varieties came about through farmer-breeder selection processes. He also noted that the Arkansas Agricultural Research Station developed the first artificial field pea hybrid, and the University of Arkansas remains one of eight state institutions engaged in *V. unguiculata* breeding research (Fery 1985; Piper 1912). Yet, Fery (1985:135) notes that “compared with many other crops the cowpea has received little attention from plant breeders.” During the mid-twentieth century commercial agriculture turned away from field peas, most likely due to the wholesale shift in agriculture from diversified farming to monocultures and extreme specialization. *Vigna unguiculata* makes extraordinary contributions to sustainable integrated farming that involves on-site production of feed, crops, and meat and dairy products, and the use of animal waste as fertilizer, because the soil requires replenishing for crop and feed production and the animals similarly need nutritious forage (Altieri 1995).

Lessons from Ozark Agroecology

While field peas have fallen out of favor with mainstream agriculturalists in the U.S., *V. unguiculata* remains popular on marginal lands that can use their “restorative” boost, and on small integrated farms that value low-maintenance, healthy feed and human food (Piper 1914). Ozarker cultivation of field peas as forage and fodder for their dairy cows and goats made a lot of sense. Vander Pol et al. (2008:698) report on the substitution of field peas for industrial feed ingredients, corn and soybeans, for a commercial dairy: “field peas could be safely fed to high-producing dairy cows at a 15% inclusion rate, replacing soybean meal and corn grain. At this inclusion rate, no effects on milk yield or milk composition were observed.” Commercial feed production utilizes genetics that required lab research to develop, and synthetic fertilizers, herbicides, and pesticides that cost money, pollute local groundwater, and leave the land impoverished after production, whereas field peas grow on the poorest lands, suppress weeds on their own, and leave the land improved. Ozarker inter-planting of field peas and corn provides a model for the cultivation of other crops that grow taller (e.g., sunflower (*Helianthus annuus* L.), okra (*Abelmoschus esculentus* L.), sorghum (*Sorghum bicolor* L.) and can benefit from a living mulch and nitrogen

fixation because agronomic research has demonstrated its ability to suppress weed growth (Pandey and Ngarm 1985:305).

Besides the agroecological lessons from Ozark use of field peas, sociological contributions also emerge, especially the cultural safety net that ensures that those in need have access to food. People in the Ozarks were more community-oriented in the recent past. They lived in a rural, isolated landscape and their best chances for entertainment resided not inside on television, but rather at community functions like church, "play parties," square dances, pot lucks, pie suppers, weddings and funerals, etc. (McDonough 1975). They knew each other and could not ignore the desperate needs of a neighbor, and they all grew their own food, so local healthy food was readily available. They had, for all intents and purposes, a community food system, quite different from the industrial globalized structure that supplies almost all food consumed in the U.S. today (Allen 1999).

While much has changed in the Ozarks, poverty and hunger remain. Despite transportation routes that provide ready access to goods from anywhere, and abundant undeveloped land for food procurement, food insecurity continues to rise (Rikoon et al. 2010). The percentage of people growing their own food steadily declines. Ozark history provides an example of the importance and advantages of community food systems: the proximity and community context ensures food security (Allen 1999). As our food system becomes more detached and disjointed, with most food shipped in from distant locales, key components of food security, availability and access, become less easily achieved (Allen 1999; WHO 2012).

Food Security Challenges

The most severe cases of food insecurity occur because of natural or human-induced disasters, "such as drought, floods, war or earthquakes" (Barrett 2010:827). A range of such disasters cause concern in the Ozarks. Regular tornadoes inflict damage and disruption, the most recent being the devastating Joplin, Missouri multiple-vortex of 2011 that killed 160 people and injured approximately 1000 (NCDC 2011). The region is especially vulnerable to earthquakes because it adjoins the New Madrid fault, which, according to a 2008 FEMA report, could cause "widespread and catastrophic" damage throughout the Ozarks, disrupting vital infrastructure, especially water and food distribution, and transportation systems (Gillam 2008). Earthquakes already became a regular occurrence just south of the Ozark Highlands in central Arkansas as a result of injection wells drilled for the disposal of hydraulic fracturing wastewater (Horton 2012). As wastewater built up in a seismically active zone, more than 800 quakes, "an earthquake swarm," hammered the region from 2010 until a 4.7-magnitude quake in February 2011 forced the Arkansas Oil and Gas Commission to admit the correlation and establish an emergency order to halt injection drilling (Horton 2012). Concerns abound that the nuclear reactor in Russellville, AR, less than thirty miles from the nearest injection wells, could wreak real havoc in the region if another large earthquake occurs (Porter 2012). The climate also poses a consistent threat. Arkansas experienced record high temperatures in 2012, with temperatures exceeding 110°F for multiple days, and drought ravaged agriculture throughout the Ozark region. As climate change heats up and dries out the Ozarks, and generates

super-storms, bouts of food insecurity may become the rule rather than the exception.

Most food insecurity correlates directly with poverty, and the Ozarks represents one of most impoverished regions in the U.S. (Sen 1982). While food banks fulfill a serious need and much work continues to go into programs designed to alleviate local food insecurity, food access persists as a key obstacle for impoverished Ozarkers. Rikoon et al. (2010:27) of the Interdisciplinary Center for Food Security at the University of Missouri report:

Importantly, the figures on food insecurity and hunger in Missouri remain high, and are not declining in spite of the myriad of mostly federally-originated public programs and locally-initiated private programs. Food insecurity and hunger continue to affect all regions of the state. Generally, one can point to larger proportions of counties with high need in the southern half of the state [Ozark Highlands region]... In general, the clustering of high need quintiles is similar to the grouping of counties with high and persistent poverty levels.

Food assistance programs serve an enormous need, assisting the neediest; however, researchers continue to point out the failings of top-down hunger relief programs (Barrett 2010; Pottier 1999; Rikoon et al. 2010). Pottier (1999:146) claims that "the failure of conventional famine relief (and of 'normal' food aid) is the very reason why anthropologists tend to argue that communities facing food shortage may be better off when food aid...fails to reach them. Relying on their own resources, vulnerable communities may stand a better chance of recovery and of preserving their ability to do so in the future."

Besides food insecurity, poverty also positively correlates with chronic diseases frequently caused by poor nutrition, such as diabetes, hypertension and obesity (Rikoon et al 2010). Unfortunately, foods distributed through aid programs frequently include excessive calories and fat and are low in nutrition. The Ozark counties with the highest food insecurity levels demonstrate similarly high percentages of such ailments (Rikoon et al. 2010). The types of foods donated to aid organizations to distribute at food banks typically "...are high in salt, sugar or calories, making them poor choices for people with high blood pressure, diabetes and other diet-related health problems. With more people turning to food banks and for longer periods of time, agency officials say they need donations but they'd like to see people give the kind of healthy and nutritious items they'd serve to their own families" (Ramde 2011:1). Food insecurity results in physical and psychological health problems, and, when combined with the negative health effects of eating unhealthy foods, produce higher demands for social services and increased health care expenditures (Rikoon et al. 2010).

Strategies for Ozark Food Security

The myriad threats to food security have no easy fix. However, growing field peas in community gardens and using existing food aid programs and resources to prepare and distribute them to needy people through existing infrastructure would go a long way towards addressing these pervasive problems. Field peas are an inexpensive comfort food and they have medicinal properties that treat the

exact health conditions (e.g., diabetes, hypertension, obesity) that afflict the impoverished peoples in need (Ige et al. 2011; Sreerama et al. 2012). As Rikoon et al. (2010:28) recommend, educational programs that emphasize “the nutritional and health impacts of food choices,” must be a key component in food assistance programming, and this includes the primary and secondary levels. School programs could simultaneously teach biology, health, and local cultural heritage, while growing corn and field peas in a school or community garden to be collaboratively harvested and cooked to serve disadvantaged community members or students (Rikoon et al. 2010). A significant and often overlooked barrier to food security, whereby everyone has access to healthy food consistently, remains socially and culturally determined food preferences (Pottier 1999). As young people eschew foods like field peas that require culinary skills and more time than processed fast food, they inadvertently and unconsciously contribute to general food insecurity. Curtailing food insecurity requires more than food redistribution, it demands that communities reintegrate the growing and eating of food into social environments like school, church, and sporting events, so that young people learn about their regional cuisine, especially how to prepare it. In the Ozarks, this means that field peas and dance remain a great combination.

Notes

¹ Due to the Ozarks vertical topography and the earliest settlers’ cultural preference for seclusion, the original farmsteads usually consisted of a valley and the hills on either side, what locals refer to as a “holler” or hollow.

² Conserving Arkansas’s Agricultural Heritage (CAAH!) engages in documentation, storage, grow-out, and redistribution of open-pollinated seed varieties of the various bioregions of Arkansas, with a focus on the Ozark Highlands. www.arkansasagro.wordpress.com

³ As a key component of CAAH!’s applied research strategy to conserve traditional crop varieties through dissemination, the use it or lose it approach, we hosted “Seed Swaps” (exchanges) throughout Arkansas and the Missouri Ozarks to encourage community members to share seeds and encourage local adaptation and food sovereignty.

⁴ *Shivaree* (from the French *charivari* from Latin for “headache”) refers to the post-marital ritual in which the newlyweds are rudely serenaded with excessive noise, and in the Ozarks, the groom was typically run about “on a rail,” especially if the guests were not provided with food and beverage.

⁵ Hoppin’ John refers to a dish that typically includes black-eyed peas (or another field pea variety) and rice, frequently cooked with chopped onions (sometimes green peppers) and some pork/hog product.

⁶ This classification fails to accurately categorize field peas because through on-farm and research station breeding, many contemporary varieties do not fit neatly into the framework. Stephens (1996:3) explains:

The Purple Hull group includes those having some purple coloring on their pods, even though they may fit into another grouping due to other characteristics.

Further confusing the issue is the plant growth habit, there being bush, vining, and semi-vining habit. These groupings will not deal with plant habit.

Another category could represent the modification of seed varieties by corporate, government, and university researchers; the seed-saving Ozarkers distinguish between “improved” and “unimproved” or “old-time(y)” field pea varieties, especially Red Ripper, Rice pea, and Whippoorwill. They mention the larger size of the “improved” varieties, which were developed at Agricultural Research Stations at Land Grant Universities.

⁷ Piper (1914) and various Land Grant Agricultural Research Stations document and present research findings conducted in the early twentieth century on the productivity of the New Era variety. The Arkansas Agricultural Research Station conducted tests on New Era on various occasions early in the twentieth century (Piper 1912). Another variety, Blue Goose was also popular during the same time period and it is possible that the interviewee combined the names of these two locally grown varieties. Or it is always possible that a distinct variety took on a locally-assigned name.

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References Cited

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| <p>Aley, T. 1992. Karst Topography and Rural Poverty. <i>Ozarkswatch</i> 5(3):19–21.</p> <p>Allen, P. 1999. Reweaving the food security safety net: Mediating entitlement and Entrepreneurship. <i>Agriculture and Human Values</i> 16:117–129.</p> <p>Altieri, M. A. 1995. <i>Agroecology: The Scientific Basis of Alternative Agriculture</i>. Westview Press, Boulder, CO.</p> <p>Barrett, C. B. 2010. Measuring Food Insecurity. <i>Science</i> 327:825–828.</p> | <p>Blevins, B. 2002. <i>Hill Folks: A History of Arkansas Ozarkers and Their Image</i>. University of North Carolina Press, Chapel Hill, NC.</p> <p>Brady, E. 1990. Mankind's Thumb on Nature's Scale: Trapping and Regional Identity in the Missouri Ozarks. In <i>Sense of Place: American Regional Cultures</i>, edited by B. Allen, and T. Schlereth, pp. 58–73. The University Press of Kentucky, Lexington, KY.</p> <p>Bressani, R. 1985. Nutritive Value of Cowpea. In <i>Cowpea Research, Production and Utilization</i>,</p> |
|--|---|

- edited by S. R. Singh, and K. O. Rachie, pp. 353–360. John Wiley & Sons Ltd., New York, NY.
- Campbell, B. C. 2009a. Ethnoecology of the Ozarks' Agricultural Encounter. *Ethnology* 48:1–20.
- Campbell, B. C. 2009b. 'A Gentle Work Horse would Come in Right Handy': Animals in Ozark Agroecology, *Anthrozoös: A Multidisciplinary Journal of the Interactions of People and Animals* 22:239–253.
- Campbell, B. C. 2010. Closest to Everlastin': Ozark Agricultural Biodiversity and Subsistence Traditions. In *Southern Spaces*, published September 20, 2010. Available at: <http://southernspaces.org/2010/closest-everlastin-ozark-agricultural-biodiversity-and-subsistencetraditions>. Accessed on November 6, 2012.
- Campbell, B. C. 2012. Open-Pollinated Seed Exchange: Renewed Ozark Tradition as Agricultural Biodiversity Conservation, *Journal of Sustainable Agriculture* 36:500–522.
- Coetzee, J. J. 1995. *Cowpea: A Traditional Crop in Africa*. Vegetable and Ornamental Plant Institute and the Grain Crops Institute, Agricultural Research Council, Pretoria, Africa.
- Davidson, O. G. 1996. *Broken Heartland: The Rise of America's Rural Ghetto*. Iowa City: University of Iowa Press, IA.
- Duggar, J. F. 1902. *Cowpea Culture*. Alabama Agricultural Experiment Station, Auburn, Montgomery, AL.
- Ehlers, J. D., R. L. Fery, and A. E. Hall. 2002. Cowpea Breeding in the USA: New Varieties and Improved Germplasm. In *Challenges and Opportunities for Enhancing Sustainable Cowpea Production*, edited by C. A. Fatokun, S. A. Tarawali, B. B. Singh, P. M. Kormawa, and M. Tamò, pp. 62–80. International Institute of Tropical Agriculture, Ibadan, Nigeria.
- Ellner, R. 2008. Celebrate New Year's with Black-Eyed Peas. December 31, 2008. *Nashua Telegraph*.
- Fery, R. L. 1985. Improved Cowpea Varieties for the Horticultural Industry in the USA. In *Cowpea Research, Production and Utilization*, edited by S. R. Singh, and K. O. Rachie, pp. 129–136. John Wiley & Sons Ltd., New York, NY.
- Finnis, E. 2009. "Now it's an Easy Life": Women's Accounts of Cassava, Millets, and Labor in South India. *Culture and Agriculture* 31:88–94.
- Gerlach, R. L. 1976. *Immigrants in the Ozarks: A Study in Ethnic Geography*. University of Missouri Press, Columbia, MO.
- Gillam, C. 2008. Government Warns of "Catastrophic" U.S. Quake. November 20, 2008. *Reuters*.
- Greene, T. 2009. *A Tasty Tradition: New Year's Meal Means Good Luck, Good Eats*. Montgomery Advertiser (Montgomery, Alabama): December 2, Section 3A.
- Gundersen, C., E. Waxman, E. Engelhard, and J. Brown. 2011. *Map the Meal Gap: Preliminary Findings*. Feeding America. Available at: www.feedingamerica.org/mapthegap. Accessed on November 2, 2012.
- Howard, G. 1944. *Walkin' Preacher of the Ozarks*. Harper and Brothers, New York, NY.
- Horton, S. 2012. Disposal of Hydrofracking Waste Fluid by Injection into Subsurface Aquifers Triggers Earthquake Swarm in Central Arkansas with Potential for Damaging Earthquake. *Seismological Research Letters* 83:250–260.
- Ige, O. E., O. F. Olotuah, and V. Akerele. 2011. Floral Biology and Pollination Ecology of Cowpea (*Vigna Unguiculata* L. Walp). *Modern Applied Science* 5:74–82.
- Lee, R. 1990. Primitive Communism and the Origins of Social Inequality. In *The Evolution of Political Systems: Sociopolitics in Small-Scale Sedentary Societies*, edited by L. Steadman, pp. 225–246. Cambridge University Press, Cambridge, MA.
- Massey, E. G. 1978. *Bittersweet Country*. Anchor Press/Doubleday, Garden City, NY.
- McDonough, N. 1975. *Garden Sass: A Catalog of Arkansas Folkways*. Coward, McCann, and Geoghegan, New York, NY.
- McNeil, W. 1992. *An Arkansas Folklore Sourcebook*. University of Arkansas Press, Fayetteville, AR.
- Mulongoy, K. 1985. Nitrogen-Fixing Symbiosis and Tropical Ecosystems. In *Cowpea Research, Production and Utilization*, edited by S. R. Singh, and K. O. Rachie, pp. 309–316. John Wiley & Sons Ltd., New York, NY.
- National Climatic Data Center. 2011. NCDC Event Record. *NCDC Storm Events Database*. National Oceanic and Atmospheric Administration National Climatic Data Center. Available at: <http://www.ncdc.noaa.gov/sotc/tornadoes/2011/13>. Accessed on November 2, 2012.
- Ng, N. Q., and R. Marechal. 1985. Cowpea Taxonomy, Origin and Germplasm. In *Cowpea Research, Production and Utilization*, edited

- by S. R. Singh, and K. O. Rachie, pp. 11–22. John Wiley & Sons Ltd., New York, NY.
- Nolan, J. M., and M. C. Robbins. 1999. Cultural Conservation of Medicinal Plant Use in the Ozarks. *Human Organization* 58:67–72.
- Otto, J. S., and A. M. Burns III. 1981. Traditional Agricultural Practices in the Arkansas Highlands. *The Journal of American Folklore* 94: 166–187.
- Pandey, R. K., and A. T. Ngarm. 1985. Agromomic Research Advances in Asia. In *Cowpea Research, Production and Utilization*, edited by S. R. Singh, and K. O. Rachie, pp. 299–308. John Wiley & Sons Ltd., New York, NY.
- Piper, C. V. 1912. *Agricultural Varieties of Cowpea and Related Species*. USDA, Bulletin No. 229.
- Piper, C. V. 1914. *Forage Plants and Their Culture*. The Macmillan Company, New York, NY.
- Porter, S. 2012. Life in the Fayetteville Shale Online Discussion: From Friends of the Mulberry Watershed February 16, 2012. Available at: https://www.facebook.com/shalelife/posts/295996643796017?comment_id=2998304&offset=0&total_comments=7. Accessed November 6, 2012.
- Pottier, J. 1999. *Anthropology of Food: the Social Dynamics of Food Security*. Blackwell, Malden, MO.
- Rachie, K. O. 1985. Introduction. In *Cowpea Research, Production and Utilization*, edited by S. R. Singh, and K. O. Rachie, pp. 309–316. John Wiley & Sons Ltd., New York, NY.
- Rackensack Collection. 1979a. Interview with Lonnie and Asburn Avery. University of Central Arkansas Archives, Conway, AR. Interviewer: Vaughn Brewer.
- Rackensack Collection. 1979b. Interview with Claudia Gertrude Gammill. University of Central Arkansas Archives, Conway, AR. Interviewer: Vaughn Brewer.
- Rafferty, M. 2001. *The Ozarks: Land and Life*. University of Oklahoma Press, Norman, OK.
- Ramde, D. 2011. *Food Pantries Request Healthier Donations over Bulk Junk Food this Christmas*. Huffington Post. Available at: http://www.huffingtonpost.com/2011/11/21/food-pantries-healthy-food-donations_n_1104973.html?view=print&comm_ref=false. Accessed November 6, 2012.
- Randolph, V. 1931. *The Ozarks: An American Survival of Primitive Society*. Vanguard Press, New York, NY.
- Randolph, V. 1955. *The Devil's Pretty Daughter and Other Ozark Folk Tales*. Columbia University Press, New York, NY.
- Rhoades, R. 1989. The Role of Farmers in the Creation of Agricultural Technology. In *Farmer First: Farmer Innovation and Agricultural Research*, edited by R. Chambers, A. Pacey, and L. A. Thrupp. Intermediate Technology Publications, London, UK.
- Richards, P. 1996. Agrarian Creolization: The Ethnobiology, History, Culture, and Politics of West African Rice. In *Redefining Nature: Ecology, Culture, and Domestication*, edited by R. Ellen, and K. Fukui, pp. 291–318. Berg Publishers, Oxford, UK.
- Rikoon, S., J. Dawdy, M. Foulkes, C. Heflin, J. Hermesen, J. Lucht, and N. Raedeke. 2010. *Missouri Hunger Atlas*. Interdisciplinary Center for Food Security, Columbia, MO.
- Romanoff, S., and J. Lynam. 1992. Commentary: Cassava and African Food Security: Some Ethnographic Examples. *Ecology of Food and Nutrition* 27:29–41.
- Sauer, C. O. 1920. *The Geography of the Ozark Highlands*. The University of Chicago Press, Chicago, IL.
- Sen, A. 1982. *Poverty and Famines: An Essay on Entitlement and Deprivation*. Oxford University Press, Oxford, UK.
- Shava, S., R. O'Donoghue, M. E. Krasny, and Z. Cryton. 2009. Traditional Food Crops as a Source of Community Resilience in Zimbabwe. *International Journal of African Renaissance Studies* 4:1–21.
- Singh, S. R., and K. O. Rachie. 1985. *Cowpea Research, Production and Utilization*. John Wiley & Sons Ltd., New York, NY.
- Sreerama, Y. N., V. B. Sashikala, and V. M. Pratapa. 2012. Phenolic Compounds in Cowpea and Horse Gram Flours in Comparison to Chickpea Flour: Evaluation of Their Antioxidant and Enzyme Inhibitory Properties Associated with Hyperglycemia and Hypertension. *Food Chemistry* 133:156–162.
- Stephens, M. J. 1996. Southern Pea Classification. *The Vegetarian*. May 1996. Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL.
- TenEyck, A. M., and T. E. Call. 1909. *Cow-Peas.. Bulletin 160 Kansas State Agricultural College, Manhattan, KS*.
- United States Department of Agriculture. 2009. *Household Food Security in the United States, 2008*. Economic Research Service. Available at: <http://www.ers.usda.gov/data-products/county-level-data-sets/poverty.aspx>. Accessed October 10, 2012.
- United States Department of Agriculture. 2011. *Economic Research Service*. Available at:

- <http://www.ers.usda.gov/topics/rural-economy-population/rural-poverty-well-being/transfer-payments.aspx>. Accessed November 10, 2012.
- United States Department of Agriculture. 2012. *Food Security in the U.S.*. Economic Research Service. Available at: <http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us.aspx>. Accessed on November 2, 2012.
- Vander Pol, M., A. N. Hristov, S. Zaman, and N. Delano. 2008. Peas Can Replace Soybean Meal and Corn Grain in Dairy Cow Diets. *Journal of Dairy Science* 91:698–703.
- Veteto, J. R. 2010. Seeds of Persistence: Agrobiodiversity, Culture, and Conservation in the American Mountain South. Unpublished Doctoral Dissertation, Anthropology Department, University of Georgia, Athens, GA.
- West, J. 1945. *Plainville, U.S.A.* Columbia University Press, New York, NY.
- World Health Organization. 2012. Food Security. World Health Organization. Available at: <http://www.who.int/trade/glossary/story/028/en/>. Accessed on November 2, 2012.
- Wight, W. F. 1907. *The History of the Cowpea and its Introduction into America*. USDA, Bureau of Plant Industries, Bulletin 102:43–59.
- Wilson, C. M. 1959. *The Bodacious Ozarks: True Tales of the Backhills*. Hastings House Publishers, New York, NY.