

Connecting with Rice: Carolina Lowcountry and Africa

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INTRODUCTION

“Rice planting is a useful topic for geographic inquiry by students.”

Though lasting less than 200 years, large-scale rice production in South Carolina and Georgia “probably represented the most significant utilization of the tidewater zone for crop agriculture ever attained in the United States” (Hilliard, 1975, p. 65). Rice is a specialty crop where successful cultivation relied heavily upon *adaptation* to nature via imported intellectual capital and the wholesale *manipulation* of nature made possible by a considerable investment of human labor.

Rice planting is a useful topic for geographic inquiry by students. True, there is an academic imperative in the form of state standards and indicators,¹ but other important motivations exist. First, the student confronts a blending of both temporal and spatial differentiation by examining (often competing) African and European histories and geographies. Second, historic texts and landscapes must be contextualized and visualized. This includes engaging primary sources and developing spatial thinking skills.

In this article we 1) provide a brief history of Carolina rice production; 2) identify and explain spatial thinking connections with the topic; and 3) connect the previous two by guiding the reader through a classroom exercise where students learn the complexities of rice planting by constructing a “huge hydraulic machine” (Doar, 1936), a rice plantation.

RICE CULTIVATION: AFRICA AND THE CAROLINAS

South Carolina’s first brush with rice, though still “shrouded in conflicting accounts” (Tuten, 2010, p. 124; Littlefield, 1995), occurred in 1685 by way of Madagascar. Known with more certainty is that Charleston-area colonists successfully grew the crop by 1690, a scant 20 years after settlement began. Growth continued along the coast and up Carolina waterways like the Combahee and Waccamaw Rivers throughout the colonial period (Figure 1).

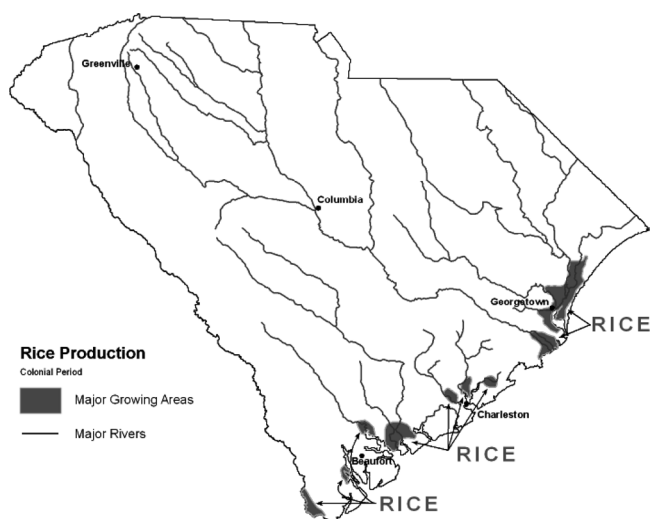


Figure 1. Areas of rice production in South Carolina during the Colonial Period (SCGA, 2010).

Production peaked in 1850 at more than 150 million pounds of rice annually (United States Census of Agriculture); the Civil War, hurricanes, pests, and declining fertility would lead toward long-term decline into the twentieth century.

Over the past 35 years scholars have focused greater attention on the role of Africans in the success of the crop, an outcome previously attributed to the ingenuity and adaptive capacity of Europeans (Carney, 2000, 2001; Littlefield, 1981; Wood, 1974). Importantly, more than the crop and a slave population survived the Atlantic passage: a knowledge system took root in the new lands as well. Early efforts at American rice cultivation were low-yielding and rain-fed. A successful rice plantation crop would require wetland cultivation, a farming system known to West African slaves (Carney, 2000) (Figure 2). Primarily identified in early scholarly works for their physical contributions such as sowing and gathering crops and clearing swamp land for cultivation, African slaves were differentiated by their familiarity with rice cultivation. In an oft-shown advertisement (Figure 3), slaves are clearly identified as coming from the *Rice Coast*, a declaration not lost on would-be slave owners intent on growing rice. The classroom activity featured in this article demonstrates the complex nature of rice cultivation in the Carolina Lowcountry, showing students “rice slaves as anything but unskilled laborers” (Carney, 2000, p. 125).

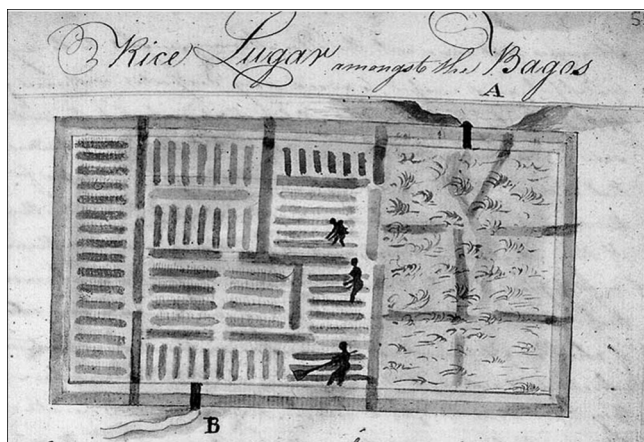


Figure 2. Samuel Gamble, a slave ship captain, illustrated Baga cultivation practices near Conakry (modern-day Guinea). The cultivation techniques shown would be adopted and adapted by slaves in the Carolinas. Gamble described the West African rice production process around 1793 (National Maritime Museum, London).

Figure 3. Newspaper advertisement from the 1780s (?) for the sale of slaves at Ashley Ferry outside Charleston, South Carolina (Library of Congress). The seventh line specifically identifies the Rice Coast as the source of these new arrivals to Charles-Town.



RICE CULTIVATION AND SPATIAL THINKING

Geographic inquiry requires more than place-name memorization inasmuch as learning a new language requires more than knowing its alphabet. Among other attempts at framing the discipline (see Pattison, 1964), the Five Themes of Geography (NCGE/AAG, 1984) remain the best known effort “to describe the core ideas of geography for classroom teachers and administrators” (Gersmehl, 2008, p. 86). This framework – organized around the concepts of location, place, human-environment interaction, movement, and place – is useful for connecting a wide array of information related to rice cultivation (Table 1), but does not by itself engage students in spatial thinking, a set of skills separate from any particular content area.

Spatial thinking combines concepts of space, tools of representation, and processes of reasoning (NRC, 2006). In short, it is the process of “thinking about locations and relationships in space” (Gersmehl, 2008, p. 98). How spatial thinking skills are separately distinguished from each other is currently debated (Gersmehl, 2008; Golledge et al., 2008; Jo and Bednarz, 2009); much less contested is the need for spatial thinking’s systematic inclusion in K-12 curriculum (NRC, 2006). Recognizing and respecting the differences noted, we incorporate a suite of spatial thinking skills identified by Gersmehl (2008) within the classroom activity described in this article.

Table 1. Five Themes of Geography and Rice Cultivation

Geographic Theme	Related Question
Location	Can people grow this variety of rice at different latitudes?
Place	How do the physical conditions (climate, soil) relate to growing rice?
Human-Environment Interaction	What manipulation of the landscape is required for rice production?
Movement	What are the connections (flows) between Africa and the American South?
Region	What features of rice production are spatially similar and could constitute a rice region?

CLASSROOM ACTIVITY: BUILDING A RICE PLANTATION

“A rice plantation is a huge hydraulic machine, maintained by constant fighting against the rivers...the whole apparatus of levels, floodgates, trunks, canals, banks, and ditches requires skill and unity to keep in order” (Doar, 1936).

In this activity, the teacher guides students through the construction of a tidal culture rice plantation. Specifically, the student reads Doar’s description of a plantation (1936) and translates that information to a blank map. The map depicts the location of the Hobonny Plantation along the Combahee River.² The student is required to think about the natural environment and appreciate how topography and moving water influence the best placement of the infrastructure described in the opening quote. Importantly, students also learn about the transfer of technology from one part of the world (Africa) to another and appreciate the contributions of Africans to the economic enterprise beyond physical labor. The following section outlines the steps needed to complete the exercise, along with detailed contextual information (historic and geographic) to assist the teacher.

Step 1

The student should briefly read the handout titled “Rice Plantation Exercise” (Appendix 1). This handout includes text by Doar (1936) and provides the student with a quick overview of the task. The task includes identifying the best location for levees, canals, field sections, flood gates, slave quarters, and the “Big House” complex (plantation owner’s home).

Step 2

The student will review the blank map (Appendix 2). The plantation setting is between the two creeks and south of the Combahee River. There is no need to draw any features north of the river. The distance between the creek mouths along the river is approximately 1.25 miles.

Step 3

The teacher describes for students the different methods of rice growing. Carolinians originally grew rice on dry land (Littlefield, 1995). This rice would have been rain-fed, similar to attempts in Virginia (Carney, 2000). Later planters began dam projects to store water to systematically flood their fields. These fields were located in swampy fresh water areas. The third effort, begun in the 1750s, relied on the tide to flood the fields (Littlefield, 1995; Hilliard, 1975). Planters established these fields in the river floodplain and great care was spent to make sure that the tide was powerful enough and the water fresh enough (low salinity) at that location. As the tide pushes water higher upstream, the raised river level was used to flood the fields. The rice plantation designed in this activity uses tidal culture. It is important to note the role of African knowledge and technology transfer, here. Europeans and Africans were working in an unfamiliar landscape and slaves, especially those from the Gambia River area, brought their knowledge of tidal culture to the Carolinas. Tuten (2010, p. 13) suggests that “Lowcountry rice culture involved some direct importation of West African skills, some European knowledge, and a good deal of local innovation.”

“...and slaves, especially those from the Gambia River area, brought their knowledge of tidal culture to the Carolinas.”

"The Carolina Lowcountry presented 'some of the most formidable agricultural land in eastern North America.'"

Step 4

The student next considers "Clearing the Field" (Appendix 1). The map assumes that the plantation area is already cleared and ready for infrastructure and subsequent planting. Here the teacher and students should discuss what was needed to clear the area. This was not an easy job. The Carolina Lowcountry presented "some of the most formidable agricultural land in eastern North America" (Tuten, 2010, p. 12). It was swampy and covered with large trees. Slave labor made it possible. Their free labor made the effort cost effective. Many of them gave their lives to exhaustion, snake bites, and diseases such as malaria. This turnover led to a continuous and brisk trade in new slaves. The clearing process was not a one-time event. Slaves grew rice, but also reclaimed other field areas during the off-season.

Step 5

Enclosing the Field

To regulate the flow of water into the fields, large banks (levees) were constructed "along the canals, rivers, or creeks." This speaks again to the knowledge needed by slaves beyond labor. Success required careful measurement and an understanding of tide levels. The student should draw on the blank map the location of levees. Ideally these would be located along the Combahee River, Hobonny Creek (to the west), and Bulls or Long Creek (to the east). A sample map is provided for the teacher (Figure 4). The levees are represented by a thick, gray line. Smaller banks would also enclose field sections and abut canals. Only the main levee is shown for clarity.

Step 6

Building Canals

As the tide lifted the Combahee River waters, canals were built to funnel water into the fields. Earth removed for the canals was used for construction embankments. The student should draw on the map the location of canals. Here the student may be tempted to connect the smaller streams as the text states that "large open canals led from one stream to another..." Importantly, tidal flow would be stronger along the river and canals should begin there. Again, Figure 4 provides an example with thick, black lines.

Figure 4. Hypothetical map constructed by a student. Careful step-by-step consideration for field development would include locating levees, canals, floodgates, field sections, and housing.

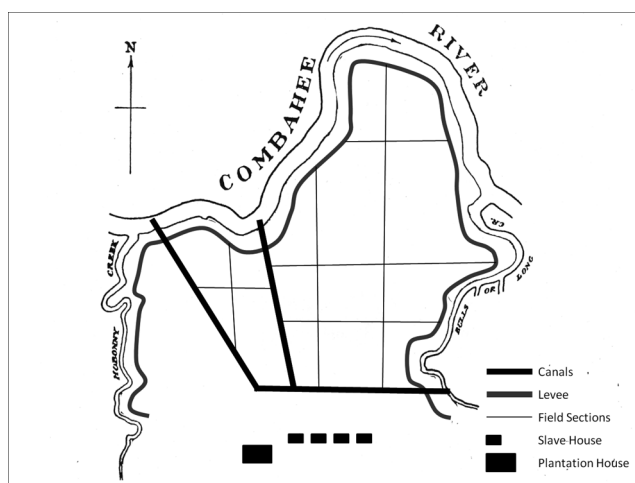




Figure 5. A “trunk” used for field irrigation. Note the swing gates located at either end. Photograph by Charles F. Kovacik.

Step 7

Placing Floodgates

Floodgates were designed to allow water to flow in and out of the fields. The student should draw these at the end of the canals. Slaves also constructed and buried “trunks” within the banks between fields (Figure 5). With swing gates on either end, trunks regulated the flow of water, allowing the planter to “control within inches the depth of water on a field at any given stage of the rice plant’s growth” (Tuten, 2010, p. 15).

Step 8

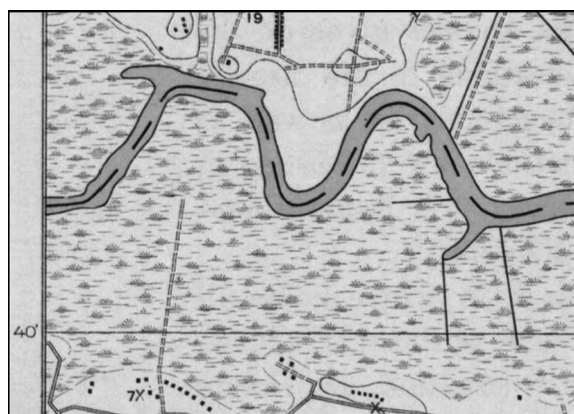
Establishing Fields

Fields also needed embankments and were constructed in tandem with canals and other enclosures. In other words, the steps shown here did not necessarily preclude others. An excellent overview of the field development process is provided by Hilliard (1975). The student should draw field sections on the map. Here the teacher should re-emphasize the skill needed by the slaves to keep sections level. Figure 4 shows an example; field sections are depicted with thin, black lines.

Step 9

Housing for the plantation owners and the slave population was also needed. Slave housing was considerably smaller than the “Big House” and generally arranged together. The teacher and students now discuss where these structures should be. Ideally they will be away from land that floods, but without elevation markers on the map, the student needs to consider the land and water flow. The creeks and river exist at lower elevations, thus water flows toward them. As the map depicts the river to the north and two creeks at the west and east, some form of higher ground (however slight) would exist at the bottom center of the map. The students may want more definitive information about the topography, and a topographic map from 1918 is available (Figure 6). Indeed, the land is higher and that is where the buildings were located.

Figure 6. A 1918 topographic map shows the Hobonny Plantation. Swamp land is shown near the river and higher land is located toward the south. Plantation housing and slave quarters are indicated by small squares.



Step 10

The student now has a completed map with likely locations for levees, canals, field sections, and housing. The teacher may show a map of the actual plantation layout (Figure 7) for comparison. How closely the two maps match depends on the level of guidance provided by the teacher. The teacher may also show a contemporary aerial image to show students where rice cultivation has left an imprint still visible in today's landscape (Figure 8).

Spatial Thinking in This Activity

Students use various spatial thinking skills to complete this activity, and we identify a few here. *Expressing Location* and *Describing Conditions* are the initial spatial thinking skills used in the activity. Students analyze the area where they will locate the rice plantation and use clues such as the directional arrow on the map to determine which direction the river flows. Students observe the two creeks surrounding the field to consider their function in this "hydraulic machine." The concept of scale is also important as the students are told the distance between the creeks. They should use this information to plan the size and location of rice fields and housing.

Comparing Locations and *Tracing Connections* are two more spatial thinking skills that are used by the students in this activity. A physical comparison of West Africa to the Carolinas requires students to think about the many factors needed for rice cultivation

Figure 7. Actual layout of Hobonny Plantation (Doar, 1936).

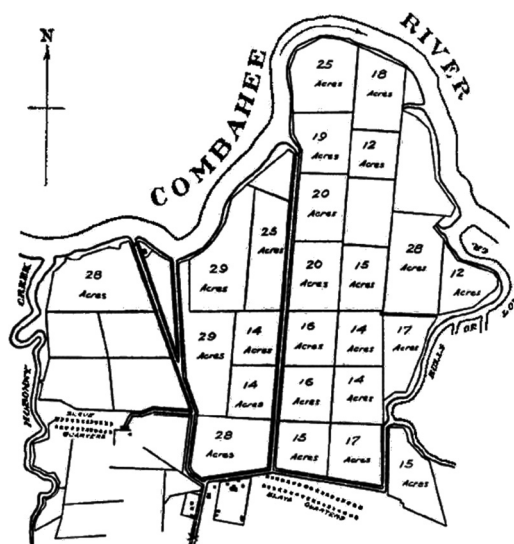




Figure 8. Google Earth image showing canals and field sections of Hobonny Plantation in present day.

success. One important difference is climate. The Senegal/Gambia area has a very pronounced rainy season that peaks in August and September, while the Carolinas see less variable rainfall year-round. This observation has important implications for the irrigation system chosen.

Describing the Area Between Places (Transition) is accomplished when siting the slave and plantation owner housing. The transition is from swampy land inappropriate for housing to elevated land. Students can infer the topographic changes from the blank map by observing the creeks, or they may use a topographic map (Figure 6). Deciding where to locate the plantation proper (an action outside this particular lesson) is also a transition exercise: the plantation must be located close enough to the coast to engage tidal action, but far enough upstream to avoid excessive saline water.

Another skill, *Analyzing Changes in Condition Through Time*, is evident. The risks involved in clearing this landscape and in keeping it cleared become more striking once students understand more fully what the landscape looked like before it was cleared and the rice fields were built. Here, the contemporary aerial image (Figure 8) shows the past as seen in the current landscape.

ADVANCED PLACEMENT® HUMAN GEOGRAPHY

This activity is applicable to an Advanced Placement® Human Geography course. A clear choice is the agriculture unit. A working knowledge of climate zones and topography are essential to understanding the different agricultural regions of the world and what crops can be grown there. Here, the selection of rice depended on African cultivation techniques and the ability to successfully manipulate the physical environment. The activity allows students to appreciate the labor-intensive nature of wet rice farming – both past and present (e.g., Southeast Asia) – and gives an example of plantation agriculture.

The transfer of agricultural knowledge has been the main focus here and can be used to explain relocation diffusion. Trunks, dikes, and levees, although constructed from differing materials, are used not only in contemporary Africa, but also in Peru. Students can compare cultivation techniques in other locations, positing explanations for observed similarities or differences.

The activity also applies to migration and culture. Concepts such as forced migration, folk culture, and cultural landscape play a key role in this activity. Students may explore

“The activity allows students to appreciate the labor-intensive nature of wet rice farming...”

housing styles (slave versus plantation owner) or folk music and other customs that Africans brought with them. Students see migration as more than the movement of people; migration entails a relocation of ideas and beliefs that impact the land, economy, and people of their new home.

“... students learn about the transfer of technology from one part of the world (Africa) to another...”

CONCLUSION

Several important outcomes emerge from this activity. First, students are required to read information from a written source and translate that information to a different medium (a map), engaging a variety of different spatial thinking skills. Second, students are required to think about the natural environment and how subtle features like slope in a swamp or moving parts like water impact human activities. Third, students learn about the transfer of technology from one part of the world (Africa) to another and the adaptations needed to ensure success in a different environment. Fourth, students appreciate the contributions of Africans to the economic enterprise beyond physical labor. Finally, given that geography is often taught as just one component of the social studies, teachers and students are able to see that a spatial perspective is useful in interpreting the past.

NOTES

¹South Carolina Social Studies Academic Standards, Indicator 8-1.6: “Explain how South Carolinians used natural, human, and political resources to gain economic prosperity, including trade with Barbados, **rice planting** [author emphasis], Eliza Lucas Pinckney and indigo planting, the slave trade, and the practice of mercantilism” (SCDE, 2005).

²The Combahee River in South Carolina’s Lowcountry is part of the ACE Basin, so named for the Ashepoo, Combahee, and Edisto Rivers that flow toward the same section of the state’s Atlantic coastline. Hobonny Plantation last grew rice in the 1920s and served as a duck hunting area in later years. Summers are hot, water moccasins and alligators inhabit the area, and other misery can be found in its insect population: “Ain’t no skeeters like Hobonny skeeters” (Tuten, 2010, p. 2).

ACKNOWLEDGMENTS

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APPENDIX 1: RICE PLANTATION EXERCISE

In this activity you will read a description of a rice plantation and then identify the placement of levees, floodgates, canals, and housing on a map. The map depicts the location of the Hobonny Plantation along the Combahee River in South Carolina.

The System:

How can we describe a rice plantation?

“A rice plantation is a huge hydraulic machine, maintained by constant fighting against the rivers...the whole apparatus of levels, floodgates, trunks, canals, banks, and ditches requires skill and unity to keep in order.”

Clearing the Field:

What is required to prepare the field?

“The length and breadth of required acreage was measured off, then the trees were cut down, logged up and moved out of the way or burnt...”

Enclosing the Field:

What is required to keep ‘desired’ water in and ‘undesired’ water out of the fields?

“The large banks outside, that is along the canals, rivers or creeks were kept a foot or two above the highest spring tides to prevent overflows.”

Building Canals:

Where should we locate canals to irrigate and drain the fields?

“There were three kinds of canals generally used on the rice plantation. First: large open canals that led from one stream to another, and served to divide one plantation from another. These were used by both of the adjoining plantations for flowing or drainage purposes, and were subject to tidal flow and ebb, as were the streams.”

Placing Floodgates:

Where should floodgates be to regulate the flow of water?

“At the end of the ... canals were put in what we planters called floodgates, to control tides.”

Establishing Fields:

How were fields constructed and arranged spatially for a successful rice plantation?

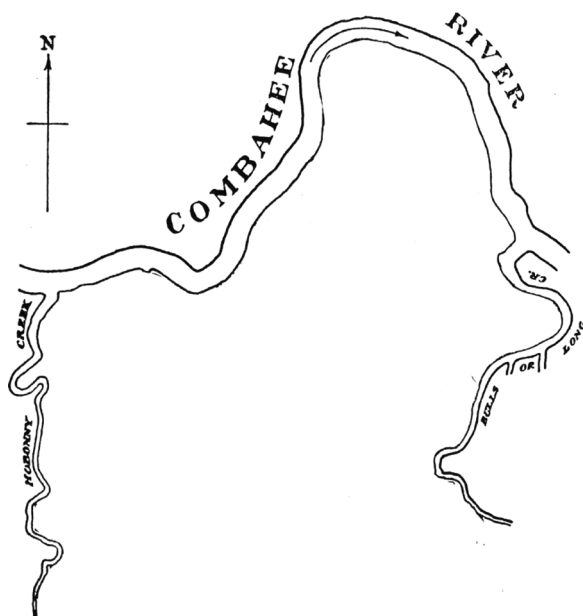
“The cross banks, dividing the different fields, were kept above the highest points of the fields, so that the entire field could be covered with water without over-topping the enclosing banks. The plantation was divided into separate fields according to the trend of the land, putting into each, as nearly as possible, sections of like level, thus securing an even flow of water over each section during the growing season of the rice ... After the land was entirely enclosed, trunks were put in ...”

Housing:

Where should housing for plantation owners, including barns and kitchen buildings, be located?

Where should slave quarters be?

APPENDIX 2: HOBONNY PLANTATION MAP



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