

## Three Sisters Garden

### Research Basis for Service Learning Project

“Agriculture is extremely vulnerable to climate change. Higher temperatures eventually reduce yields of desirable crops while encouraging weed and pest proliferation. Changes in precipitation patterns increase the likelihood of short-run crop failures and long-run production declines. Although there will be gains in some crops in some regions of the world, the overall impacts of climate change on agriculture are expected to be negative, threatening global food security.”

International Food Policy Research Institute (IFPRI) (2009) <http://www.ciwf.org.uk/factory>

“Provides today’s gardener with a guide to an agricultural method free from fertilizers, pesticides, and herbicides”, p. xi, Buffalo Bird Woman’s Garden. This book “is not the end, but the beginning. It is a foundation a viewpoint, and it presents a cultural relationship with nature that we can all appreciate and from which we can all derive benefit.” (p. xxiii).

From Jim Gilbert’s Minnesota Nature Notes

The Three Sisters garden should be planted in May when warm temperatures and showers continue the greening up process. The beginning of May is neither too hot nor too cold. The phenological changes of the plants are obvious and can easily be recorded by drawings or photos.

Since the times of Aldo and Nina Leopold scientists and citizen scientists have been recording phenological changes of plants and animals.

### Service Learning Project: Planting a Three Sisters Garden in a schoolyard plot

During Social Studies lessons we spoke with our classes about the Native American Culture and how climate change has altered their growing season. We looked at The Three Sister’s Garden as a solution to unhealthy diets that have been occurring and getting back to organic agricultural methods. In this method of planting the corn supports the beans, the bean’s roots absorb nitrogen for the corn and the squash/pumpkin leaves shade and detour weed growth and pests.

Our fourth and fifth graders planted this garden under the direction of a parent/landscaper. As diagramed in Creating a Three Sisters Garden ([www.kidsgardening.org](http://www.kidsgardening.org)), the corn, beans, squash/pumpkin were planted in a mound, with sunflowers in between mounds.

Measurement of the garden: 300” \* 24” plot on East side of school building.

## **Minnesota K-12 Social Studies Academic Standards that apply to this project:**

Grade 4: Geography of North America

Standard 4.4.1.2.1 (also Grade 5 Standard 5.4.1.2.2 )

Historical inquiry is a process in which multiple sources and different kinds of historical evidence are analyzed to draw conclusions about how and why things happened in the past.

Standard 4.4.2.4.1

The differences and similarities of cultures around the world are attributable to their diverse origins and histories, and interactions with other cultures throughout time.

Grade 5: History of North America

Standard 5.4.1.2.2

Historical inquiry is a process in which multiple sources and different kinds of historical evidence are analyzed to draw conclusions about how and why things happened in the past.

Standard 5.4.4.15.1

North America was populated by indigenous nations that had developed a wide range of social structures, political systems and economic activities, and whose expansive trade networks extended across the continent. (Before European Contact)

## **Related grade level field trips:**

Grade 4

River Rendezvous Field Trip, Dakota County.

Grade 5

Big River Journey Field Trip, Mississippi National River & Recreation Area, National Park Service.

<http://www.nps.gov/miss/learn/education/brjindex.htm>

Bdote Field Trip: Dakotas in the Twin Cities <http://www.minnesotahumanities.org/bdotefieldtrip> &

<http://bdotememorymap.org/>

## **Plants & Seeds**

Plants provided by Eagle Bluff Environmental Center:

Corn – Seneca Red Stalker, Oaxacan Green Dent, & Smoke Signals

Squash – Table Queen Acorn Squash, Crookneck Summer Squash

Pumpkin – Cornfield Pumpkin

Seeds provided by Eagle Bluff Environmental Center:

Bean – Hutterite Soup

Sunflower – Titan Italian White

Seeds provided by Native American Nation:

blue corn, white corn, & red beans

## Three Sisters Garden Resources

*Actual Three Sisters Garden sites visited:*

**Northern Great Lakes Visitor Center, Ashland, WI**

**Eagle Bluff Environmental Learning Center, Lanesboro, MN**

(Plants and seeds for our garden provided by Gretchen Engstrom, Science Education Coordinator, at Eagle Bluff)

*Online resources:*

Creating a Three Sisters Garden. <http://www.kidsgardening.org/node/12033>

How to Plant a Three Sisters Garden. <http://blogs.cornell.edu/garden/get-activities/signature-projects/the-three-sisters-exploring-an-iroquois-garden/how-to-plant-the-three-sisters/>

The Three Sisters: A Legend. <http://blogs.cornell.edu/garden/get-activities/signature-projects/the-three-sisters-exploring-an-iroquois-garden/a-legend/>

Three Sisters Garden. <http://faq.gardenweb.com/discussions/2766718/three-sisters-garden>

Growing a Three Sisters Garden. <http://www.pcrm.org/health/diets/recipes/growing-a-three-sisters-garden>

Three Sisters Garden Growing Guide. Planting Guide by Doña Ana Extension Master Gardeners - 525-6649 - <http://aces.nmsu.edu.damg>

Compassion in World Farming Climate Change in Detail. <http://www.ciwf.org.uk/factory-farming/environmental-damage/climate-change-in-detail/>

*Book resources:*

Wilson, Gilbert L. Buffalo Bird Woman's Garden – The Classic Account of Hidatsa American Indian Gardening Techniques. Minnesota Historical Society Press, 1987.

Gilbert, Jim Jim Gilbert's Minnesota Nature Notes, Nodin Press, 2008.