

# Three Sisters (agriculture)

The **Three Sisters** are the three main agricultural crops of various Native American groups in North America: squash, maize, and climbing beans (typically tepary beans or common beans).

In one technique known as companion planting, the three crops are planted close together. Flat-topped mounds of soil are built for each cluster of crops.<sup>[1]</sup> Each mound is about 30 cm (12 in) high and 50 cm (20 in) wide, and several maize seeds are planted close together in the center of each mound. In parts of the Atlantic Northeast, rotten fish or eels are buried in the mound with the maize seeds, to act as additional fertilizer where the soil is poor.<sup>[2][3]</sup> When the maize is 15 cm (6 inches) tall, beans and squash are planted around the maize, alternating between the two kinds of seeds.

The three crops benefit from each other. The maize provides a structure for the beans to climb, eliminating the need for poles.

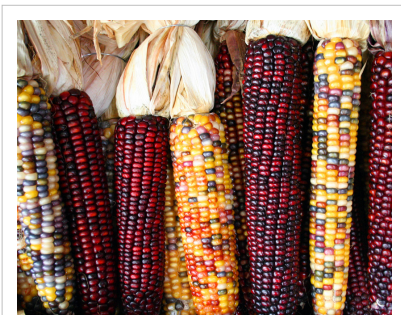
The beans provide the nitrogen to the soil that the other plants utilize, and the squash spreads along the ground, blocking the sunlight, helping prevent establishment of weeds. The squash leaves also act as a "living mulch", creating a microclimate to retain moisture in the soil, and the prickly hairs of the vine deter pests. Maize lacks the amino acids lysine and tryptophan, which the human body needs to make proteins and niacin, but beans contain both and therefore maize and beans together provide a balanced diet.

Native Americans throughout North America are known for growing variations of Three Sisters gardens. The milpas of Mesoamerica are farms or gardens that employ companion planting on a larger scale.<sup>[4]</sup> The Anasazi are known for adopting this garden design in a drier environment. The Tewa and other Southwest tribes often included a "fourth sister" known as "Rocky Mountain bee plant" (*Cleome serrulata*), which attracts bees to help pollinate the beans and squash.<sup>[5]</sup>

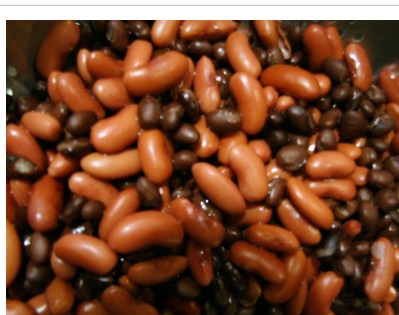
The Three Sisters planting method is featured on the reverse of the 2009 US Sacagawea Native American dollar coin.<sup>[6]</sup>



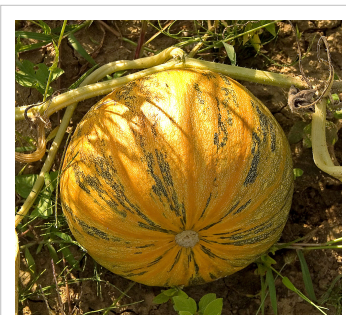
Three Sisters as featured on the reverse of the 2009 Native American U.S. dollar coin



Maize



Beans



Squash

## References

- [1] Mt. Pleasant, Jane (2006). "The science behind the Three Sisters mound system: An agronomic assessment of an indigenous agricultural system in the northeast". In John E. Staller, Robert H. Tykot, and Bruce F. Benz. *Histories of maize: Multidisciplinary approaches to the prehistory, linguistics, biogeography, domestication, and evolution of maize*. Amsterdam. pp. 529–537.
- [2] "The Three Sisters." (<http://www.abc.net.au/northcoast/stories/s1485865.htm>) Phil Dudman. October 19, 2005. ABC North Coast NSW.
- [3] "The Three Sisters." (<http://www.motherearthnews.com/Nature-and-Environment/2001-02-01/The-Three-Sisters.aspx>) John Vivian. February/March 2001. Mother Earth News.
- [4] Mann, Charles. *1491*. 2005. pp. 220-221. Vintage Books.
- [5] Hemenway, T. (2000) *Gaia's Garden: A Guide to Home-Scale Permaculture*. Chelsea Green Pub Co. White River Junction, VT. p. 149. (ISBN 1-890132-52-7)
- [6] 2009 Native American \$1 Coin ([http://usmint.gov/mint\\_programs/nativeamerican/index.cfm?action=NADesign](http://usmint.gov/mint_programs/nativeamerican/index.cfm?action=NADesign)), US Mint. Accessed 2009-07-08.

## External links

- Artistic Rendition (<http://www.naz.edu:9000/~ethnobot/ebot2003/kevinwhite/materialuse/threesister.gif>)

# Article Sources and Contributors

**Three Sisters (agriculture)** *Source:* <http://en.wikipedia.org/w/index.php?oldid=512988559> *Contributors:* Aaron Walden, Abrahami, Apothecia, Asarelah, B'er Rabbit, Belovedfreak, Brookie, Chris4682, Dalf, Dmitri Lytov, Dr.frog, DrMicro, EricStephens, FoxtrotfanII, Golfcam, Gurch, Hajor, Heironymous Rowe, Hike395, Hoshie, Jaguarlaser, Jalaber, Kay Dekker, Kazvorpai, Kerowyn, LarryMorseDCOhio, Look2See1, McGeddon, Mhockey, NoraBG, Pekinensis, Pinethicket, Quercusrobur, Ravelite, Shawn in Montreal, Smallchief, Smartse, Solace098, Soupyx, Spookymonkey, Strobilus, Unfree, Uyvsdi, Wachholder0, Walt373, Wdfarmer, 35 anonymous edits

# Image Sources, Licenses and Contributors

**File:2009NativeAmericanRev.jpg** *Source:* <http://en.wikipedia.org/w/index.php?title=File:2009NativeAmericanRev.jpg> *License:* Public Domain *Contributors:* User:RoyFocker 12

**File:Corncobs edit1.jpg** *Source:* [http://en.wikipedia.org/w/index.php?title=File:Corncobs\\_edit1.jpg](http://en.wikipedia.org/w/index.php?title=File:Corncobs_edit1.jpg) *License:* unknown *Contributors:* Original version: Image:Corncobs.jpg - Edit by User:Waugenberg (overexposed part removed)

**File:Bean vvs.jpg** *Source:* [http://en.wikipedia.org/w/index.php?title=File:Bean\\_vvs.jpg](http://en.wikipedia.org/w/index.php?title=File:Bean_vvs.jpg) *License:* unknown *Contributors:* Sam Smith

**File:Cucurbita pepo var. styriaca05.jpg** *Source:* [http://en.wikipedia.org/w/index.php?title=File:Cucurbita\\_pepo\\_var.\\_styriaca05.jpg](http://en.wikipedia.org/w/index.php?title=File:Cucurbita_pepo_var._styriaca05.jpg) *License:* Creative Commons Attribution-ShareAlike 3.0 Unported *Contributors:* DerGraueWolf, Kulac, Multichill, Uleli

# License

---

Creative Commons Attribution-Share Alike 3.0 Unported  
//creativecommons.org/licenses/by-sa/3.0/