

# Green Beans

## 1. Why is nitrogen important for plant growth?

Primary-level response:

Fertilizers typically provide three major plant nutrients: nitrogen, phosphorus, and potassium. Nitrogen fixation is important for plant growth. Nitrogen in the air passes through soil where bacteria changes it into a compound that lives at the root of legumes to support growth

Secondary-level response:

Fertilizers typically provide three major plant nutrients: nitrogen, phosphorus, and potassium. Nitrogen fixation is important for plant growth. Nitrogen in the air passes through soil where bacteria changes it into a compound that lives at the root of legumes to support growth. Fertilizers are compounds given to plants with the intention of promoting growth; they are usually applied via the soil, for uptake by plant roots, or by foliar spraying for uptake through leaves. Fertilizers can be organic or inorganic. They can be naturally-occurring compounds, or manufactured through natural processes or chemical processes.

## 2. What is riboflavin? Name three things riboflavin does for the body.

Primary-level response:

Riboflavin, or vitamin B2, is a water-soluble vitamin in the B-complex group. It is important for:

- 1) body growth,
- 2) red blood cell production, and
- 3) helping to release energy from carbohydrates.

Secondary-level response:

Riboflavin is also known as vitamin B2. It is important for building healthy red blood cells. Riboflavin is a water-soluble vitamin, which means it is not stored in the body. Riboflavin works with other B-vitamins to help your body grow and release energy from the carbohydrates you eat. Riboflavin is found in whole grain cereals, mushrooms, zucchini, and lowfat yogurt.

3. **Illustrate the two cotyledons, hypocotyl, epicotyl, and plumule that form during green bean growth.**

Primary/Secondary-level response:

*[The botanical image in the newsletter (page 2) can be used for guidance. The image can also be downloaded from the website.]*

4. **What were some of the harvesting techniques for green beans practiced by Native Americans as observed by early explorers?**

Primary/Secondary-level response:

The beans were domesticated from wild plants. These domesticated beans were light in color and had small seeds. The Native Americans domesticated beans and planted them in companion gardens. Some Native American communities grew “companion gardens” of green beans, squash, and corn. The corn supported the growing green bean vines; the green beans provided usable nitrogen for the other plants; and the squash plants covered the soil, keeping it moist and preventing small animals from damaging them. These were essential or staple crops for the families.

5. **What does the “three sisters of life” refer to in green bean history?**

Primary/Secondary-level response:

Much of Native American agriculture and cuisine was based on corn, beans, and squash, which the Indians called the “three sisters of life.” Native Americans planted seeds for these three vegetables all together in a “hill” rather than in a row.

Sources:

[www.fruitsandveggiesmatter.gov/month/fresh\\_beans.html](http://www.fruitsandveggiesmatter.gov/month/fresh_beans.html)  
[www.ipmcenters.org/cropprofiles/docs/cabeans-green.html](http://www.ipmcenters.org/cropprofiles/docs/cabeans-green.html)  
[www.mypyramid.gov](http://www.mypyramid.gov)

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