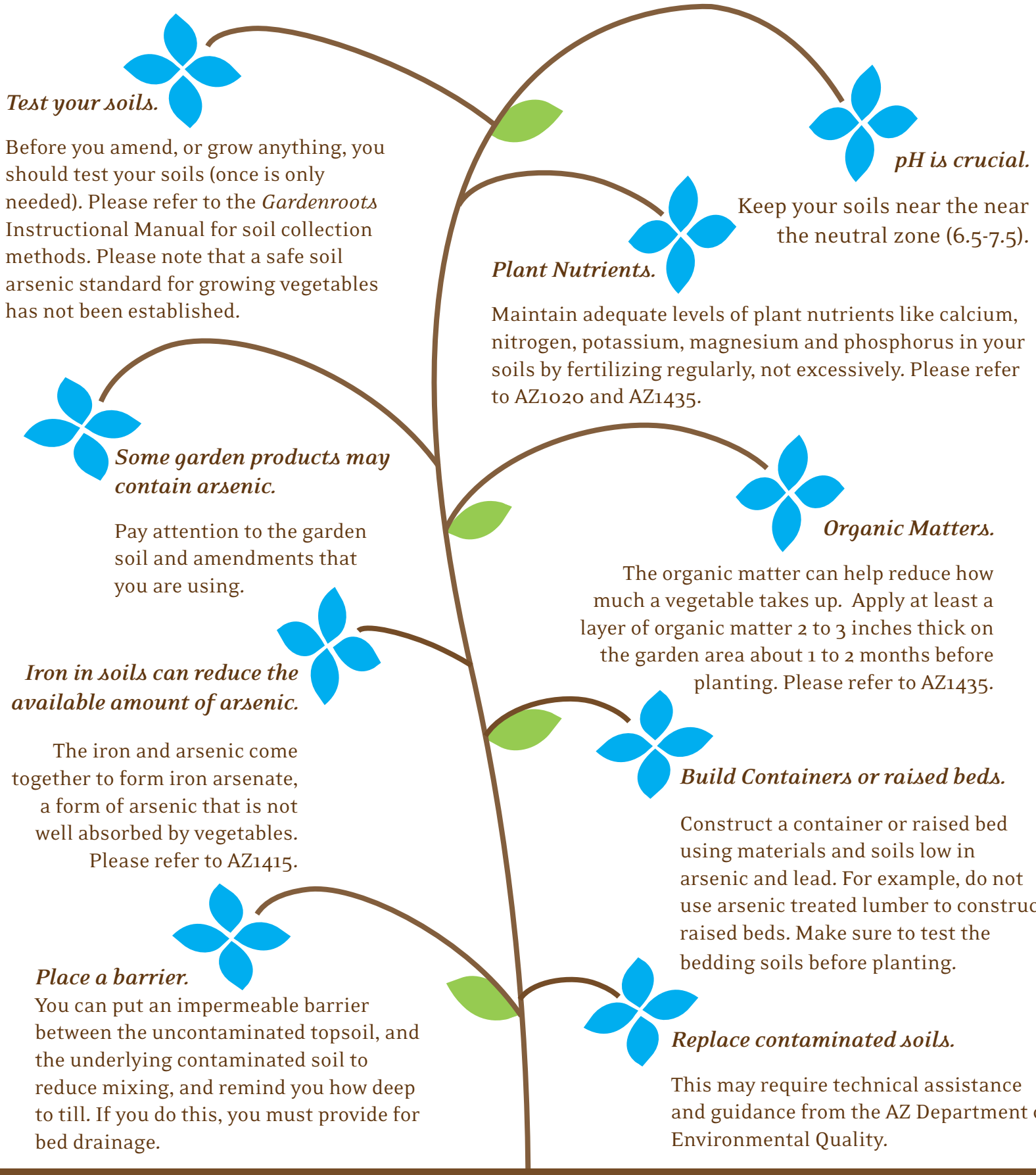
Recommended Practices for Garden Preparation: Ways to Reduce Arsenic Absorption by Vegetables



Test your soils.

Before you amend, or grow anything, you should test your soils (once is only needed). Please refer to the *Gardenroots* Instructional Manual for soil collection methods. Please note that a safe soil arsenic standard for growing vegetables has not been established.

pH is crucial.

Keep your soils near the near the neutral zone (6.5-7.5).

Plant Nutrients.

Maintain adequate levels of plant nutrients like calcium, nitrogen, potassium, magnesium and phosphorus in your soils by fertilizing regularly, not excessively. Please refer to AZ1020 and AZ1435.

Some garden products may contain arsenic.

Pay attention to the garden soil and amendments that you are using.

Organic Matters.

The organic matter can help reduce how much a vegetable takes up. Apply at least a layer of organic matter 2 to 3 inches thick on the garden area about 1 to 2 months before planting. Please refer to AZ1435.

Iron in soils can reduce the available amount of arsenic.

The iron and arsenic come together to form iron arsenate, a form of arsenic that is not well absorbed by vegetables. Please refer to AZ1415.

Build Containers or raised beds.

Construct a container or raised bed using materials and soils low in arsenic and lead. For example, do not use arsenic treated lumber to construct raised beds. Make sure to test the bedding soils before planting.

Place a barrier.

You can put an impermeable barrier between the uncontaminated topsoil, and the underlying contaminated soil to reduce mixing, and remind you how deep to till. If you do this, you must provide for bed drainage.

Replace contaminated soils.

This may require technical assistance and guidance from the AZ Department of Environmental Quality.

Arsenic and lead occur naturally in soils. It is impossible to grow plants completely free of arsenic and lead, but there are ways to reduce the amount that is available to, and taken up by your vegetables. **Above are important recommended practices.**

References

Ramírez-Andreotta, M.D., Artiola, J.F. ***Gardenroots* Instructional Manual**. 2011. Available at: http://garden-roots.org/how

The University of Arizona, Cooperative Extension. 2008. **Extension Bulletin 1435: Ten Steps to a Successful Vegetable Garden**. Available at: http://cals.arizona.edu/maricopa/garden/pubs.htm#Vegetable

The University of Arizona, Cooperative Extension. 2009. **Extension Bulletin 1020: Fertilizing Home Gardens in Arizona**. Available at: http://cals.arizona.edu/maricopa/garden/pubs.htm#soil

The University of Arizona, Cooperative Extension. 2007. **Yavapai Extension Bulletin #1: A Guide for Making Recommendations for Garden Soils**. Available at: http://extension.arizona.edu/yavapai/yavapai-county-horticulture-bulletins

The University of Arizona, Cooperative Extension. 2006. **Extension Bulletin 1415: Recognizing and Treating Iron Deficiency in the Home Yard**. Available at: http://cals.arizona.edu/maricopa/garden/pubs.htm#soil

U.S. Environmental Protection Agency, Region 9. February 2010. Fact Sheet: Safe Gardening, Safe Play, and a Safe Home. Available at: http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/ViewByEPAID/az0000309013?OpenDocument

University of California – Davis, Cooperative Extension. 2004. Publication 8121: Safe Handling of Fruits and Vegetables. Available at: homeorchard.ucdavis.edu/8121.pdf|

Washington State University, Cooperative Extension. 1999. Extension Bulletin 1884: Gardening on Lead- and Arsenic-Contaminated Soils. Available at: https://pubs.wsu.edu/ItemDetail.aspx?ProductID=13859&SeriesCode=&CategoryID=&Keyword=arsenic

gardenroots
The Dewey-Humboldt, Arizona Garden Project