Acreage Living

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In This Issue

Acreage Living is published monthly. Please share it with your acreage neighbors. Call your local ISU Extension Office for more information or contact an ISU Extension staff member listed below to suggest topics for future articles.

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Vegetable and Fruit Garden Soil Preparation

By Henry G. Taber, ISU Professor and Extension Vegetable Specialist

Folks living on a few acres enjoy raising fruit and vegetables for recreation and for the satisfaction of becoming more self-sufficient in their own food needs. Also, if there is time and interest, growing vegetables and fruits for retail sale, such as a farmers' market, a roadside stand, or a U-Pick operation can be a way to generate additional family income. A key question to ask is: "Do I have a suitable location to obtain good yields and high quality?"

Two major factors to consider in selecting a site are full sunlight and soil properties, particularly drainage. Full sunlight is essential for most vegetable production. The criterion is a minimum of six hours of full sun. If the best, well-drained location has some shade, locate cool-season crops such as lettuce, radishes, carrots, and leafy greens in partial shade. They can tolerate low light intensities. The warm-season crops, including sweet corn, snap beans, tomatoes, peppers, and vine crops need full sun.

Avoid tree and shrub boundary lines as they will rob the garden of water and nutrients. A good rule-of-thumb is to stay beyond the drip-line of trees. Walnut trees present an additional problem because they produce a toxin that can injure some vegetables such as tomatoes, eggplants, and peppers. Plant these vegetables at least 50 to 60 feet away from walnut trees.

Drainage is key

A well-drained fertile soil is best for vegetables and fruits. When drainage is poor, water replaces the air in the soil and roots suffocate. Soil-borne diseases build up and can destroy perennial plantings like asparagus and raspberries. Most soils in Iowa are well suited for gardens, though a few may have special problems needing correction before planting. The ideal soil is a sandy loam or loam that is well drained, high in organic matter, with a pH of 5.7 to 7.0 (slightly acid to neutral). Sandy soils warm

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quickly in the spring, permitting early planting and quick The heavier loams are well suited for later-season crops, such as late plantings of sweet corn, snap beans, cabbage, and tomatoes.

Online or paper copy soil survey information will help you determine the soil properties of your location. Soil texture, percent organic matter, permeability ratings, structure, and potential soil erosion factors are examples of soil properties and characteristics listed. This will help you determine whether a particular site is suitable and if special management techniques such as drainage or terracing are needed. Some soils are too wet due to poor drainage. Others are difficult to till due to high clay content and a few dry out too quickly due to the large amount of sand in the soil.

Soil too wet for tillage

Soil is ready for plowing or tilling

Compaction is the enemy

The soil should never be worked when too wet. If worked under wet conditions, the soil will become hard and restrict root growth causing unproductive plants. If a handful of soil formed into a ball retains its shape, delay soil tillage until the water content diminishes. If a handful of soil formed into a ball crumbles when pressed with the thumb, it is ready for plowing or spading.

With field equipment becoming bigger and heavier and the overuse of the tandem disk, areas of your acreage may exhibit an excessively compact soil if it had been under previous tillage. Working the soil when it is too wet is the major cause of soil compaction. Compaction can occur on almost any soil type including sands and loamy sand soils.

There are a number of ways to identify the compact soil conditions. Any time the compact soil is identified by visual means, or with estimates of the force required to put a probe into or through the soil, the soil is too compact for good growth. The soil sample probe is a good tool to determine compaction problems below a plowed or even a deeply disked zone. This method evaluates the resistance of the soil to the penetration of a probe. If resistance is great, it can be easily felt. Excessively compact soil conditions can be detected over a relatively wide range of soil moisture conditions.

You could use a spade, such as a square nosed spade, to determine the same results.

Perhaps the best evaluation method is to study plant root distribution and development patterns. Oval, flattened or otherwise deformed roots are reliable indications of compact soils. A limited number of roots or the absence of roots in a given soil zone is also good evidence of a compact soil. If you discover your best site has a compacted layer, it will be necessary to deep chisel or rip the site before general tillage and planting.

Compacted soil restricting tomato roots

Test, Don't Guess

A general soil test provides information about soil pH plus levels of phosphorus and potassium. Special tests for organic matter, zinc, and nitrogen also are available. Yearly soil tests are not necessary; testing every three or four years is generally sufficient. The exception is a sandy soil for which testing every other year is desirable.

To improve the accuracy of soil test results, the soil samples should

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represent an area that is fairly uniform in color and texture. If different parts of the site are noticeably different in appearance, it may advisable to do multiple tests. Soil testing is available from Iowa State University's Soil Testing Laboratory for $10-$15. Sample bags and instruction sheets are available at ISU Extension county offices. Any needed additions of lime, phosphate, or potash should be made prior to tillage.

Additional information:
PM 820 *Garden Soil Management* http://www.extension.iastate.edu/Publications/PM820.pdf
PM 814 *Where to Put Your Vegetable Garden* http://www.extension.iastate.edu/Publications/PM814.pdf
USDA-NRCS Online Soil Survey http://websoilsurvey.nrcs.usda.gov/app/
ISU Soil Analysis Laboratory http://www.agron.iastate.edu/soiltesting

Pasture Management and Forage Production (part 2 of 3)

By Stephen K. Barnhart, ISU Professor and Extension Forage Agronomist

Among the practical ways to boost pasture is planting more grasses or legumes into the existing pasture.

Frostseeding and interseeding are methods used to add more productive or higher quality forages into an existing sod. Frostseeding is broadcasting seed in February and very early March in Iowa. Interseeding is done with a no-till drill later in the spring (March and April) or in late summer (August to very early September) if soil moisture conditions are suitable.

Legumes can be added to existing pasture sods by either method, while grasses are better suited to interseeding.

Success of these efforts is generally better when done on a thin or less competitive sod and with follow-up clipping and grazing.

The benefits of frostseeding or interseeding are gradual and can be short-lived, unless grazing management is used to allow for 'development of the new pasture.' Production gains can be erased within a few years by maintaining continuous stocking at high stocking rates on the pasture.

The most drastic and costly planting alternative is to completely renovate the pasture. While 'starting over' with complete renovation allows you to make major changes, it often requires a few years for new seedings to become fully productive, and can leave you with low pasture production for a few years while the pasture is establishing. Risks with complete renovation are soil erosion and possible stand damage before seedlings become well established. Several ISU Extension pasture seeding publications are listed below.

Quick points:
1. Maintain optimum soil pH, phosphorus (P) and potassium (K) levels
2. Select adapted and compatible grasses and legumes
3. Consider oversowing legumes (interseeding or frostseeding)
4. Improve grazing management to maintain desirable species and forage plant vigor

Additional information:
PM 1792 *Selecting Forage Species* http://www.extension.iastate.edu/Publications/PM1792.pdf
PM 856 *Frost Seeding* http://www.extension.iastate.edu/Publications/PM856.pdf
PM 1097 *Interseeding Pasture* http://www.extension.iastate.edu/Publications/PM1097.pdf
PM 1008 *Establishing Pasture* http://www.extension.iastate.edu/Publications/PM1008.pdf

Clean Up Flooded Wells Before Using

By Tom Glanville, ISU Professor, Agricultural and Biosystems Engineering

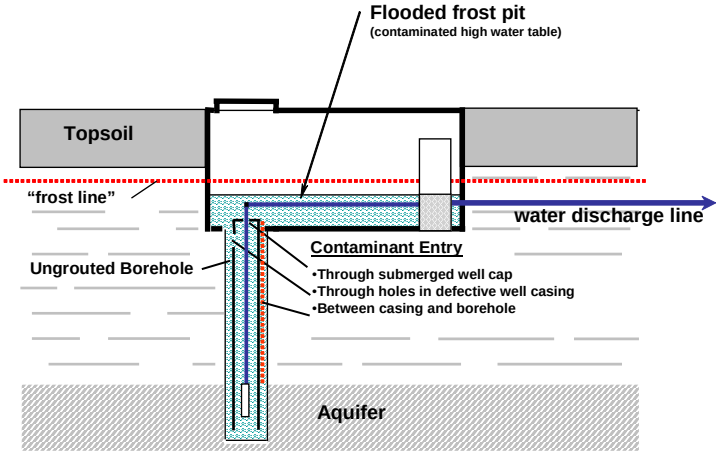
Wells that have been submerged beneath floodwater or high groundwater tables should be disinfected and tested for safety before using water from them for drinking or food preparation.

Most wells do not have watertight caps, so bacteria, silt, and other pollutants are likely to enter them if they are submerged. Wells located near streams or drainage ditches are particularly vulnerable to flooding following rapid snowmelt or heavy rainfall. Even wells located far from drainage ways can become submerged if they are located inside leaky subsurface frost pits that become flooded as shallow water tables rise during wet seasons.

To reduce the risks of well contamination caused by submergence, wells should be constructed with watertight casing that extends at least one to two feet above ground or above the highest known flood level in low lying areas. In addition, earth should be mounded around the casing to prevent ponding of contaminated water around the well. For further information on proper well construction or repair, obtain a copy of ISU Extension Publication PM 840, *Good Wells for Safe Water* from your county extension office or by downloading a copy from the ISU Extension website below.

After a well has been flooded, it needs to be sanitized using a procedure called "shock chlorination." Experienced and properly equipped do-it-yourselfers may be able to shock chlorinate their own wells, but the procedure requires removal of the well cap and dealing with electrical wiring and piping that may obstruct the interior of narrow diameter wells. For these reasons it is recommended to contact a well driller or pump installer to handle the task, as they have the professional training and equipment to perform the job thoroughly and safely.

After the well is disinfected, a water sample must be tested for coliform bacteria to ensure that the disinfection procedure was effective and that the water is again safe to drink. Until test results indicate that water from the well is safe for human consumption, use bottled water from a safe source for drinking and food preparation. If bottled water is not available, small batches of clear (not cloudy) well water can be disinfected by vigorously boiling for at least five minutes.



Additional information:

PM 840 *Good Wells for Safe Water* http://www.extension.iastate.edu/Publications/PM840.pdf
PM 899 *Shock Chlorinating Small Water Systems* http://www3.abe.iastate.edu/HTMDOCS/pm899.pdf
PM 1335 *Sampling Your Drinking Water* http://www.extension.iastate.edu/Publications/PM1335.pdf