

COMPOSTING

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x 3'. If any smaller, it will dry out too fast; any larger and there will be poor air movement and it will be difficult to turn the pile.

How can I avoid problems with unpleasant odors from the compost pile?

Odors may arise either from the addition of excessive amounts of wet plant materials like fruits or grass clippings, from over watering the pile or by not turning an actively decomposing pile periodically. A properly prepared and adequately turned compost heap will generate little if any objec-

tionable odor. Good aeration, provided by regularly turning over the materials in the pile, is essential for good, rapid decomposition. Also, keeping the compost damp but not water-logged will go a long way toward preventing unpleasant odors.

How long does it take to reach a finished product?

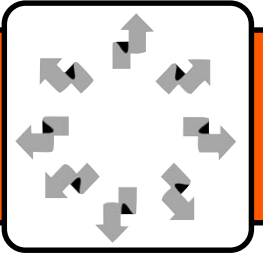
Generally, a compost pile that contains a good mixture of finely chopped materials, is turned regularly and kept moist, will be ready in about 2 to 4 months. A pile or bin left unattended and material not shredded may take a year or longer to decompose. Piles prepared in the late fall will not

be very well decomposed by the spring. When the compost is finished, the pile will be about half its original size and have a pleasant, earthy smell.

Of what value or use is the finished compost product?

Compost is used as an organic amendment to improve the physical, chemical and biological properties of the soils. For example, adding compost to garden soil will increase the moisture holding ability of sandy soils and improve the drainage and aeration of heavy clay soils. Over time, yearly additions of compost will create desirable soil structure making the soil easier to work. (MJF)

Miscellaneous



Hedge Apples

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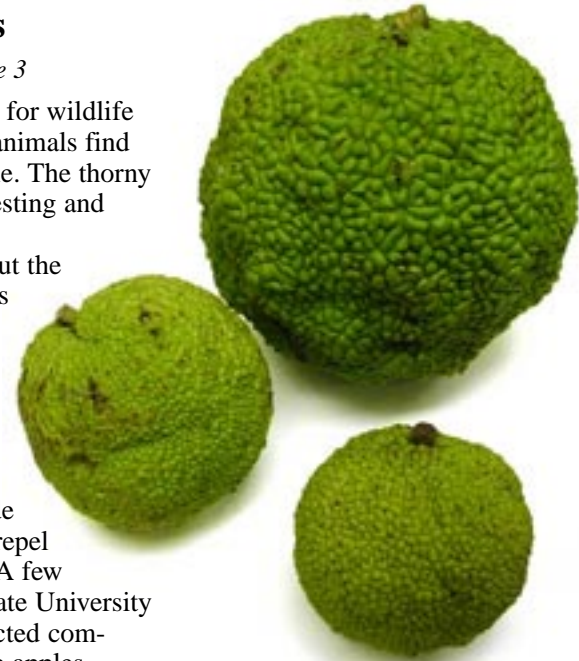
tant source of food for wildlife as most birds and animals find the fruit unpalatable. The thorny trees do provide nesting and cover for wildlife.

The belief about the use of hedge apples for insect control is widespread and persistent. It is claimed that placing hedge apples around the foundation or inside the basement will repel or control insects. A few years ago, Iowa State University toxicologists extracted compounds from hedge apples. When concentrated, these compounds were found to repel insects.

Scientists also found that natural concentrations of these compounds in the fruit were too low to be an effective repellent.

So, don't be fooled into spending much to use hedge apples as an insect repellent.

If you decide to



Hedge apples are produced by female Osage-orange trees.

pick hedge apples to check out the repellency for yourself or to use the fruit as a fall decoration, it would be wise to wear gloves. The milky juice present in the stems and fruit of the Osage-orange can irritate the skin. (BPO)

Winter Rose Care

Roses must be protected against not only low winter temperatures, but also fluctuating temperatures and winter winds. To prevent winter injury, keep your roses healthy during the growing season. Roses that have been sprayed for disease control and have been properly nourished are more likely to escape winter injury than plants that have lost their leaves because of diseases or nutrient deficiencies. Provide winter protection for the bud union of roses that have been grafted onto rootstocks.

Bush Roses

Most rose bushes are not completely hardy in northern areas and need to be protected from cold temperatures. Different types of insulators, such as soil, mulch, cones, etc., can provide necessary protection.

To protect roses using soil, mound soil around the base of canes after the first hard frost while you can still work the soil. Bring soil from another part of the garden for mounding because you may injure roots if you remove soil from around the rose plant or bed. Avoid using clay or heavy soils because they hold too much moisture.

Tie all the canes together to keep them from being wind-blown and loosening the soil

around the base of the bush. Or, you may shorten canes to reduce wind whipping. However, do not cut the canes to the soil level because they may not be killed during the winter.

After the ground has frozen in late fall, around Thanksgiving, pile eight inches of hay, straw, strawy manure, leaves or similar material over the mounded canes. Hold the material in place by covering with some soil. These materials help to keep the soil temperature constant. It is important to apply straw or other materials only after the ground has frozen to prevent mice invasion. You may also want to distribute some mouse bait around the bushes. For additional protection, place twiggy branches or evergreen boughs (from Christmas trees) over the top of the bushes. These branches help accumulate snow between the bushes, which may help reduce injury to the roots while still allowing for air circulation.

Remove protective materials (straw, soil, etc.) in spring as soon as danger of hard frost (several degrees below freezing) has passed, but before new growth appears. If new growth has already started the plant may need protection in case of frost, so replace the protective covering whenever frost is predicted.

Carefully remove the soil mounded around the bases of plants to avoid breaking off any shoots that may have started to grow. Never uncover the bushes in spring before the ground has thawed because the tops may start to grow before the roots can provide water.

Tree Roses

Protect tree roses by covering the plants with soil. Dig carefully under the roots on one side of the plant until it can be completely pulled over on the ground. Be very careful to prevent breaking all root connections with the soil. In spring after the soil thaws and danger of severe frosts has passed, remove the soil cover and set the plants upright.

Climbing Roses

Climbing roses need protection in areas where the temperature regularly drops below zero. Lay the canes on the ground, anchor them with wire pins or notched stakes, and cover them with several inches of mulch. In spring, remove the mulch after danger of severe frost has passed. (DJ)

GRAIN

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in a warming of the grain mass, which in-turn results in higher rates respiration which causes greater dry matter loss and more heat production, etc.

Various fungi species can grow on stored grain if it is above the threshold moisture content and temperature. These fungi are collectively known as storage molds. Like all aerobic organisms, storage molds also respire (they consume carbohydrates and oxygen; and release carbon dioxide, water, and heat.) Molds also lower the grain quality by virtue of their presence in the grain by adding offensive odor, taste, and dust. Some mold species also produce toxins which can be harmful if consumed in sufficient quantity. The best way to prevent loss of dry matter and a reduction in grain condition from molds is to

store only dry grain (below 15 percent moisture.) Alternatively, one can use aeration to keep the grain mass below 50 degrees F and thus extend the storage life by reducing mold activity, and respiration.

We are fortunate in Nebraska that we can usually count on cool air temperatures following fall grain harvest in most years. Given sufficient airflow rates and cool outside air temperatures, aeration can be used to cool grain in the bin. Depending on the airflow rate used, one should expect a cooling front to take many days to a few weeks to move all the way through a bin of grain. Caution: Problems can result if layers of grain in the bin vary by more than a few degrees in temperature unless the aeration fans are operating. Therefore the aeration fan should run continuously (rain or shine) until the cooling front has moved com-

pletely through the grain, and the grain is down to 50 degrees F.

Experts discuss the shelf-life of corn as the point at which one-half of one percent of the dry matter has been lost. Corn at 16 percent moisture that went into storage at 50 degrees F, followed by careful monitoring and periodic aeration to maintain a constant 50 degrees F in the grain, will have a shelf-life of about 186 days (six months.) The shelf-life drops dramatically at higher moisture contents. Corn at 18 percent moisture and a constant 50 degrees F will have a shelf life of 128 days (four months.) At 20 percent moisture and 50 degrees F, the shelf-life is only 63 days (two months.) A rule of thumb is that shelf-life drops about a month for every point of moisture above 16 percent when the grain is maintained at 50 degrees F with aeration.

Shelf-life is reduced even

more dramatically by higher temperatures. At any given moisture content, the "shelf-life" is less than half as long for every 10 degree F increase in temperature above 50 degrees. For example, for corn at 16 percent moisture content, the shelf-life (with aeration) is 186 days when held at 50 degrees, 81 days at 60 degrees, and 45 days at 70 degrees. NebGuide G87-862, "Holding Wet Corn With Aeration" presents a chart showing the shelf-life of grain over a range of moisture contents and temperatures.

Airflow Rates

Airflow rates as low as 0.1 cubic foot per minute per bushel (cfm/bu) have been successfully used to hold grain that is at or less than 16 percent moisture during the cooler part of the year. Greater airflow rates (0.33 to 0.5 cfm/bu) are recommended to hold grain that is placed into

storage at moisture contents above 17 percent or grain that goes into storage above 70 degrees F. The fractional cfm/bu airflow rates that are used for aeration can only be expected to keep grain from heating and to very slowly cool grain when air temperatures that are cooler than the grain mass. Much higher airflow rates (2.0 cfm/bu or higher) are needed to remove appreciable moisture from the grain. For more information on drying grain, refer to NebGuide G85-760 "Natural Air Corn Drying."

To access the Lancaster County Extension Grain Storage web page which contains links to the NebGuides mentioned above and dozens of additional articles and publications on grain storage, point your browser to: <http://lancaster.unl.edu/ag/crops/storage.htm>. (TD)

Insect Quiz

Answers

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- A. Centipede
- B. Pillbug
- C. Wireworm
- D. Millipede

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