

News Article

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Date: May 7, 2018

Please use by: May 17, 2018

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Understanding agriculture – growing corn

If you are one who is perplexed by simple questions about agriculture that you don't understand, read on. Today's article is a primer on growing corn, written especially for non-farmers who may have always wondered about these things.

In Whitley County, as in most of northern Indiana, the predominant crops we grow include corn, soybeans, wheat, and hay. We'll cover corn today. According to the most recent statistics available, Whitley County harvested 56,000 acres of corn in 2017, with an average yield of 175 bushels per acre. In 2016, Whitley County ranked 42nd among Indiana counties in corn production, harvesting 58,000 acres of corn at an average yield of 161.2 bu./acre.

Bushels and acres may be difficult for the average person to visualize. A bushel is the dry volume equivalent of 8 gallons. For an acre, if you imagine a football field from end zone to end zone, that is approximately 1.1 acres, just a little over an acre.

Corn is used for many things, including livestock feed, cooking oil, corn flour, breakfast cereals, sweeteners, baby food, ethanol, paints, plastics, syrup and many other uses. When we eat corn on the cob, that is a type of corn known as sweet corn; it is different than regular field corn and different than popcorn.

For any crop, we start with the soil. Farmers test their soil periodically to check for the pH (acidity or alkalinity), and for levels of major and minor nutrients. If the pH is too low (acid soil), farmers must add lime to raise the pH. Lime is basically crushed limestone. The consequence of *not* doing this is that some essential nutrients can get held tightly in the soil and are unavailable to crop plants.

Corn is an easily recognizable crop. Just like sweet corn we grow in gardens, field corn grows tall and has the familiar tassels later in the year. Tassels contain anthers, which contain pollen, the male part. Ears grow out from the middle part of the plant, and silks grow out of the tips of ears. Silks are a conduit for pollen to land on, grow a pollen tube through, and unite with one female ovule (kernel) on the cob. For every kernel of corn, one pollen grain has successfully fertilized an ovule.

Many inputs are required for a successful corn crop. Examples include hybrid seed, fertilizer, herbicides, and other crop inputs. Different production systems (conventional, organic, no-till, etc.) will vary crop inputs used and how much they cost.

You will notice as you drive rural roads that many years, you see a different crop in a particular field than was there the previous year. Farmers use crop rotation as a non-chemical defense against many insects or diseases that would otherwise thrive if the same crop was grown in the same field year after year. A simple rotation schedule is: corn one year, soybeans the next. Sometimes, wheat or other crops may be part of the rotation.

Purdue Extension experts construct annual average crop budgets for corn, soybeans and wheat. This information is available at Purdue Center for Commercial Agriculture: <https://ag.purdue.edu/commercialag>. Search for "Purdue Crop Cost & Return Guide."

Just to give you a feel for what farmers face in terms of costs per acre in a conventional production system, let's explore some of the costs outlined in Purdue's guide (updated March 2018). For average productivity soil for corn in crop rotation, farmers could spend, on average for one acre: \$121 for fertilizer, \$111 for seed, \$61 for pesticides, \$35 for dryer

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fuel, \$18 for machinery fuel, \$22 for machinery repairs, \$17 for hauling, \$12 for interest on borrowed money, and \$38 for insurance and other miscellaneous expenses, for a total of \$435 per acre. If we assume the crop yields 172 bushels per acre, and the selling price is \$3.70 per bushel, the total revenue for that acre is \$636. This leaves \$201 per acre for things like cash rent, labor, and profit. In the most recent Purdue land values survey, average cash rent for average productivity soil in northeast Indiana was \$187 per acre. That leaves only \$14 per acre. Of course, all of these are averages, but it helps a person understand some economics involved. Weather extremes, production systems, price variability, and other factors and risks all come into play.

At harvest, farmers combine corn and store the grain in a bin for future sale or for feeding to livestock, or they may sell directly to the elevator or ethanol plant. Most years, farmers also have to dry the grain using heat (you may have noticed dryer fuel in the costs above), or pay a discount at the elevator for them to dry the grain. This must be done so that grain can be stored safely without risk of spoilage.

We have just scratched the surface on what it means to grow corn. And, granted, there are a variety of management systems that farmers employ. Find Purdue Extension publications on a wide array of subjects at the Education Store: <https://mdc.itap.purdue.edu>.