



Northeast Missouri Ag Connection

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Harvesting Late Planted Soybean

A significant number of soybean acres in Missouri were planted late due to frequent rains preventing access to fields. The following information provided by University of Missouri Extension may be of use to soybean growers this year.

Q: At what stage of development are my soybeans safe from frost?

A: R7 - soybeans have reached full size and lost their green color. All pods on a plant will not reach this stage at exactly the same time. Walk fields, open pods, and observe size and color to determine the risk of damage from frost. Dr. Bill Wiebold, MU state agronomist provides more information to address this question in an article titled "What to Expect from Ultra-Late Planted Soybean" published in the University of Missouri Integrated Pest and Crop Management newsletter. The article is available online at <http://tinyurl.com/MU-late-beans>

Q: My soybeans were planted so late I am sure they will not reach R7 before frost. What is the best stage to bale?

A: If possible, harvesting at the early pod stage, when most pods are formed and beginning to fill, gives the best compromise between yield and nutritive value. If a frost is imminent, then harvesting before the frost would be better than waiting. Dr. Craig Roberts and Dr. Rob Kallenbach, MU state forage specialists answered this question on the University of Missouri Extension "2015 Weather Challenges to Missouri Agriculture" web page. For more 2015 weather challenges visit <http://extension.missouri.edu/2015weather>

Q: My soybeans were frosted before R7, how do I estimate the value of what remains in the field?

A: Observing the percentage of green soybeans and estimating the yield are two of the main factors in determining if a frost damaged field is worth harvesting. Dr. Wiebold provides more information in an article titled "Soybean Plants Killed before Maturity Possess Grain that Remains Green" published in the University of Missouri Integrated Pest and Crop Management newsletter. This article is available online at <http://ipm.missouri.edu/archive/ipcm/2009/v19n21.pdf>

Q: I am concerned my soybean yield is so low it may not be worth harvesting. How do I estimate soybean yield to estimate the likelihood yield will cover harvest expenses?

A: The following worksheet can be used to estimate soybean yield. Soybean yield

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Worksheet for Estimating Soybean Yields

Notes:

1. Read "[Decision Points While Estimating Grain Yield before Harvest](#)" found online on the IPM website (last link in the article above).
2. Column 1 assumes sample area is 1/1000 acre. Examples of row lengths required for 1/1000 acre are: 30-inch rows = 17 feet 5 inches, 15-inch rows = 34 feet 10 inches, and 7.5-inch rows = 69 feet 8 inches. If some other area size is used, adjust default in column 5.
3. Include plants with few pods in column 1 only if they represent sample area.
4. Count number of pods on 10 plants (more if warranted) in each sample area and record average in column 2.
5. Default number of seeds per pod is 2.5. Adjust if warranted and record in column 3.
6. Default number of seeds per pound is 2800. Adjust as warranted and record number divided by 1000 in column 5.
7. Bushel weight for soybean is 60 pounds. Do not adjust.
8. Field average is the average of estimates made in 8 to 10 sample areas.

Example

1. Number of plants in 1/1000 acre		2. Average number of pods per plant		3. Number of seeds per pod (default is 2.5)		4. Number of seeds per 1/1000 acre		5. Number of seeds per pound / 1000 (default is 2.8)		6. Pounds per bushel (60)		7. Estimated yield (bushels/acre)
135	X	22	X	2.5	=	7,425	÷	2.8	÷	60	=	44.2

* repeat 8 to 10 times and average

estimates may be off by 20% or more for various reasons. In addition to utilizing the following worksheet, the article "Decision Points While Estimating Grain Yield before Harvest" by Dr. Wiebold may help reduce the errors in your estimate. Find the article online at <http://tinyurl.com/MU-estimate-yield>

Source: Max Glover, Agronomy Specialist

Fall Gardening Tasks

The end of the growing season is drawing to a close. It was a challenge for most gardeners with 20 inches of rain in June in some parts of the region and nearly 18 inches in July. August arrived and the rain seemed to shut off for a while. With lack of rain, lawn grass that was used to cool, wet conditions showed signs of stress, turning brown and in some cases, going dormant. Many trees and shrubs experienced environmental stress.

Maples turned color early, which in a year like this one, is a sure sign of stress. As fall progresses, stressed, young maples should be protected from sun scald also known as Southwest injury. Southwest injury typically

occurs on thin barked trees and on the southwest side during the winter months. Living cells just inside the outer bark are damaged by daily temperature fluctuations during the winter months. Trunks of young trees should be wrapped at the end of November with a tree wrap available at garden centers and farm supply stores.

Due to stress, some lawns may need to be reseeded. Fall seeding should be completed before October 15 in northern Missouri. Grass seedlings need enough time to establish roots before cold weather arrives. Rake up leaves as they fall so they do not smother newly established lawns. Winterizer fertilizer can be applied to lawns from late October through mid-November. Garden clean-up is important to reduce the number of overwintering insects and diseases. It is important to remove and destroy diseased plants and compost only disease free plants. Fall tillage of annual flower beds and vegetable gardens may expose potential insect larvae to birds and animals of prey. This is also an excellent time to take a soil test and incorporate compost, lime and nutrients needed by many vegetables and annual flowers. Fall is a good time to divide perennials, particularly those blooming in the spring such as peonies. To keep plants from drying out, dig the plants on a cool, cloudy day. Make sure each divided section has at least one bud and some roots. Plant the divided perennials soon after digging. Not all perennials appreciate fall division, some

prefer spring. Make sure your variety is suitable for fall division before digging. A general rule of thumb is if they bloom in the spring, divide in the fall. If they bloom in late summer or fall, division is best done in the spring.

Fall is the time to plant spring flowering bulbs which must undergo a chilling period required for spring blooms. Prepare the soil before planting bulbs. Work compost or other rich organic material into the soil to a depth of 12 inches. Follow the directions on the package for depth of planting.

Pumpkins and gourds are available for fall decorating. Select pumpkins for intended use. For example, large well-shaped pumpkins are best suited for jack-o-lanterns. Small heavy pumpkins are best for pies and other dishes because they contain more pulp. Sweet potatoes can be a good substitute for pumpkins in certain dishes. Care should be taken while digging and handling sweet potatoes to avoid skinning and bruising. Even a small wound can easily become infected with decay organisms. Storage containers should be lined with rags or other soft material to avoid damage. Do not store those which are badly injured or diseased. Allow sweet potatoes to dry and cure before removing excess soil because freshly dug sweet potatoes are easily damaged.

Even though the shorter days and cooler nights of fall are fast approaching, there is still plenty left to do in the yard and garden. For more information contact your regional horticulture specialist.

Source: *Jennifer Schutter, Horticulture Specialist*

FAA Streamlines Exemption Process for UAVs

Overview

Iowa State University's Center for Ag Law and Taxation explained the new rules which the Federal Aviation Administration (FAA) proposed for integrating small commercial unmanned aerial vehicles (UAVs) or "drones" into U.S. airspace. These rules, if finalized, will allow businesses—including farms—to use UAVs in their commercial operations, subject to certain safety requirements. Although the rules will not be finalized for some time and the general ban on commercial UAV flights remains, a number of developments have arisen in recent months to begin opening the skies to many commercial UAVs, including some for agricultural purposes.

There are many potential uses for UAVs in agriculture including: crop scouting, livestock monitoring, weed identification, and soil fertility management. The lack of a

regulatory framework is hampering the widespread emergence of these practices. Until FAA regulations are finalized, farmers may generally fly their UAVs only for hobby purposes. For example, a farmer could legally fly a UAV over his soybean field to take a picture to hang on his living room wall. If that same farmer flies the same UAV over the same field to monitor the health of the farmer's soil, he has flown into impermissible territory. The latter flight, although similar to the first flight, would generally constitute an impermissible commercial flight.

Streamlined Exemption Process

In the FAA Modernization and Reform Act of 2012, Congress directed the FAA to safely integrate UAVs into U.S. airspace by September 30, 2015. With *proposed* rules for small UAVs not issued until February 2015, it is apparent that FAA will no doubt miss this deadline. In response, the agency has turned to the interim solution of integrating commercial UAVs into U.S. airspace on a case-by-case basis. Since initiating this process, hundreds of commercial UAVs have begun operating and many more will likely soon follow.

The main barrier to flying a UAV commercially is the requirement that all commercial aircraft possess an "airworthiness certificate." This process is cumbersome, and the FAA has only issued *special* airworthiness certificates to certain experimental UAVs and to UAVs used for certain restricted operations in the Arctic. However, Congress has granted FAA the authority to wholly exempt certain UAVs from the airworthiness certificate requirement. Called a "Section 333 Exemption," the FAA can grant this authorization to low-risk commercial UAVs. This exemption is appropriate where a UAV—because of its size, weight, speed, operational capability, proximity to airport and populated areas, and operation within visual line of sight—does not create a safety hazard.

FAA issued its first Section 333 exemption to a commercial UAV in September of 2014. As of January 2015, FAA had granted only 13 exemptions. However, in April of 2015 the FAA announced a new streamlined exemption process, and the number of Section 333 exemptions exploded. Under the streamlined process, the agency began issuing a "summary grant" for requests that are similar to a previously granted exemption. Under this new policy, FAA granted 1,208 exemptions as of mid-August 2015.

The Section 333 exemptions are aircraft-specific and require the operator to follow certain requirements. For example, operators must conduct a pre-flight inspection, operate the aircraft within their visual line of sight (or that of a partnering visual observer), fly at less than 400 feet above ground, and not exceed the speed of 100 miles per hour. 3

As part of the streamlined process, FAA now allows those operating under exemptions to hold only a recreational or sport pilot certificate, as opposed to a private pilot certificate. Also, FAA no longer requires a medical certificate. Rather, those operating under an exemption need only a valid driver's license to satisfy medical requirements.

In conjunction with the new summary exemption process, the FAA also created a streamlined Certificate of Waiver or Authorization (COA) process. This gives an operator permission to fly in a particular block of airspace. Typically, an operator has to submit a COA application and wait for a response, which usually takes around 60 days. Under the new streamlined process, FAA will grant to those operating under Section 333 exemptions a "blanket" COA. This allows operators of aircraft weighing less than 55 pounds to fly anywhere in the country (except for restricted airspace) as long as they stay at or below 200 feet. Operators wishing to fly up to 400 feet must still follow the traditional COA request process.

Since initiating the streamlined processes, FAA has granted exemptions in response to more than 100 petitions citing agricultural uses. This number is sure to increase in coming months. The FAA website contains a running list of granted Section 333 Exemptions. Instructions for filing a petition for an exemption are available <http://aes.faa.gov/Petition/>

Unauthorized Flights Expanding

Expanding along with the number of authorized commercial UAV flights is the number of *unauthorized* UAV flights. In mid-August, the FAA announced that traditional aircraft pilots have reported a record number of "close calls" with unauthorized UAVs. The FAA stated that it is working closely with local law enforcement communities to identify and investigate unauthorized UAV operations. The agency warned that unauthorized operators could be "subject to stiff fines and criminal charges, including possible jail time." Bottom line, the skies are opening up to UAVs. Hobby uses are increasing and commercial uses are expanding. But, with increased usage comes increased enforcement. Operators are reminded that even hobby users must follow certain guidelines, such as flying safe distances away from populated areas.

(article content adapted from Kristin Tidgren's article, Center for Ag Law and Taxation, Iowa State University)

Source: *Mary Sobba, Ag Business Specialist*

