

Flood Recovery for cropland

Webinar Q&A

Following the Sept. 12 Flood Recovery for Cropland webinar speakers responded to viewer questions. These responses have mostly been grouped according to webinar topic. Questions outside of these topics are included at the end.

Access the archived webinar, hosted by Iowa State University and the University of Nebraska–Lincoln, in the Crops section of each state's flood information website.

ISU: <http://www.extension.iastate.edu/topic/recovering-disasters>

UNL: flood.unl.edu

Sedimentation and Debris Removal

– Shawn Shouse, agricultural engineer, Iowa State University

Do we have an idea of where levees will be repaired and where they will not, before we spend money on repairing soil?

The Army Corp of Engineers has not yet announced levee repair plans or priorities. The Omaha office of USACE Website is www.nwo.usace.army.mil.

What should the moisture content of soil be before it can be safely used in levees?

Soil conditions best for compacting in levee repair would be near field capacity (drained but damp). See proctor density curve for actual advice. Repairing holes in levees is complicated. Consult a qualified engineer for best results.

Managing Post Flooding Soils: Flooded Soil Syndrome

– Mahdi Al-Kaisi, extension soil management/environment specialist and John Sawyer, extension soil fertility specialist, both in the Department of Agronomy at Iowa State University

Will ammonium acetate help release P & K in soils in fallow syndrome?

The flooded soil syndrome is not solely associated with the retention of P, and is not an issue with K. For P, the syndrome is likely more associated with the absence of active plant root systems that promote growth of the arbuscular mycorrhizae (AM) fungi that assist with plant P uptake. Ammonium acetate will not make P more available.

How long will it take for AM recovery under normal spring conditions, i.e., late planting corn into a cover crop?

The AM recovery will likely continue into the growing season as crop growth continues.

Is there a soil test P level where no extra P will be needed?

The suggestion is to apply P no matter the soil test level. If the P availability is reduced due to the flood/dry cycle, or the reduced AM, then a P application close to or at planting is suggested to help overcome those issues.

Will iron chlorosis be more of a problem on flooded soils with soybeans?

Iron chlorosis in soybean is associated with high pH, alkaline conditions, with free carbonates. That soil condition is not going to be changed with flooding. Iron is more soluble in anaerobic conditions, but re-aeration would change the available iron back to original or perhaps lower levels as solubility would return to “normal” levels or be temporarily reduced due to soil chemical reactions. If the soil does not have alkaline conditions or free carbonates, flooding should not affect iron chlorosis potential.

If testing soils in the spring, does soil temperature matter?

The soil temperature at sampling is not critical, but what can be is the recovery from frozen conditions. Soil freezing can influence the soil K test, so some time in the spring for the soil to “recover” after thawing would be best. Also, later spring sampling would be helpful to have a greater chance for more normal soil test P.

What form of N would be best? (UAN, ammonia, etc.) Soil bacteria available for N conversion to plant available forms?

The nitrogen fertilizer product, per se, is not critical. What is more important is the management of the product to be applied (assuming for corn). That is, best practices should be used for the product of choice, rather than any specific product choice following the flood. The soil bacteria will recover and have typical N conversions/processing. Nitrogen application should not be needed for soybean, but inoculation is recommended.

Cover Crops for Soil Health

– Paul Jasa, extension engineer, University of Nebraska–Lincoln

How do you decide on seeding a cover crop when soils are still wet. We want plant growth, but trafficking wet soils is a concern too.

For wet soils, use as lightweight equipment as possible. Driving on wet soils will create wheel tracks so use as wide equipment as possible to minimize the number of passes. A small tractor pulling a dry fertilizer spreader with a 60-foot pattern will cause less compaction than a larger tractor pulling a 30-foot drill. If using a light tillage implement to incorporate the seed, drive in the same tracks as the spreader whenever possible.

Tilling wet soils will create compaction and should not be done until the soils dry more. The later the cover crop is seeded, the larger the percentage of seeds of a winter annual crop like cereal rye or winter wheat. Consider early spring seeding of a cool season spring crop if the soil is too wet to drive on this fall.

Are there ATV seeders that would work for cover crop seeding?

There are ATV seeders available, usually powered by a 12-volt motor. ATVs usually are light weight with low inflation pressure tires, an excellent combination for driving on wet soils. Unfortunately, these ATV seeders have fairly small hoppers and don't spread a very wide swath, so many trips will be needed if the field is large. However, they may be ideal for successive seedings over time as the water recedes. There are also three-point mounted seeders with larger hoppers that spread a wider pass. When used on a small tractor, till may be a good option. Similar small spreaders may be available in the lawn and garden markets and for material spreading, like de-icers.

Is aerial cover crop seeding economical? What cover crops work best with aerial seeding?

Aerial seeding isn't recommended on bare ground. The seeds may not have enough seed-to-soil contact for germination. Even if they do germinate, they may not have enough moisture to become established. As the seeds are only laid on the surface, the winter annuals won't develop a good root system and probably wouldn't survive the winter. If the soil is dry enough, a light tillage operation to incorporate the seeds may reduce many of these problems. Aerial seeding works best when there is a residue cover or mulch to protect the seeds from drying out.

How well do cover crops work for dewatering, and which cover crops are best.

A winter annual such as cereal rye, winter barley, or winter wheat should be established as soon as possible to use water in the fall. When the weather warms up in the spring, they will use a lot of water if allowed to grow a considerable biomass. Oats seeded in the early spring also will use a lot of water. If it looks like it will be a wet spring, kill the cover crop late so it can continue to use water and provide biomass.

What will be the effects of no-tilling cover crops like wheat into flooded ground?

Wheat or any of the winter annual grasses will have a fibrous root system to provide some soil structure and stability. They should be no-tilled as tillage destroys soil structure and stability.

How about cattails as a cover crop?

Cattails are wetland plants that grow in saturated soils, helping dewater the soil. Its vigorous root system anchors the soil and helps reduce erosion. However, as a wetland plant, cattails

don't have a lot of micro-biological associations with things favorable for cropland. They will produce a lot of above ground biomass which helps protect the soil, but they need to be killed before they reach maturity as the residue is fairly rank. Cattails don't spread very far from the saturated soil areas so they don't provide cover crop benefit over other portions of the field.

Rich Pope, county extension program coordinator, Harrison County, Iowa: When tillage returns, cattails will no longer be a problem. Cattail seed is everywhere, it is just waiting for the environment we got here this year, and will go away.

Land is still under water and corn planting will start April 10. Will cover crops benefit?

Corn planting will start April 10 if the soil is dry enough. Growing a cover crop will help dewater the soil if you can get it established. A fall seeded winter annual grass crop (wheat, winter barley, cereal rye) or an early spring seeded cool season grass crop (oats, spring barley, spring wheat) will dewater the soil and help provide soil structure. The living roots of the cover crop helps rebuild the soil system before the cash crop is planted, reducing flooded soil syndrome. Even a month of growth will benefit the cash crop.

What are your thoughts on seeding bin-run soybeans (outdated seed, etc.)?

The most economical cover crop seed is any seed that you have left over or bin-run seed you have on hand. However, soybeans are a summer annual crop and won't provide enough growth as a cover crop seeded in the fall or early spring. Austrian winter peas or Frostmaster winter peas seeded this fall or spring peas, spring lentils, or forage peas seeded next spring would give you much more growth and nitrogen fixation as these are cool season legumes. For good nitrogen fixation, make sure to double inoculate the seed with the proper inoculant for the species. Bin-run winter wheat would provide inexpensive cover crop seed and good cover crop benefits.

What cover crop would you recommend to stabilize sand short-term, then long-term?

For a quick cover crop now, oats would probably be best for reliable growth from surface seeding with light incorporation or from drilling. For long-term use, consider winter annual grass crops such as winter wheat, winter barley, or cereal rye. A mix of oats with the winter annual grass(es) is better yet. Cover crop cocktails always perform better because of the added diversity.

In southeast Nebraska we likely won't get leveling done until February. Would a cover crop still help before corn/soybean planting in May?

No matter when the field is ready, getting a growing cover on the soil is important to recover the biological life. Oats, mustards, common vetch, spring wheat, forage peas, and others are options for late February, March, or April seeding. Even a month of growth will provide benefits to the following corn or soybean crop.

How successful is dormant seeding of oats vs. early spring seeding?

If the dormant seeding is drilled in dry or frozen surface soil at least an inch deep, it may work fairly well. However, early spring seeding will provide a better and more consistent stand if conditions are proper for seeding.

How much time is needed for tuber-type cover crops (i.e., oilseed/tillage radish) to establish a "useful" root?

Radishes seeded now will still do a lot of good with a fair sized root. It would be nice to have 30-60 days of growth. Radishes will withstand temperatures down to about 25°F or so and will continue to grow after the first few light frosts. If seeded in the spring, they won't develop the large diameter root, but they will still provide good root activity to help soil recovery. A forage radish would be a better choice than an oilseed radish for spring seeding because it provides more top growth and a more extensive spreading root system.

Do we need to till the soil or can we no-till? In our experience, we need to open up the soil to let it dry?

Full width tillage should NOT be done unless the soil needs to be leveled. Tilling a wet soil causes compaction and breaks down soil structure. The tillage pan will reduce infiltration of the spring rains and hold the soils wetter longer. A drill will open up the soil enough while establishing the cover crop. The growing cover crop dries the soil out and the decaying root channels, once the cover crop is killed, allow water to infiltrate better.

What's a good source of information on phytotoxicity of cover crops?

I'm not aware of such a listing for all the cover crops. A Google search on the cover crop of interest may provide some observations. Depending on the situation, phyto-toxicity can be a positive or a negative and a cover crop may be toxic to some following crops and not to others. For instance, it has been suggested that a mustard cover crop can reduce soybean cyst nematode and mustards are used as a bio-fumigant in organic production. As a negative, the decaying green ooze of a dying annual ryegrass cover crop is toxic to germinating grass crops. When using ryegrass or cereal rye as a cover crop, make sure it is killed two to three weeks before planting corn. This isn't a concern when planting soybeans, a broadleaf, into a dying rye cover crop.

The cover crop chart shown during the presentation is available as a PDF at: www.mandan.ars.usda.gov or <http://www.ars.usda.gov/Services/docs.htm?docid=20323>.

Additional in-depth information on cover crops can be found at: <http://www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition>

Economics, Leases and Crop Insurance On Flooded Land

– William Edwards, extension farm management specialist, Iowa State University

Is a cover crop considered double cropping by insurance carriers?

Only if it is harvested or grazed before September 1.

How will county assessors deal with acres that have been flooded/damaged?

That will vary from state to state and county to county. I don't know what effect it will have.

Iowa DNR charges an annual well tax. It is \$135 and center pivot users get hit every year. Will there be waivers granted to well/pivot owners who have incurred flood damage?

Please contact the Iowa DNR for an answer.

If ground is in a long-term lease, for example three to five years, is there a legal option for breaking or altering this lease arrangement?

Any lease beyond one year in length must be in writing (at least in Iowa, I assume the same applies in Nebraska), so you should read the wording of the lease. The owner should have the obligation to return the property to its original condition, or to adjust the terms of the lease if it can't be.

What are typical landlord/tenant arrangements for fall cover crop planting costs?

If it is a cash rent lease, the tenant would pay those costs. If it is a 50-50 crop share lease, the seed and other inputs would be divided equally, and the tenant would provide machinery and labor, just like any other crop.

Pathogens

If we have flooded or hail damaged corn with some mold showing on the ears, will aflatoxin be a problem?

Rich Pope, county extension program coordinator, Harrison County, Iowa: Aflatoxin is most typically associated with dry conditions. Other parts of Iowa may have more issue (don't know about Nebraska), but it's likely not as big a concern in the flooded counties.

Does extended time of submersion have any effect — good or bad — on soybean cyst nematode (SCN) populations?

Rich Pope, ISU county extension program coordinator, Harrison County, Iowa: SCN will still be there if it was before, it will mostly be like a non-susceptible crop (the flood year). Cysts are tough as you know.

John Wilson, UNL Extension educator in Burt County, Neb.: Part of this may depend on the amount of erosion or deposition that occurred on the field and also how close the field was returned to its original grade in the case of deposition. Also, I would expect that any field that had water on it is likely to have SCN, even if it didn't in the past. The cysts can float and be moved with the water. Producers will want to monitor this by visual observation and soil testing to confirm SCN's presence.

Other

We had several hundred acres of native prairie that has 2 to 3 feet of flood water on it. What should the strategy be to restore this to a pre flood condition?

Al-Kaisi: Prairie system is a resilient system and will recover from such flood. As a native system in the Midwest, prairie system exposed to such events in the past. Just let the system correct itself. No need for any change in management except some cleaning from debris and other objects.

Rich Pope, county extension program coordinator, Harrison County, Iowa: All you can do is wait. No doubt, rip gut and other riparian adapted species may make it OK and there is likely a good seed bed so you need to wait and see. Do not fertilize prairie areas at all. That only stimulates competing stuff you don't want.

I flood out at 80-90,000 cfs. Does anyone have an idea of what the Army Corps of Engineers will do next year? Don't want to waste my money or government money if this will happen again.

John Wilson, Extension Educator in Burt County, Neb: A local farmer was at a meeting with the Corps of Engineers the other day and their response was they will not deviate from their guidelines until told to do so by Congress.

Shouse: Annual peak stream flow for the Missouri river at Omaha can be found at

http://nwis.waterdata.usgs.gov/usa/nwis/peak/?site_no=06610000.

This will give you an indication of how often the flow has exceeded your criteria in the past. The USACE Missouri River Mainstem Reservoir System Master Manual can be downloaded from UNL at

<http://digitalcommons.unl.edu/usarmyceomaha/71/>

or the Army Corp of Engineers at

<http://www.nwd-mr.usace.army.mil/rcc/reports/mmanual/MasterManual.pdf>.