Farm Disaster Preparation Certificate

Section 2

Disaster-Proofing Your Farm

Instructor Manual

Version 2.0 – December 2014

Learning Objectives

At the completion of this unit participants should be able to:

- Identify fire hazards unique to their operation
- Understand the role of accelerants in the spread of fire
- Understand the risks associated with agricultural operations being exempt from building codes

Title Slide 1: Disaster Proofing your Farm

Section 2 will provide a set of tips and recommendations that apply to just about any farm . . .a greenhouse or dairy and everything in-between.

Farms need to disaster-proof themselves. Period.

Slide 2: Top **12** Tips for Disaster Proofing Your Farm

Most disaster resources for farms will offer anywhere from 150 – 300 actions to be disaster ready. It's nice to know there are so many things you could do, but that is the problem.

Toooooo much to do!

Here, we will just deal with 12 of the tips that will give you the biggest readiness bang for the buck. Over the course of few years, we have sorted through to get some of the best actions possible.

Most of these tips are about readying the farm before a disaster, but some of them are more about helping emergency services assist your farm. If you make their job easier, the impact of a disaster will be reduced, just like we said we would at the beginning.

Slides 3-6: Tip #1 Clearly Post the Farm's 911 Address at the Farm's Entrance

3: Read Tip #1

4: This photo is an example of a 911 address. Each mailing address has been assigned a unique number, to both streamline mail delivery and improve emergency response to rural properties.

Your farm should have a road address sign that looks a lot like this one at the driveway. If you don't, you are risking a delayed response, or in a disaster, being harder to find and assist. Or disaster response crews go to the WRONG farm because yours was not marked and they had never been there before.

Ask your fire department or the county emergency services office about how to obtain an E-911 address and a green sign. The sign costs about $15.00.

Get one and put it up**.** (Don't just have it lying around).

Make sure your green marker sign is posted and clearly visible from both directions on the road.

At night, check to make sure it reflects properly . You may put numbers on your mailbox, but you should still have an official green address marker sign posted. The E-911 address is part of a grid system, and allows a dispatcher to send services to your farm immediately. Pretty handy in a community disaster, don't you think?

5: Any contrasting farm sign with a numerical address is proper. But sometimes, the situation requiring a disaster response or coordination is not where you get your mail.
It might be an old barn down the road, a grain storage area or a field.

6: Any field that has a driveway can be assigned an E-911 address.

The hay field in this photo is assigned number "5341" even though there is no house, barn, or mailbox. It is just a farm field.

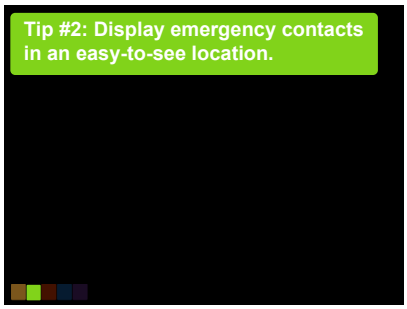
However, in the event of a disaster or emergency, this address will pinpoint exactly where responders need to go. This is important for barns with separate driveways or new

properties picked up by your farm. It might be easy to get to the home farm, but if the fire, or barn collapse or roadway accident is 2 miles away in another location, a 911 address will really speed things up and possibly reduce the impact of a disaster.

(It helps with general farm planning too, because remote fields can be identified by road address, not just the common name, like "Borthendahl's long field.")

Instructor Note: Notice the 'conversational tone' of the slide script annotations. There is a lot of information in these slides – keep participants' attention with varying tones of voice and a conversational tone.

Slides 7-8: Tip #2 Display Emergency Contact Information in and Easy-to-See Location



7: Read the Tip

8: Emergency contacts should be posted near all telephones and on office doors.
Include contact information for the local fire department, police, hospital emergency room, poison control, veterinarian, and equipment technicians. You don't want to have to look up numbers when time is short or communications unreliable.

It is also a good idea to get this laminated.

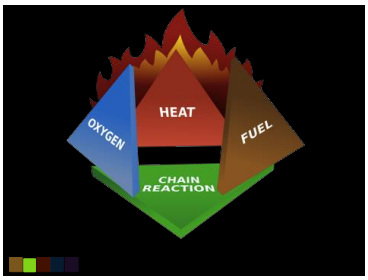
Once the emergency contacts have been updated, the farm should hold a meeting for all employees. At this meeting the farm should identify each emergency contact and where this information can be accessed.

In addition, employees should program the key contacts into their mobile phones should an emergency happen in the field.

[The sheet depicted above is from http://www.prep4agthreats.org . . . It's pretty good.]

Slides 9-20: Tip #3 Find and Fix Fire Hazards

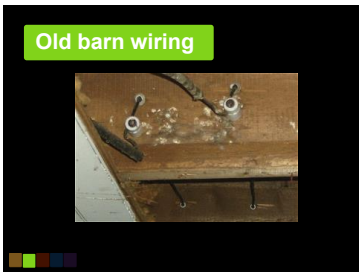
9: Read Tip #3



10: Just a little reminder about what fire is . . .

Fire requires oxygen, heat, and fuel to continue to burn. Once combined, they continue a fire in a chain reaction, until one is depleted. Removing any one of these three elements can stop a fire.

On a farm, we tend to have plenty of oxygen, so what we want to control is the source of heat and the fuel.



11: Old barn wiring can be (and often is) is a source of intense heat.

Farm building wiring gets old and corroded. When wires get corroded, there is increased resistance and high temperatures at wiring connections. This can result in ignition of surrounding combustible materials, like wood, dust, hay, or rodent debris.

12: Dust and debris are both a source of heat and a fuel. Dirty equipment can overheat, especially appliances in barn settings like dryers and refrigerators.

Heat generated from electric motors can create a hazard especially if lint traps are not routinely cleaned or if excessive cobwebs and dust have built up around the motor.

13: Look familiar?

Piles of junk like this allow fire to move easily from one structure to another, placing a lot of your farmstead at risk.

Look between your outbuildings for dead vegetation, wood, or other debris piles and clean them out. Great chore for a day when you can't get to the fields due to recent weather.

14: Fuel for a fire is sometimes classified as an accelerant.

Accelerants can greatly increase the speed at which a fire will spread.

15: Store all flammables in a designated area. If they are spread out, the chances of something going disastrously wrong go way up.

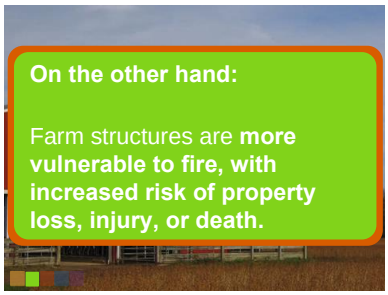
This could be a separate flammable storage unit, a flammable storage cabinet, or posting warning signs in areas where flammables are being stored.

Flammables should not be stored near livestock or electrical motors.
Above all, smoking should be strictly prohibited in your flammable fluid storage area.

16: Farms should recognize the benefits and drawbacks associated with building code exemptions in New York.

17: This is what is currently exempted from fire code in New York – bona fide agriculture structures [Read listed structures]

18: Benefits include the ability to quickly construct new structures with reduced cost.

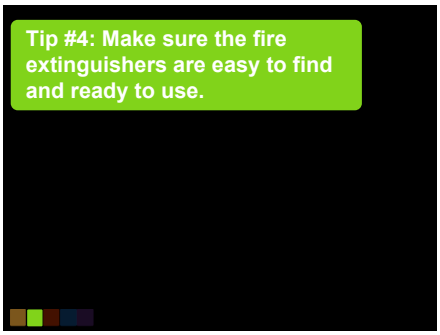


19: However, these exemptions often result in increased risk and susceptibility to fires, which increases the likelihood of property loss and personal injury or death in the event of a fire.

20: This wraps up Tip #3 – Find and fix fire hazards.

We will stay with the fire theme for a bit though . . .in making sure you can extinguish a fire when needed and avert a fire-related disaster.

Slides 21-28: Make Sure the Fire Extinguishers are Easy to Find and Ready to Use

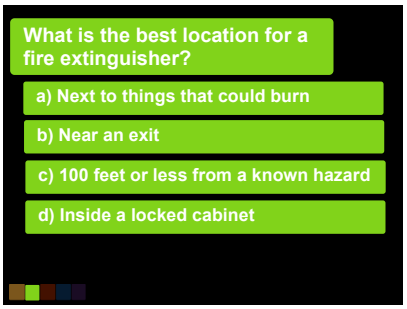


21: Read Tip #4

22: The extinguisher type recommended for farms is **type ABC.**

These are multipurpose Class A-B-C dry chemical extinguishers. They can be used on virtually any fire at the farm, they are widely available and most cost-effective.

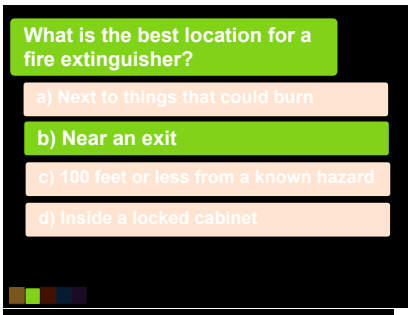
They do not freeze in winter and can withstand outdoor conditions encountered on farm machinery.



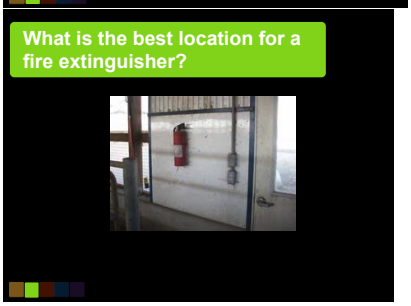
23: Here is a quick quiz about placement of fire extinguishers on your farm . . .

Question for Participants:

Which choice is the best answer about placement?

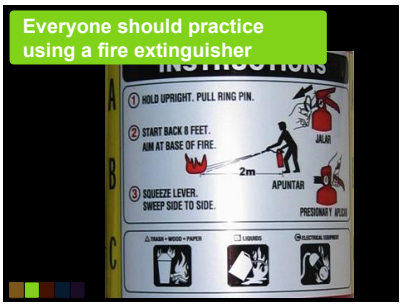


24: Fire extinguishers should be placed conspicuously near an exit – easy to find with signs and an orientation.



25: This photo is an excellent illustration of what we mean by "near an exit" and "conspicuous." This one is hard to miss.

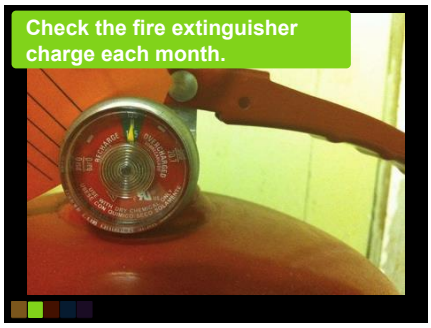
Your extinguisher should be just as easy to find.



26: You have the right extinguisher, in the right location. Do you know how to use it?

Ask participants if they have ever had to use a real fire extinguisher in a real emergency. Of those who have, did they know exactly what they were doing?

The NY Center for Agricultural Medicine and Health provides fire safety and extinguisher use training for farm employees, using a real fire and real fire extinguishers.



27: Ensure the extinguisher is fully charged and ready for use

Make sure the indicator is in the operating range (the needle should be located in the green portion of the gauge).

28: Blank slide . . .we are moving away from fire things to Tip #5, having to do with the risk of building collapse.

Slides 29-37: Tip # 5: Make Sure Buildings are Constructed to Prevent a Collapse

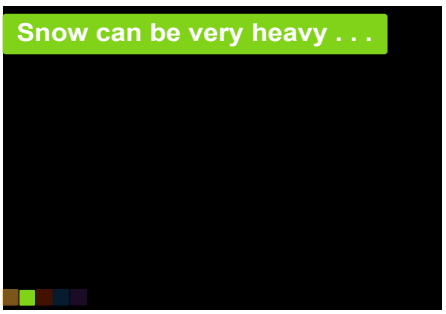
29: Read Tip Slide.

In this section, we will look at barn collapse disasters on farms in New York.

The main point is to make sure that during construction, and on a regular basis, to take roof integrity seriously.

30: Snow is light and fluffy sometimes, but when it accumulates and then thickens to a dead weight on your barn roof, disaster can happen.

This slide is another view of the King's Ransom Farm north of Albany when a major barn collapse occurred in early February 2011. The cause was possibly a construction fault combined with heavy snow.



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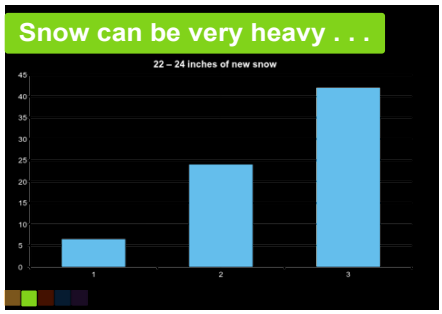


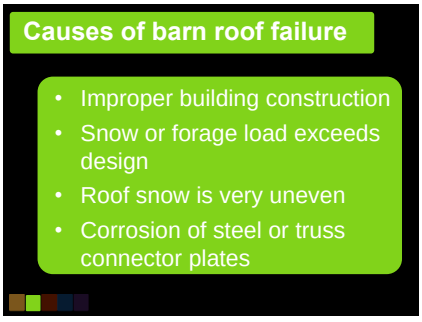
32

31 & 32: Barn collapse rates do not necessarily follow winter weather trends. A mild winter can feature heavy wet snow, and a cold winter can have deep accumulating snow drifts that place similar pressure on barns.

The chart on the right shows the weight of snow at different depths – how a 2-foot snow drift can become a 40-pounds-per-square-foot mass on the roof.

33: Any structure not specifically engineered for snow loads can collapse.

In this photo, the collapse is more of a nuisance. It is different in large barns. With heavy snow loading, there is a great risk to humans and livestock. If one or more trusses fail, the results are often catastrophic and total collapse can occur in seconds.



34: The four top reasons leading to roof collapse of barns.

The first one, "Improper building construction" is avoidable. Even though agriculture structures are exempt from building code, they still need to be ready for weather realities.

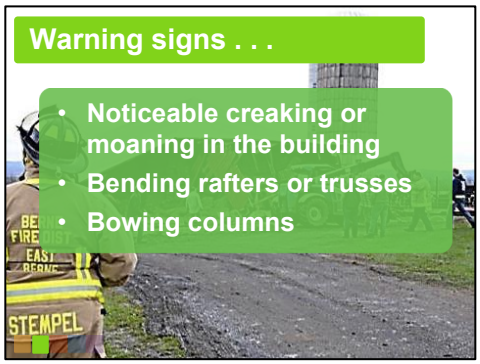
The second one, "Snow or forage load exceeds design" is also preventable. Barn roof load standards should be between 35-40 pounds per square foot.

Uneven snow is common on barn roofs. Windy areas drift snow into deep pockets. These pockets become dense with new snow.

Corrosion is an overlooked factor. Older buildings typically have moisture problems due to inadequate ventilation. This can cause key structural components to deteriorate rapidly, especially if manure gases are present.

35: There are warning signs – things you can see and hear.

Things to look for and listen for when snows are accumulating…

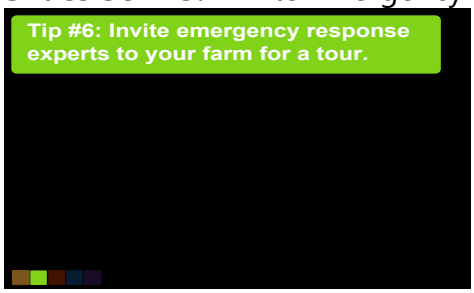


36: [Read through the barn warning signs]

Typical warning signs include creaking or moaning in the building, bowing of the trusses or rafters, or bowing of the headers or columns.

People should not enter barns or climb on the roofs if there is any evidence of buckling, if the roof appears to be lower in the middle of the building than at the end walls, or if the walls are pushed out.

Slides 38- 43: Invite Emergency Response Experts to Your Farm for a Tour.



38: Read Tip #6

39: Farms are complicated and nothing beats an on-site visit from emergency personnel to get familiar with they layout and operations of your farm. This visit should be intentional and scheduled so as many of the fire department personnel can show as possible.

Throw in some refreshments and make sure you have an emergency response crew that is committed to assisting you should the need arise.

In this photo of a medium sized dairy farm, we can tell where the cows probably are (the big barn up top) and where feed is

kept (the long agriculture bags and silo.

But what about the tool shed, or hazardous chemicals? (Lower right gray barn, and the small outbuilding next to it have farm chemicals).

40: Over the years, this farm added side buildings and lean-tos in such a way to make it impossible for emergency response crews to access the central barnyard from the road.

It may not seem like disaster planning, but building spacing is a type of disaster mitigation – an action that is taken well in advance of any calamity intended to reduce

41: The farmers that own this small dairy are active members of their local fire department. They have organized their farm buildings for easy access of emergency vehicles and other equipment to any point on the farmstead.

42: Right!

43: Blank slide getting ready for some weather disaster tips for the farm.

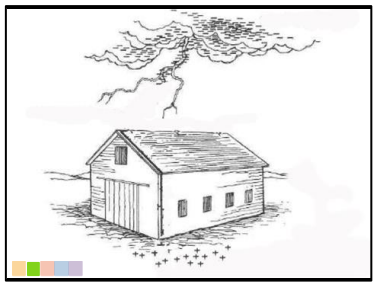
Slides 44-49: Tip #7 Prepare Your Farm for Lightning

44: A lightning strikes is probably the fastest disaster event for a farm. It begins and ends in about 30 microseconds and can leave the farm impaired for quite some time – fire, fried computers, damaged electronics, dead or injured livestock to deal with.

Why we take lightning seriously: An average lightning flash has the energy of a 1-kiloton explosion, and can hit your farm with 300 million volts instantaneously.

Lightning current averages 30,000 amps, but it takes less than 1 amp to kill a human.

Lightning can strike and damage farm buildings in several different ways:
Strike a metal object on the roof.
Strike a building directly.
Strike a tree or silo near the building and jump to the building.
Strike a power line or a wire fence and follow the line or fence.



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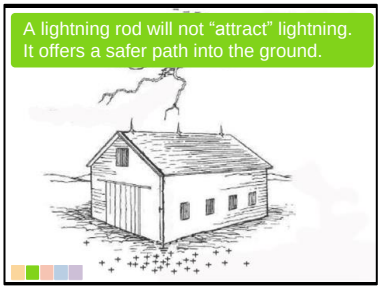

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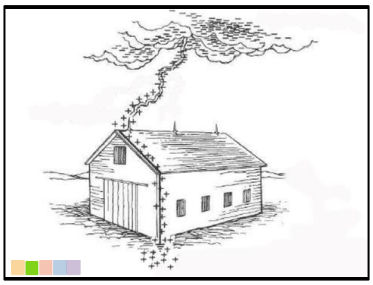


47

45: This sequence of drawings shows how lightning can pass from a storm cloud to a farm building, and the role of lightning protection. Negative charges accumulate at the

base of a storm cloud, and will discharge to positive charges in the vicinity. Your farm might be in the path of this connection.

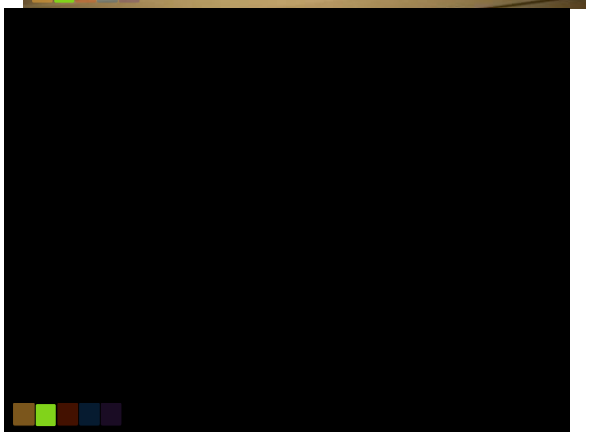
46-47: Lightning rods, if they are properly installed, will provide a defined path for the enormous surge of electricity that is a lightning strike.

Protect livestock, farm property, and human lives from lightning. Hire trained personnel to develop, inspect, or install effective lightning protection systems.

Ground wire fences to prevent hazards to livestock and humans.

A small investment now can protect family members, farm workers, property, and equipment from lightning devastation

48: Install surge and lightning arresters at all electric service panels to buildings to protect interior wiring and electronic equipment.



49: Blank slide, a break before Tip #8 of 12. . . .

Slide 50-53: Map Your Farm for Better Disaster Response

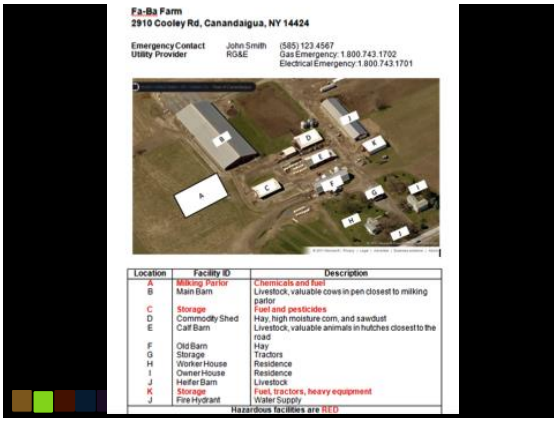
50: A great chore for a rainy day.

A disaster map for your farm shows the overall layout of the farm and identifies critical areas, access roads, and will give you a better communication tool than your memory.

Disasters tend to re-arrange farms and make familiar landmarks unavailable.

51: We recommend using an overhead image of your farm as a basis for a farm map. Hand-drawn maps leave out important information and details.

Aerial photos are now easy to access using a popular Internet website called “Bing maps.”
You can also get an aerial photo of your farm from the county Soil and Water Conservation District.
This is a typical image of how aerial photos look.
You can obtain a view of your farm that includes as much of it as possible.


Fa-Ba Farm
2910 Cooley Rd, Canandaigua, NY 14424

Emergency Contact John Smith (585) 123.4567
Utility Provider RG&E Gas Emergency: 1.800.743.1702
Electrical Emergency:1.800.743.1701

Location	Facility ID	Description
A	Milking Parlor	Chemicals and fuel
B	Main Barn	Livestock, valuable cows in pen closest to milking parlor
C	Storage	Fuel and pesticides
D	Commodity Shed	Hay, high moisture corn, and sawdust
E	Calf Barn	Livestock, valuable animals in hutches closest to the road
F	Old Barn	Hay
G	Storage	Tractors
H	Worker House	Residence
I	Owner House	Residence
J	Heifer Barn	Livestock
K	Storage	Fuel, tractors, heavy equipment
J	Fire Hydrant	Water Supply

Hazardous facilities are RED

52: After you get an aerial image of your farm, label the map as to the use of each building and what is found there.

This farm has 10 different buildings, and a disaster response team would not automatically know what is in each. The farm operator tagged each building, gave each one the familiar name, and then documented what is found in each building.

A disaster map like this gives you the ability to describe your farm to people unfamiliar with it. You can pinpoint where electrical panels and shut offs are located, chemical storage, and where workers are most likely to be found.

53: Blank slide to lead into Tip #9.

If you go back to your farm at this point, you have a lot of insights and things to do already.

But what about the other people on your farm? Do they know what to do in a disaster?

Slides 54-57: Tip #9 Make Sure Farm Personnel Know Their Response Roles

54: Tip #9 is to assign roles to the people on your farm . . . even if there are only one or two others.

You can save time and get more done in an emergency when some important decisions – who will do what – are made ahead of time.

55: A severe storm on the horizon is hard to miss. On many farms, there is a temptation to continue farm work outside until it gets much closer, or expect it to pass farther away. This can be a huge mistake, because the speed, direction, and severity of a storm can be hard to predict while you are preoccupied with farm chores. You will need to keep it simple and make sure your family knows what to do.

Establish a simple set of rules and expectations, for example. . .
"Hey folks . . .there is some weather we expect to get today. Here's what I need you to do if you hear thunder . . "

56: Storm clouds should be taken seriously. The threat should be enough to:

Stop all field operations – anyone who is outdoors should park machinery and tools and get to a safe

shelter with time to spare. Don't be caught out in an open area or a crop field.

Secure loose materials – flying farm debris has caused injury to many farm owners, workers, family members and livestock.

Get to shelter – a solid building is best. In a pinch, stay inside your truck or tractor cab. Vehicles and enclosed tractor cabs are excellent lightning shelters as long as you don't touch the metal frame. Avoid being inside self-propelled agricultural equipment, especially those with tillage or harvest implements.

57: Blank slide leading to Tip #10.

Almost there . . … !

Slides 58-60: Tip #10 Store Enough Water, Food, and Fuel to last 72 hours.

58: This recommendation for planning your farm's emergency supply needs is to plan for three full days of supplies to have on hand.

Very often, a weather emergency will be over, but the damage and travel limitations continue for several days.

If your farm is stocked ahead of time for up to three days of complete self-sufficiency, you can consider your farm "ready for just about anything."

59: There are five categories of supplies you will need to consider:

60: Fuel (diesel, propane, oil) – these fuels can be stored with reserve capacity

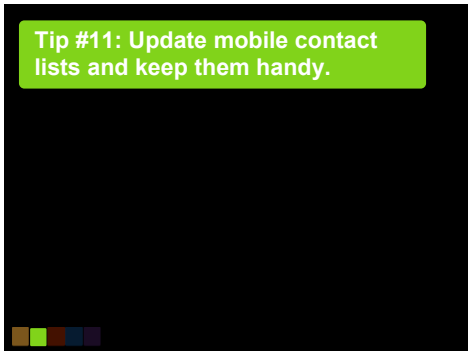
Stored water – no power often means no private well water. Use purchased containers of drinkable water for people and pets. Livestock water can be stored in tanks.

Stored feed – Cycle through the feed inventory to leave several days' worth of feed always available in reserve, in any given month.

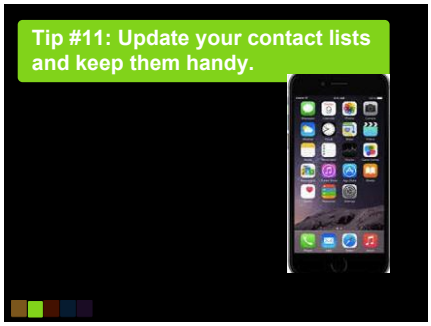
Animal care supplies – veterinary supplies, sanitizers, and other supplies should be on hand before severe weather hits.

Human food & water – The need for food and water continues in an emergency, and a farm stocked with canned food and stored drinking water will be able to nourish the workers, and possibly offer support to other farms or even emergency personnel.

Slides 61-64: Tip #11 Update Mobile Contact Lists and Keep Them Handy



Read Tip #11 – this is applicable to farm owners who tend to use mobile devices.



62

#63

62: Your farm staff is going to be a big part of disaster conduct and recovery. You should have their phone numbers and even e-mail already loaded into your mobile device. This unit will be easier to manage in an emergency, than trying for the Internet or operating a computer.

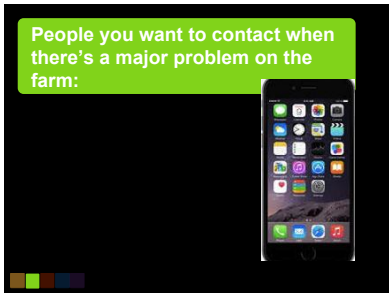
63: Some people are not quite up to speed on texting.

Slide #64: Texting is a better way to communicate in a disaster or emergency.

The message can go out to a lot of people at once "We are OK" or "Road washing out . . .do not approach the farm until I say so!"

The message will re-send itself a number of times if phone lines are tied up. The data packets are very small and better for communications overall in the community. Phones consume a lot of communications capacity.

Slide #65: People You Want to Contact in an Emergency



Mobile devices also should be programmed with others you will need to get a hold of . . .

#65: Read through this list and give local examples or take ideas from participants.

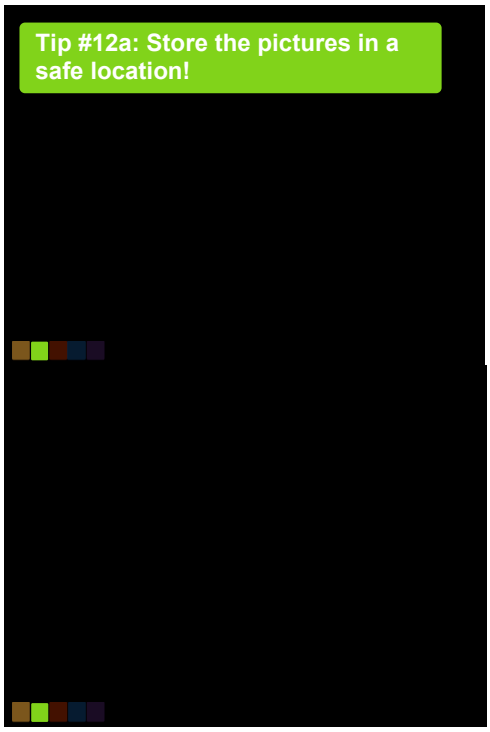
Slides 67-69: Tip #12 Take Pictures of Your Farm as it Changes

67: Chances are, your farm has added or gotten rid of certain pieces of equipment in the past year, but your insurance policy might not be as updated.

The process of documenting your farm equipment and livestock is important. The more current your records, the better you will be able to handle claims and estimates of value. Photographs will help you remember the wide range of items you have around the farm.

68: You might have a new building or newer tools in the shop. Walk through your shop, taking pictures every few feet of your supplies, tools, and equipment.

69: Store the pictures in a safe location**!**



70: This blank slide ends Section 2.