UNIVERSITY OF MINNESOTA
Extension SERVICE

Combine and Tractor Fires . . . A Burning Problem

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It's a perfect day to start wrapping up the last full week of a long, busy harvest. There's not a cloud in the sky. The crop is dry and bountiful. The harvest has been as hectic as any other, but fortunately with no breakdowns or any real problems! In fact, other than checking the oil a few times, greasing bearings, and fueling up, your combine hasn't missed a beat. You're congratulating yourself, because this year . . . you'll be done with harvest before all your neighbors.

As you turn at the end of the field, midway through your first round, you smell smoke. You feel your stomach sink. That feeling of anticipation and exhilaration turns to fear and you realize that last busy week of combining could drag on into the early winter!

You jump out of the combine wishing you were closer to the cellular telephone and fire extinguisher in the cab of your pickup! Just as you hit the ground, you turn back to see bright orange flames and smoke starting to pour out of the bottom of the combine's engine compartment. You walk toward the smoke to get at the engine to try and at least throw some dirt on it. You burn your hands on the now red-hot hood latch and resign yourself to standing back and watching your $150,000 new machine go up in flames!

Does this scene sound far-fetched? Probably not to most busy farmers. Combine and tractor fires are a problem that cause over $20 million in property losses each year and millions more because of lost time and downed crops during the busy harvest season. Fires not only cause huge losses and waste time . . . they also cause 40 or 50 serious injuries each year, and occasionally a person is killed because of a farm machinery fire.

There are two keys to preventing a disaster like the one just described:

- prevention
- preparation in case a fire does break out

Machinery Fire Prevention

For a fire to occur, three things must be present: air, a material to burn, and a heat source. It's impossible to eliminate air around a farm machine. So, farm machinery fire prevention focuses both on keeping the machine clean of possible fire-causing materials and eliminating all possible sources of heat that could lead to a fire.

Farm machinery fires cost millions in property damage, downtime losses, and personal injury.

Cleanliness and Maintenance

Begin every harvest season with a clean machine. Pay special attention to the engine and engine compartment, since about 75% of all machinery fires start in that area. Use a pressure washer to remove all caked-on grease, oil, and crop residue. A clean engine will run cooler, operate more efficiently, and greatly reduce your chance for fire.

After starting the season, make sure you frequently blow any dry chaff, leaves, and other material off the machine with compressed air. Also, clear off any wrapped plant materials on bearings, belts, and other moving parts.

Pay close attention to your machine operator's manual and follow all instructions and schedules for lubrication and routine maintenance. If you notice any leaking fuel or oil hoses, fittings, or metal lines, make sure to replace or repair them immediately!

Eliminate Heat Sources

Combine and tractor fires can be caused by several heat sources. The most common is exhaust system surfaces that contact any flammable material. Make sure your exhaust system including the manifold, muffler, and turbocharger are in good condition and free of leaks.

When checking your oil and performing other daily maintenance, quickly scan any exposed electrical wiring for damage or signs of deterioration. Replace any worn or malfunctioning electrical component with proper parts from your dealer. If you are blowing fuses, or have a circuit that intermittently cuts out, it's a good sign that there's a short or loose connection in the system. The arcing electrical wires on a farm machine will generate extremely high temperatures.

Also keep an eye out for worn bearings, belts, and chains. A badly worn bearing can glow red-hot. Any rubber belt subjected to intense heat from a worn part can burst into flames.

Being Prepared

Despite your best intentions and good maintenance, a fire on a tractor or combine can still occur. Your best source of protection for a combine is at least one fully charged ten-pound ABC dry chemical fire extinguisher. A five-pound unit is recommended for tractors. Select only extinguishers with an Underwriter's Laboratory approval. Having two extinguishers on the machine is even better in case one malfunctions or loses pressure. Keep one mounted in the cab, and one where it can be reached from the ground.

Check your extinguishers periodically, paying special attention to the pressure gauge. To function effectively, the gauge must show adequate pressure to expel the powder inside.

Extinguishers should also be checked periodically by someone from your local fire department or insurance company. Any extinguisher that has been even partially discharged must be fully recharged before it's used again. During even a brief discharge, the tiny dry chemical particles will create a small gap in the internal seal of the extinguisher valve. This tiny opening will cause any remaining pressure to leak out in a few hours or days.

What If I Have A Fire?

If a fire does break out on a machine you're operating, quickly shut off the engine, grab your extinguisher, get out, and get help. If you forget to grab the extinguisher, don't go back in after it unless the fire is extremely small or confined to an area well away from the cab.

Having a cellular phone or two-way radio nearby will help get professional assistance to the field more quickly.

Approach any fire with extreme caution. Even a small fire can flare up dramatically as you open doors, hatches, or other areas to gain access. These types of fires are especially dangerous when liquid fuels are involved. If possible, use the extinguisher's flexible hose to shoot the chemical from a safe distance at the base of any flames you see. Continue to blanket flames to allow the fire to cool and prevent a reflash.

Remember that it may not be possible to put out every fire. If it's in a difficult-to-reach area or seems out of control, don't risk the chance of injury or even death... wait for help to arrive.

Before resuming operation after any fire, make sure to find and correct the cause.

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