

Performance Boosting Tips From Combine Expert

Combine specialist and performance parts supplier George Kuchar has spent the better part of 35 years working with combines and combine operators across the U.S. and Canada. He gives seminars to combine owners to help them better understand their machines and improve performance. (You can reach Kuchar by phone at 217 854-9838 or by email at kuchar@ctnet.net.)

Kuchar says farmers only have to spend a few days each year and minimal dollars to better maintain their combine, do a better job of harvesting, save repair bills, and make more money from their crops. Kuchar tells farmers attending his combine seminars to go over their machines like a doctor giving a thorough physical. Start the diagnosis, Kuchar says, at the front of the machine, where the sickle meets the grain.

Sickle Timing

Time the sickle in the center of the platform, not on one end or the other. The center section on the head should always stop in the center of the guard. That being done, the sickle will cut uniformly and not tear plant stems and shatter the heads or pods, which can leave 1-2 bushels per acre on the ground.

Reel Setting

Reels are often set too fast or too slow. Either way can shatter grain or cause the platform auger to reject material. Kuchar says his rule of thumb is to set reel speed slightly faster than ground speed. "The reel should look like it's pulling the machine through the field," Kuchar says.

Also, locate the reel as far forward and as high as possible for crop conditions. The fingers should gently tip the crop toward the auger, not lift it or throw it on top of the auger.

Auger Setting

Kuchar says that slowing the auger speed will help it feed material evenly off the sickle. If it runs too fast the material is thrown back toward the sickle and won't move evenly into the auger and the feederhouse. About 130-140 rpm's is the best speed; 170-190 rpm's is too fast. Change the chain sprocket to set the speed.

On many machines, the auger moves more material to the sides of the feederhouse rather than to the center. It should feed evenly across the width of the feederhouse. You can improve feeding to the machine by removing some of the fingers in the auger. Kuchar suggests removing 3 fingers from each side nearest the edge of the feederhouse to make it feed more evenly. On rotor machines, remove the same number of fingers.

Kuchar says you can look at the paint wear patterns on a new head and tell a great deal about what is happening. On many machines there isn't any wear on the center of the auger, which isn't a good sign. This means that material is feeding too much to the sides and not enough to the center.

Auger Flighting

The main auger should not be sharp to the touch like a knife, it should be smooth on top and sharp on the edges. If it's sharp to the touch, it could be damaging grain as it feeds into the machine. Kuchar recommends grinding the top edge of the auger flat and to also make sure any bends are removed.

Another area to check is the length of the auger flighting. Kuchar says flighting should never extend more than 3 inches past the opening of the feederhouse. If it does, cut the flighting back and material inflow will improve. On pickup headers the length of flighting isn't as critical because the material is already in a swath and not feeding from the sides.

Kuchar says that operators should be careful not to run dirt into their machines. Excessive dirt can cause auger damage in as little as 150-200 hours. Normally auger wear wouldn't occur until 1,200-1,400 hours. Rasp bars and the leading edge of the concave are also subject to abnormal wear when dirt runs into the machine.

Feederhouse

Make sure the chain has the proper tension by checking specifications in the operator's manual. The correct tension should allow you to slide a piece of paper under the chain and remove it without pinching. If the chain is too tight, sprockets and bearings will wear too fast. Chains should run for 2,000 hours or more, but can wear out in only 1,000 hours if the machine has been taking in dirt or if tension is incorrect. Worn chain

becomes longer in the pitch and doesn't fit the sprocket, eventually wearing out the rear sprockets sooner than normal. If there's more than 1/8" inch play in the chain, plan on replacing it.

Kuchar says operators should also check to be sure the feederhouse chain is installed correctly. The leading edge of the chain feeding into the machine should be the taller part of the slat, not the other way around. In his travels, Kuchar has seen many machines with the chain installed backward, which reduces capacity and can damage grain as it feeds into the cylinder.

Lubrication Records

Keep an annual record of engine and separator hours and the hours when regular maintenance and lubrication took place. Good records with a used machine justify a higher asking price when it's time to trade or sell.

Cleaning

Always clean your combine in the fall before storing it. Use high pressure air to remove dust and chaff buildup. Don't wash it in the fall. Reserve washing for warm weather when the machine has ample time to dry off and won't freeze. Also, never point high pressure water at the bearings.....moisture will penetrate and shorten their workable life.

Greasing

Always grease when the machine is warm or when the weather is warm, so the bearings take the lubricant. If the weather is cold, grease when you finish for the day so the grease easily moves into the bearings.



Kuchar concave, right, is designed to increase productivity by reducing backfeeding and the amount of accumulated residue, such as that shown on OEM concave, left.

Oil Change Before Storage?

Some people recommend changing oil before storage, and that's fine, but Kuchar doesn't think it's absolutely necessary. Says George, "I don't think impurities in the oil damage an engine that sits all winter. My preference is to leave the old oil in the machine over winter and change it in the spring or summer. That way, if any condensation builds up over winter, you're getting rid of the condensation plus the old oil when you change it before harvest. Before changing the oil, always warm up the engine to normal operating temperature.

A good way to check for possible engine problems is to examine the oil filter. After removing a used filter, cut it in half and look for metal particles or shavings in the filter element. If any are present, the engine may be experiencing unusual wear that should be checked by a mechanic.

Chopper

Check bearings, belts and hammers. Hammers with more than 1/4 wear should be turned. Any hammer that's cracked or broken should be replaced. Remember that an even number of hammers should surround the shaft in each rank.



Because combines are built to handle a wide variety of crops and conditions, it's up to the owner to "customize" his machine for his own particular situation.

An uneven number causes imbalance and excessive wear on the bearings.

Belts

Any belt that shows splits or cracks should be replaced. The feederhouse belt is very important. If it becomes worn, slippage can occur and the machine doesn't feed properly. Make sure it is properly tensioned, not too tight or too loose. It's easier to replace belts before harvest than it is in the field.

Chains

Any chains should be checked for wear and stretching. If lubrication is necessary, use special chain lubricant rather than engine oil. The best time to apply lubricant is when the chain is warm after you're done operating for the day. This will allow the surfaces to accept the lubricant and disperse it into the rollers. Never apply chain lubricant on a cold day or when the machine is cold.

Discharge Auger

Be sure that the discharge auger flighting is flat and shows even wear. Anytime an auger has sharp rather than flat edges on the flighting, grain may be damaged. On the 9000 series Deere models, the top of the discharge auger can wear unevenly, causing cracked grain.

Sieves

Deere 9000 series sieves are generally good for 3,000 hours before bearings need to be replaced. If a machine has 4,000 hours or more, Kuchar says all the bearings should be closely checked and probably replaced. If a bearing goes out during operation, you can damage a sieve and the shoe, and that will be very expensive to replace. The 9000 has a 7-piece sieve and chaffer system, more moving parts than the STS models, which have one chaffer and one sieve.

Case-IH Sieves

The rotor machines have a larger sieve that needs to be checked. If the sides are showing signs of wear, replace the bearings and bushings.

Concave

Wear usually occurs in one spot, typically in the center where most of the material feeds in. Wear can also occur on both sides and not in the middle. If the machine is running at full capacity and calibrated properly, wear should occur evenly across the cylinder and the concave.

A worn concave will reduce threshing ability, lower the capacity, and might damage grain. Kuchar advises operators to check the wear every fall before harvest. Reset the cylinder/concave clearance to the recommended specifications every 500 acres.

Rasp Bars

On rotor machines, if wear shows on the first 2 feet of the rotor, adjust or replace as necessary. On a cylinder machine, use the wooden pencil test. Place a wooden pencil in the bars and if the wood sticks out from 1/16" to 1/8" of an inch, the bar needs replacing. You can operate the machine with

worn rasp bars, but you're losing efficiency, it pulls harder, it doesn't thresh as well, and you're using more fuel. Replace the bars and you'll pay for them in one season with better productivity and better capacity.



Kuchar filler plates reduce cylinder vibration by keeping dust out of cylinder.

Filler Plates For Concaves Rotor Machines

In soybeans use a filler plate under the first concave to keep pods out. In wheat fill the first concave and half the second one. No filler is needed for corn.

Cylinder Machines

In soybeans plug the first two slots. In wheat fill 4 or 5 slots, depending on how hard it threshes. In corn don't use any fillers.

Cornheads

Check for wear at the point where the cob hits the deck plate. If these areas are wearing, replace the deck plate.

The auger on the corn head should be set high enough so there are always full ears below the auger when it's running empty. This setting prevents the auger from damaging kernels. Also, you can install a large sprocket to slow the auger speed, which causes less damage to grain.

Snapping rollers will usually show wear in one spot. Once this starts the rollers should be changed. If they're not working efficiently, there's trash going into the machine, and that's cutting capacity, because trash takes up room. If there's extra trash going in, open up the deck plates and make sure only ears are going in. Too much trash going into the machine could also mean that the head is running too fast.

Don't speed up the head intending to chop the stalks. Extra speed means extra head loss because ears hit the plate and you're losing kernels that shell off the bottom of the ear. A better suggestion is to install knife rolls, and Pixall makes good ones.

Engine & Drive Train

- Check the transmission fluid level and color. Replace the fluid and filter every 500 hours.
- On the air filter, don't touch it until the warning light comes on. Don't clean it every day, just when it needs it. Don't clean the inside safety filter, just the outside one. Be careful not to poke a hole in the filter, because then the engine can intake dirt, which will cause major problems.