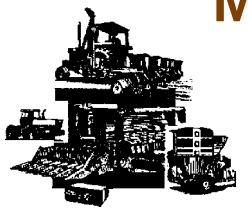

MAINTAIN MACHINERY IN WINTER TO AVOID DOWNTIME

Farm Machinery Fact Sheet FM-18

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The following suggestions from FARMING WITH AMOCO are very appropriate.

The best time to start your battle against next year's breakdown blues is right now. By using time available during the less busy winter season to check and repair your machinery you can save valuable hours in the spring when you need them most.

In addition, if repair parts are necessary, a delay in obtaining them now is far less critical than when you are in the middle of field work.

The following general machinery guidelines are suggested by machinery specialists at International Harvester and J.1. Case. Exact procedures vary by make and models; therefore, be sure to consult your operator's manual for specific instructions.

TRACTORS

As your tractor is the most often used piece of equipment, it deserves a lot of attention in preparation for the spring season. Here are some important items to check:

1. **Ignition system.** You should start by replacing the spark plugs, distributor points and condenser, unless they were replaced just before the end of last season's use. Whether you're using last year's parts or installing new ones, spark plug gap, distributor gap or dwell, and spark timing should all be set to recommended values.

Low-voltage and high-voltage wiring should be inspected for signs of insulation deterioration. The wires should be replaced if insulation on any of these wires shows signs of cracking or splitting.

2. **Fuel system.** Adjust the carburetor of gasoline engines to recommended settings. In addition, the sediment bulb, fuel filter or other device for removing contamination from the incoming fuel supply should be serviced. Farm Fuels Final/Filter for your storage tank

can help, too. It removes water from the fuel, traps it in a transparent bowl where you can see it and drain it. In addition it removes dirt and rust that can collect in storage tanks.

On diesel engines, check your operator's manual for recommendations on servicing injectors. In some cases you can remove injectors yourself - by exercising care and take them to your dealer for servicing. Be sure to cap the high pressure lines. Some manuals recommend that only the dealer should remove injectors. The disassembly and servicing of injectors, however, is definitely a job for a skilled serviceman. You will likely damage the complex, close-fitting internal parts of injectors if you attempt to take them apart and service them yourself.

Be sure to service the filtration portion of the diesel fuel system. Clean fuel is important for proper operation of injectors. Most diesel engines have at least two (and sometimes three) fuel filters. Check manual.

3. **Air cleaner.** Whether your tractor engine is spark-ignition or diesel, it requires large amounts of air for correct fuel combustion. This air supply should be kept as clean as possible to prevent undue wear on the vital working parts of the engine.

Newer engines use a dry-type air cleaner; older ones an oil-bath type cleaner. Some dry air cleaners can be serviced by simply replacing the filter element. In other cases, your operator's manual will tell how to clean the filter element to extend its life.

To service oil-bath filter, remove and clean oil cup. Clean out caked dirt in the bottom; wash cup with kerosene or solvent. Refill cup with same viscosity oil as used in the engine. Be careful not to overfill the cup or oil may be sucked into the carburetor. Use only new engine oil. Do not use oil drained from the crankcase.

Both types of air cleaners are generally protected by a precleaner or screen over the intake. To service empty the container or any accumulated contaminants by cleaning the intake screen.

4. **Crankcase**. Drain existing oil; replace with recommended viscosity for the season. Check operator's manual for recommended viscosity and service classification. Use a reliable motor oil. (Refer to the new A.P.I. engine lubricating oil designations.)

Before draining oil make sure engine is up to normal operating temperature so that contaminants will be suspended in the oil and drained from the engine. Before adding new oil, service the oil filter.

5. **Transmission.** Check lubricant level. If your manual recommends a heavier lubricant for summer use, change it now. Or add lubricant if required to bring it tip to proper level.

6. **Hydraulic system.** You should drain and refill with new fluid at least once, and sometimes twice a year in order to get rid of dirt particles in the fluid and the water formed by condensation. Refill with recommended fluid before starting the engine to avoid serious damage to the hydraulic pump.

Most modern tractors use a common fluid in the transmission and hydraulic system. Use American Petroleum Institute specification or refer to operator's manual.

7. **Cooling system.** To adequately carry away waste heat developed by the engine, air must pass freely through the radiator core. To make sure this is done, remove the grille, dirt and trash from the back side. Use an air gun, water hose or hand tire pump. Wear safety glasses or shield during this operation.

Check for any signs of leaks at the radiator top tank, bottom tank or in the core when the engine is thoroughly warmed to operating temperature. Look for signs of leakage around the seals of the water pump shaft.

It is a good idea to drain and flush the cooling system even if no repair service is needed. Then refill the system to the recommended level with the solution recommended by your operator's manual.

Also, check fan belt condition and tension. Look at under side; that's where breaks generally start. A loose belt will slip and prevent the cooling system from doing its job properly.

8. **Electrical systems.** Check liquid level in battery. If low, add clean water. Clean up any corrosion on terminals. Corroded terminals and cables can be cleaned with a baking soda solution. Take care so that this solution does not get into battery. Keep battery fully charged to prevent freezing.

Make sure terminal clamps are tight; coat lightly with grease. Check hold-down clamps to see if they are in place. Rough ground can shake battery enough to break the case, if not adequately secured.

Check general condition of wiring. Be alert for corroded connections between wires and terminals of electrical devices. Usually these terminals can be disconnected and cleaned to help ensure proper performance. However, before disconnecting any terminals, disconnect the negative or "hot" terminal to avoid the possibility of shorting wires or terminal during cleaning. Check wiring and mounting of lights. If alternator or generator is powered by separate belt, examine it for tension and condition.

9. **Clutch and brakes.** Adjust free play of foot clutch or the over-center action of the hand clutch. If necessary, tighten brakes and adjust so that both pedals take up evenly.

10. **Steering gear.** On tractors and self-propelled machines with manual or power-assist type power steering, check the level of lubricant in the steering gear case. If necessary, add lubricant to bring it up to recommended level. Usually it's not necessary to drain existing lubricant. Check condition of front wheel bearings (or rear wheel bearings on self--propelled swathers and combines). Replace if they show signs of wear. If they are in good condition relubricate and reinstall.

11. **Tires and ballast.** Look for signs of breaks or cuts in tire casings. Have them repaired now. Check wheel rims for damage caused by driving over sharp objects. If rims are bent, pound out with sledge hammer.

    Check tires for proper inflation pressure.

If your first use of a tractor next spring will be for plowing or other heavy drawbar operation, check ballast.

12. **Air conditioning system**. Check Freon level, clean or replace filters and inspect belts for wear and tension. You can clean chaff off condenser core with compressed air or fairly stiff brush. Evaporator cores should be cleaned with compressed air if dry; otherwise, flushed with water from a garden hose without a pressure head. Remove dust from motors and blowers.

IMPLEMENTS

Check implements for broken or missing parts. Maybe you got by and finished out the season last year, but it's foolish to start off a new season on such a basis.

Look for wearing parts which may have to be replaced, such as plow points, disk harrow blades, mower knife sections and hay rake tangs.

Don't overlook lubrication. Even though you may have greased all bearings and shafts thoroughly at the end of last season, pump in fresh grease now. This will force out all the moisture which may have condensed inside during the winter. Wipe all grease fittings clean before applying grease gun; otherwise you may force dirt directly into the bearing along with grease.

Check implement tires carefully. After several months of not being used repairs may be necessary.

Go over all your machinery and tighten bolts, nuts and capscrews that have worked loose. This simple precaution can prevent serious and costly damage.

And, finally, make sure safety decals are in place and legible, and that instructions are followed to prevent accidents.

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