

MAINTENANCE PROGRAM FOR SMALL ENGINES--HOW TO KEEP THEM RUNNING

Frank Galbavi
Agricultural Engineering Department, MSU

1. I OWN

- 4, no 5 running vehicles
- 2 tractors (1 gas, 1 diesel)
- 2 chain saws
- 1 weed wacker
- 1 L & G tractor
- 1 push mower
- 1 roto-tiller
- 1 log splitter
- 2 antique tractors

2. MY MOTHER-IN-LAW OWNS

- 2 running vehicles (1 gas, 1 diesel)
- 1 L & G tractor
- 2 roto-tillers
- 2 chain saws
- 1 or 2 push mowers

3. WHAT DO ALL OF THESE MACHINES/VEHICLES HAVE IN COMMON?

- AN ENGINE!
- AN ENGINE TO MAINTAIN!!
- 25 ENGINES TO MAINTAIN!!

4. ALL ENGINES NEED MAINTENANCE. WHY?

- reduce failures
- save on operating costs
- keep equipment safe

5. BEFORE YOU PERFORM ANY MAINTENANCE ON AN ENGINE YOU MUST KNOW WHAT KIND OF ENGINE YOU HAVE.

- gasoline
- diesel
- 4-cycle
- 2-cycle
- liquid cooled
- air cooled

6. NEXT, YOU'LL NEED TO HELP YOURSELF:

- by keeping records for each machine (engine)
- servicing machine at recommended intervals
- operating machine properly--avoiding abuse
- using safe procedures when performing maintenance
- using operator's manual

- watch gauges (if equipped)
- listening for changes in sounds

7. NOW, LOOK AT EACH ENGINE TO SEE WHAT NEEDS TO BE MAINTAINED:

- Cooling system/cleaning engine
 - liquid (coolant, radiator, hoses, belts, etc.)
 - air (baffles, fins, air shrouds, etc.)
- Air filters
 - wire mesh
 - foam
 - paper
- Fuel systems
 - filters/strainers
 - clean fuel
 - carb. adjustments
- Lubrication system
 - splash vs. pressure
 - filters
 - oil changes
 - correct oil

	<u>API</u>	<u>SAE</u>
- gasoline	SA-SG	single viscosity multi viscosity
- diesel	CA-CD	
- 2-cycle	TC or TC-W	
- Exhaust system
 - 2-cycle
 - clean ports
- Ignition/electrical
 - batteries
 - spark plugs
 - points/condenser
 - connections

tune-up

8. ENGINE STORAGE:

- Importance of proper storage
 - prevent corrosion
 - prevent gum deposits (gasoline)
 - prevent moisture buildup inside and outside--electrical components
 - prevent dirt and dust from accumulating
 - prevent physical damage

- How To:
 - run engine until it runs out of gasoline--prevents gum deposits
 - change oil--gets rid of moisture and other contaminants in old oil
 - clean engine
 - coat inside of engine with a rust preventative
 - clean, regap, or replace spark plug
 - put piston at TDC - combustion chamber is closed and protected
 - repaint exposed surfaces
 - cover engine with plastic
 - store in dry place
 - store in safe place away from moving equipment or falling objects

9. REFERENCES

- AAVIM, Small Engines, Vols. 1 and 2
- John Deere, Compact Equipment, Engines, Electrical, Power Trains, Hydraulics
- Drake, George, The Repair and Maintenance of Small Gasoline Engines
- Roth, Alfred, Small Gas Engines
- Billiet, Walter, Small Gas Engines and Power Transmission Systems.