



Tractor maintenance improves fuel efficiency

The basics

As a piece of complex machinery, a tractor needs to be well maintained to continue to operate efficiently. Maintenance covers day to day operations that vary from tyre pressure adjustments and lubricant top ups, to periodic maintenance such as the tuning of engines and filter changes. Even marginal improvements in efficiency can have a significant financial benefit for machinery that is in use for long hours.

In practice

Key maintenance tasks include:

1. Tyre pressure adjustments - taking into account, implement, ballast, task and ground conditions.
2. Clean fluid and air filters. In many cases these need changing every 1,000 hours or so. Keep an eye on water and sediment traps and blow out air filters occasionally. Filters - (usually both primary and secondary), are used to collect small particles and impurities to protect close machine tolerances inside the engine from wear. To maintain a proper fuel and air mixture in the engine cylinders, filters must be replaced on a periodic basis as restricted flow starts to impact combustion efficiency.
3. Keep cooling coils clean and unblocked - otherwise engine overheating can take place resulting in a drop in efficiency.
4. Optimal lubrication of the engine and gears to reduce friction losses.
5. Tune the engine - this will ensure that there is the correct amount of air in the fuel-air-mixture for effective combustion (a lack of air in the mixture would be recognisable by smoke and loss of power).

Savings are possible

A recent fuel consumption survey carried out on a farm in The Vale of Glamorgan identified significant fuel savings for regularly used, older tractors, which are normally missed from servicing schedules.



It was recommended that particular attention be paid to fuel, oil and air filters and for radiators to be cleaned regularly and kept free of dust and debris, especially on yard based tractors. A 10% fuel saving for each machine was deemed achievable which would result in a combined annual saving of nearly £2,000 per year.

In addition to the fuel savings possible, tractor maintenance decreases engine wear and tear and increases its working life when compared to an un-maintained tractor.

Of course the cost of servicing should be taken into consideration and compared against any fuel cost savings.





Ensure air filters are regularly cleaned



Blocked radiator

6. Lubricate joints and linkages and make sure they move freely.
7. Sharpen blades on items like mowers and balers - blunt knives on disc mowers can increase power requirement by 20% whilst 10% losses have been observed on balers with blunt blades.

Pay attention to the ease of maintenance when buying a tractor. A machine that's easier to maintain will be looked after better and will consequently remain at peak performance for a longer period of time.

Potential savings

Savings will vary depending on the general state of maintenance of the tractor. However, as an example, in a study by agricultural engineers at the University of Missouri where they replaced filters on 99 tractors regardless of whether the filters were near the end of useful service life or had been recently replaced, dynamometer power testing showed an average power increase of 3.5%, translating to an equivalent saving of 3.5% in fuel at an equivalent power output.

In a recent study carried out by Efficient20, altering tyre pressures to suit the workload showed a marked improvement in fuel efficiency of 17%.

For more information on how 'Tractor maintenance improves fuel efficiency' please contact:

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