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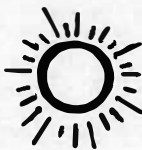
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FARM TRACTOR SAFETY

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Tractor accidents are a major contributing factor to the high fatality rates experienced in Kentucky agriculture. Despite the variety of potential hazards on farms, nearly half of all farm fatalities and one out of ten injury accidents involve tractors. The single most common factor in tractor fatalities is an overturn.

The documented number of tractor related fatalities occurring in the state vary depending upon the year and source of information. Figures for the 1970s indicate an average of nearly 40 tractor fatalities annually on Kentucky farms and highways. In fact, the rate of tractor fatalities in Kentucky during this time was twice the National average (see Table 1). Most of this difference was due to the high rates of tractor overturns which accounted for 60% of the fatal tractor accidents on Kentucky farms.

TABLE 1: Tractor Fatality Rates
Deaths per 100,000 Tractors

<u>Type</u>	<u>U.S.</u>	<u>KY</u>
All types	11.8	23.2
Overturns	6.5	13.8
Falls & Runovers	2.2	2.8
Power take-offs	0.7	0.6
Other	2.5	2.8
Not indicated	-	3.2

The number of tractor accidents in Kentucky and other states have been reduced through safety efforts and the increasing use of ROPS (roll-over protective systems) either frames or cabs. However, the results of a recent National study indicates that Kentucky may still have one of the highest yearly totals for tractor and machinery fatalities.

Why are tractor accident rates so high in Kentucky? The reasons are varied but one apparent factor is the large number of farms with small tractors which are not equipped with ROPS (roll-over protective systems). This is compounded by the fact that these smaller tractors are generally associated with use on the steeper farm land. In contrast the greatest use of ROPS has been cabs on bigger tractors which are used in larger farming operations. Often these larger tractors are used on the more level terrain and in crop production activities with the lowest risk of tractor accidents.

HIGH RISK AGE GROUPS

Some age groups appear to be at greater risks of a tractor accident than others. Table 2 illustrates the age groups most commonly involved in tractor fatalities. The 45-64 and 65+ age groups account for nearly two-thirds of the accidents. However, these figures only tell part of the story since the 45-64 age group also represents the largest segment of the farm population.

TABLE 2: Tractor Fatalities By Age Group

<u>Age</u>	<u>% of Accidents</u>	<u>Relative Risk</u>
0-14	7%	0.3%
15-24	15%	0.9
25-44	14%	0.8
45-64	33%	1.3
65+	31%	2.6

The relative risk column provides a better means for comparing the risk of accidents between different age groups since it takes the population size of each age group into consideration. (Relative Risk is the percentage of accidents divided by the percentage of farm population for each age group.) Based upon relative risk, it becomes apparent that those over 65 have a much greater risk of fatal tractor accidents than any other group. This segment of our farm population is often overlooked in tractor safety efforts.

The youth comprise the other high risk age group who have traditionally received special emphasis for training in safe tractor operation. While their relative risk is lower than other age groups, their hours of actual operation is also much lower. Because they lack experience and a full

awareness of the potential hazards they are a high risk group and need special safety emphasis.

HIGH RISK ACTIVITIES

Overturns: According to news clipping reports, a number of activities appear to be associated with a higher risk of fatal tractor accidents in Kentucky. One of the highest risk activities for farmers is gathering firewood, snaking logs, and pulling trees with tractors. Of these activities, gathering and hauling of fire wood over rough terrain with its many obstacles and steep slopes is a primary hazard. Another frequent occurrence is rear overturns from pulling heavy logs up slopes or from the log snagging on a stump or jamming into the ground. Attempting to pull dead trees or stumps is an additional source of rear overturns. While these are not routine activities they are a common source of tractor fatalities in the state that primarily involve adult operators.

Mowing fields, pastures and other areas around the farm also has a high risk of overturns for the tractor operators. The most frequently reported factors involved in these accidents were working on steep slopes, striking obstructions or washed out areas hidden by tall grass and weeds and mowing too close to steep banks and drop-offs.

Road travel is another high risk activity for tractor operation. These accidents occur primarily from overturns off the roadway during normal transport operations. There are frequently no apparent reasons for the accident except loss of attention which allowed the wheels of the tractor to drop off the edge of the road. In other cases icy roads, towing heavy loads down steep hills, or improperly adjusted brakes have been contributing factors. Finally, collisions between the tractor and other motor vehicles are also frequent sources of tractor fatalities on roads and highways. In Kentucky, as in other states, the risk of both collision and non-collision accidents is very high for the limited time that tractors are used on the roads.

Falls and Run-Overs: Although overturns are the major source of tractor fatalities, falls and run-over accidents are the second most common type of accident. In these accidents several high risk hazard patterns are apparent. First, overturns are a primary source of tractor fatalities for those under 10 years of age and also for those 65 and over. The most tragic of these are to the youth who are run-over by the tractor or a trailing implement such as a "bush hog" type rotary mower while riding with a parent as an extra rider. Adult operators are more commonly killed either while attempting to mount or dismount the tractor while it is moving or from being thrown or knocked off the tractor during operation. Coupled with the tractor run-over accidents are the people who fall or are thrown from wagons and run over.

PREVENTING TRACTOR FATALITIES WITH ROPS

The single most effective way of saving lives on Kentucky farms would be through the use of ROPS, either protective frames or cabs, on all tractors. Approved ROPS are designed to withstand the forces of an overturn and will almost always prevent serious injury to an operator, particularly if a seat belt is worn. ROPS are the best life assurance available for those situations where, despite all safety efforts, an operator error or other factor leads to a tractor overturn.

PREVENTING TRACTOR ACCIDENTS

Most farmers have learned about tractor safety from experience. But experience can be a costly teacher. Taking time to remind yourself, other family members and workers of the following tractor safety procedures and striving to follow these will help reduce the risk of a tractor accident on your farm.

General Safety Guidelines:

1. All operators should be physically and mentally fit for the task of operating a tractor.
2. All new operators should receive instructions on safe operation of each tractor and be made aware of potentially hazardous situations.
3. New operators, especially youth, should be closely supervised until they have demonstrated their skill and knowledge of safe tractor operation.
4. Before youth are allowed to operate a tractor, they should:
 - a) be able to reach all controls comfortably from the operators seat,
 - b) have maturity and judgement to recognize and anticipate potential hazards, and
 - c) have received instruction and training in tractor operation and safety.
5. **Read and follow** the procedures outlined in the Operator's Manual and only use the tractor for its intended purpose.
6. Make **NO RIDERS** a policy on all tractors.
7. Never attempt to mount or dismount a moving tractor.
8. Keep others clear of the area during operation.
9. Make sure that all **PTO** equipment is properly shielded.

PREVENTING OVERTURNS

The following common sense precautions will help avoid tractor overturns.

Safety Guideline for Side Overturns:

1. Reduce speed of operation on hillsides and slopes, rough or slick areas and especially in turns. (Doubling the turning speed increases the centrifugal tipping force four times.)
2. Check areas near banks or in heavy ground cover for washouts or obstacles.

3. Keep front-end loader buckets low for transport and reduce speed for turns.
4. Set wheels at widest spacing practical for the job at hand.
5. Avoid driving across steep slopes.
6. When driving on side slopes be extra alert for holes and washouts on the downhill side and bumps on the uphill side.
7. Turning downhill increases stability on side slopes. Uphill turns and turns across the slope when driving downhill greatly increase the risk of an overturn.

Safety Guidelines for Rear Overturns:

1. Hitch loads only to the drawbar and hitch points recommended by the manufacturer.
2. Use weights on the front of the tractor to increase stability.
3. Avoid pulling large loads up steep slopes.
4. Back your tractor out when stuck in a ditch or mired in mud. If you can't back out, tow it out with another tractor.
5. Avoid backing down steep slopes.
6. Use caution when engaging the clutch on an uphill pull.

Guidelines for Safe Road Travel:

1. Kentucky law requires a slow moving vehicle emblem (SMV), a red tail light or reflector, a light revealing the left side of the vehicle and head lights for slow moving farm equipment used on the highways.
2. For added visibility, 2 amber flashing warning lights, red reflectors mounted on the extreme right and left and visible from the rear are also recommended. If the mounted or trailing equipment extends more than 4 feet to the left of the center of the tractor it should have an amber reflector visible to the front.
3. Only licensed drivers should operate equipment on public roads.
4. For high speed road travel, brakes should be properly adjusted and pedals locked together.
5. Use braking power of the engine when going down hill with large loads; use the same gear required to pull the load up the hill.
6. For adequate braking at road speeds, avoid pulling loads heavier than the weight of the tractor.
7. Obey traffic rules, be courteous, and pull off on the shoulder to let traffic pass when possible.
8. **STAY ALERT!!** Don't let slower tractor speeds dull your attention to the driving task.