

Safety of “part-time and not professional” operators in agriculture: the Tuscany regional law n°30/2007 and reference in the national law 81/2008.

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Abstract

Authors report on a new legislative approach due to the high number of accidents that each year occur to hobbyists, part time and not professional agricultural operators.

Only in Tuscany farms managed by hobbyists, part-time and not professional operators represent 80% of the total amount. Working day per year are less than 40 but with turns over 10 hour a day. Entrepreneurial mindset is very low.

These operators have hold a not reliable machinery in almost all cases and an average of 15 mortal and more with permanent handicap accident occur each year caused by capture in the rotating mechanical parts or by crushing due to loss of control of small farm tractors or capsizing of machinery.

The Tuscany Regional Administration faces up to these problems by the regional law n°30 of May 25, 2007 that promotes actions to inform and train these increasing sector of agriculture. But now the D.Lgs. 81/2008 expands this action to the whole nation.

A specific project has been implemented in Tuscany in which AUSL 3 Pistoia and DIAF have the aim to analyse and diffuse technical note for a safer use of machinery.

A large extention training is in progress by easy access manuals, multimedia tools and meetings.

Keywords: Safety, Risk management, Non professional agricultural workers

Introduction

INAIL (National Institute of Assurance against Injuries on Labour) data related to accidents on agricultural operations in Tuscany (Italy) reveal a general decrease in the last years. 4881 cases are reported in 2006. But mortal accidents are increasing with 76 dead a year. Most of these accidents occur to operators who drive occasionally agricultural machinery.

The current agricultural productive system is more and more characterized by new figures of operators who are not professional. Hobbyists, part-time, familiar and occasional workers are undoubtedly replacing professional operators in small farms. This is particularly evident in the sub-urban areas. The phenomenon also called “new-urbanization” or “new-ruralisation” is strongly increasing for many reasons: many people prefer living in rural areas, and an expanding urbanization along main roads close to the city is in progress.

A survey conducted in 2005 by the Department of Agricultural Economy of the University of Florence (Rocchi B., Stefani G., 2005) highlights that in the Region of Tuscany an amount of 80% farms are conducted by not professional workers that mainly produce food

for own family need. The entrepreneurship level is very low, the operations are concentrated in short periods, the use of machinery is occasional, and the turn of daily work is often higher than 10 hours.

All these factors represent a further risk in the machinery use.

The occasional use of machine and the hard conditions of work are the main cause of accidents for the category of hobbyists and part-time farmers whose main income derives from other activities. As a consequence very often they have not the necessary competences to manage in safe way mechanical operations in field.

Another specific aspect of risk related to hobbyists and part-time workers in agriculture it's due to the use of old machinery no more corresponding to law's criteria and characterized by a low price, which are still and more used by these categories of operators. Dangerous machines are therefore often used occasionally with a low training level (Vieri M., 2007).

All surveys confirm that bad behaviours and human error are the causes statistically more frequent.

Each worker influence farm risk index with his behaviour. It derives from own experience, personal skills, health and emotional status.

Risk level is increased by many factors: low information on machine or plant works; use of material, machine and process unsuitable for the specific work or situation; low training on the correct drive and behaviour in the specific situation; lack of correct procedures in agricultural machine use; fixing machine components; lack of correct maintenance; being careless, tired, in a hurry, having too much confidence with machines . (Figure 1)

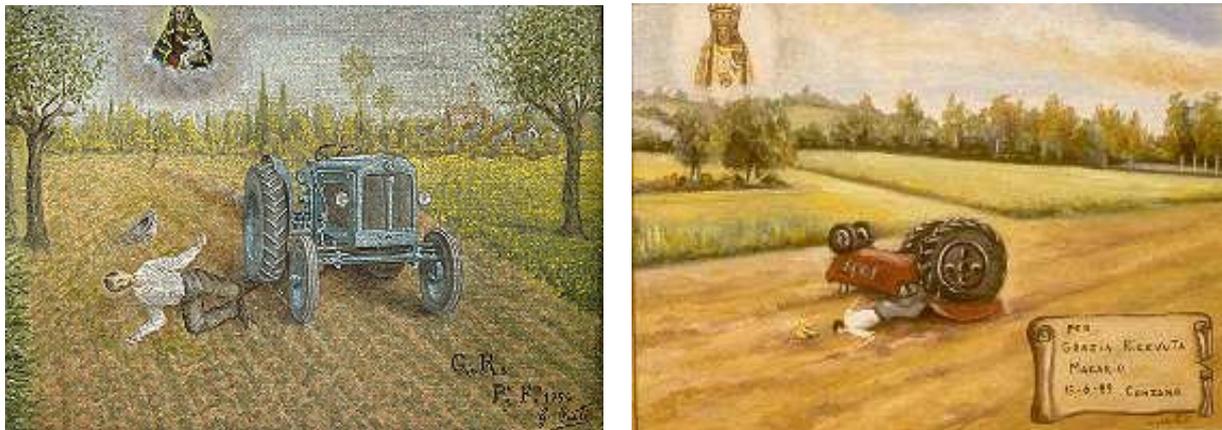


Figure 1. Accidents and risks in agricultural machinery use have always been well known as represented in the (*ex voto*) exposed all over in Shrines. But this know-how is no longer owned by the new farmers who work occasionally without experience and with often old and not reliable machinery.

In the case of hobbyists and not professional operators these risks are accentuated by the absence of institutional controls on the machinery.

But suitable training, correct maintenance and periodical controls are fundamental in these cases. (Vieri, 2007²)

To control risks in these particular situations of agriculture scenery Tuscan Regional Administration issues Law 30 on may 25, 2007 "*Norms on safe and health of agricultural workers*". This law involves all situations and operators not mentioned by the Law by Decree

626/94. All persons who use agricultural machinery also for personal use are penalty responsible of accidents caused by these.

Besides just now has been issued the Law by Decree 81/2008 that introduces new measures similar to these, which are already provided by Regional Law 30/2007. The main innovation in comparison to measures provided by Law 626/94 consists in the enlargement of application range: Law 81/2008 takes into account all sectors and all people, and there are no distinction between ordinary and occasionally workers.

As application of the tasks expected by the Regional Law 30/2007 a specific project called “*Safety culture promotion in use of agricultural machinery*” has been designed by DIAF (*Dept. of Agricultural and Forestry Engineering - University of Florence*) and Agency USL (*Prevention Departments of Sanitary 3 Pistoia (Italy)*). The project has the aim to realize information and training tools address to unprofessional and hobbyist agricultural operators.

It's articulated in four main steps: preparation of informative and formative multimedia tools; realization of specific courses; their diffusion in the whole regional area; survey on safety appropriate conditions of tractors and their use on the Tuscany regional territory.

Methods

The steps of action done by Agency USL 3 Pistoia and DIAF involve:

- ✓ friendly manual with basic informations on accidents, risks, needed maintenance of machinery, operative behaviour and procedures;
- ✓ multimedia clips on conventional and possible cases of accidents with 2 wheel, 4 wheel and track tractors in operative situation and in reparation moments;
- ✓ proposal of a new active protection device for 2 wheel tractor. For the third goal it has been realized a device that hold disconnected clutch.

The project “*Safety culture promotion in use of agricultural machinery*” has to be applied to the whole regional areas and involve subjects focalized by Law 30/2007. The aim is to provide informative and training tools for unprofessional and hobbyists agricultural workers with particular reference to safety and eco-compatibility.

Technical extension is in progress with easy comprehensive tools. Impressive language has been adopted to fix attention of operators.

Diffusion of these materials has been realized by meeting carried out on the whole Tuscany areas and with the cooperation of the Agricultural Operators Organizations.

Results

In the first step of the project it has been realized an extension technical handbook titled “*Ten rules for safe use of agricultural machine*”. In this handbook are analyzed the main causes of accidents and injuries. Real events reported in the daily news are focused.

Particular attention is assigned to risks in use of small four well drive tractors and two well drive tractors that represent the most dangerous machines. Each accident is analyzed to focus either human errors and either machine malfunction, to point out a check list of controls, maintenance and behaviour at work that could prevent risks of accidents.

General behaviour in machine use are described in the handbook and the last chapter is dedicated to the check lists control applicable to the different equipment use and the related legislative norms.



Figure 2. Old tractor without ROPS (*Rollover Protective Structure*) are cause of mortal accident. Inefficient brake system and lack of assisted-aid systems characterize these machines.



Figure 3. Accidents with conformed tractors equipped with ROPS and retention belt don't have heavy injuries for operators in almost all cases.

Many video clips have been produced in which are shown typical cases of risks in the use of unconformable and old agricultural machinery.

Have been developed many screenplays about: small tractors, 4WD and 2WD tractors with different equipment applications, rotary hoes, chain saws, hand mowers.

In the specific case of small tractors have been taken into account the following risk cases: limbs capture or crushing, tractor rollover caused by heavy carried equipment, overload in pulling, extreme transversal slope, transversal skid, uncontrolled kynematisms between tractor and equipment, unexpected release of gear, unexpected autonomous start of machinery, immoderate forward speed or fast manoeuvre.

Risks related to Motor Hoes and Two Wheel Drive Tractors are examined in the cases of: capture of clothes or limbs, accident due to slicing of operator, crushing between tractor and obstacles.

In the case of mower use it has been focused risk derived from the rotary blade that can cut limbs (hand, arm, or foot) if: the operator has not enough attention, motor is running during maintenance. Stones or other objects can be thrown during weed cutting.

The use of chain saws has been examined too.



Figure 4. Oversights could have funny results but at the same time very dangerous.

All this informative multimedia supports are illustrated and delivered during meeting carried out on the whole Tuscany areas.

The program of these meetings is organized as follows: accidents analysis in agriculture with particular attention to Tuscany activities, risk cases analysis, controls and procedure to mitigate risks in agricultural activities, legislative approach, norms, responsibilities and actors.



Figure 5. 4WD small tractor: typical case of capture (see the shoelace) and case of tractor rear up pulling something.

All actions are arranged with the Agriculture Professional Organizations who have the task of wide extension service. The technicians of these organizations have cooperated in the project with the task of survey on farms machine conditions.

The survey has been done following a check list of analysis applied to a representative sample of the typical regional farms.

All the multimedia products are presented on a specific web site of the Regional Administration and on local television networks.

Different professional figures are implicated: agronomists, technicians, agricultural machine constructors, agricultural equipment dealers, local administration officials.

Dealers of agricultural equipment have great responsibility in training operators for safe use of machinery for their opportunity to meet frequently the farmers.



Figure 6. Motor hoe tractors provoke usually heavy and permanent injuries.

Tests on safety devices for 2 wheel tractors are still in progress, and it has been proved that these devices can be use with old machinery too.

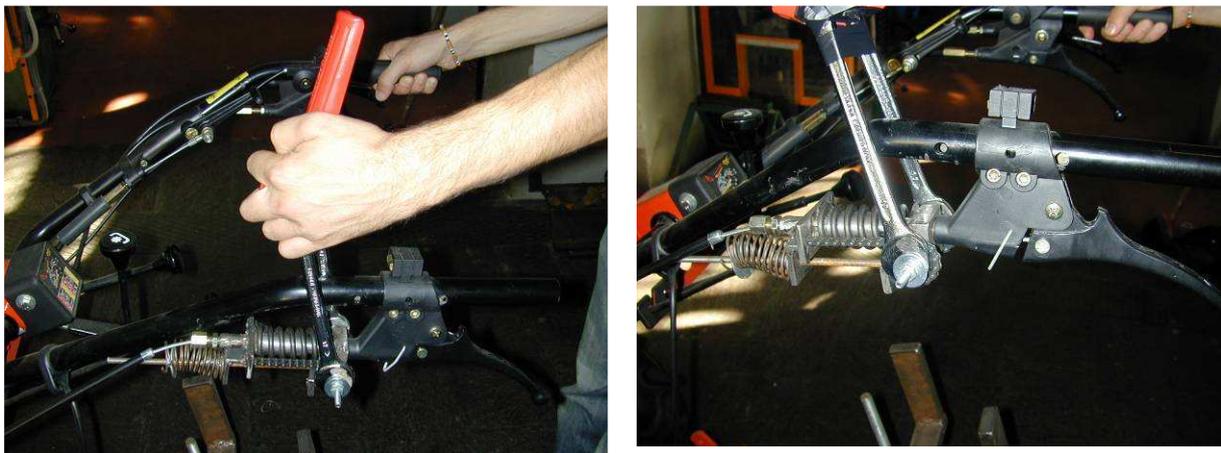


Figure 7. Prototype of fit device to control automatically the immediate clutch disconnection on 2WD mechanical gear tractors. Belt gear systems are easier to control as connection is usually due to a kept action.

Conclusions

The Tuscany Regional Law 30 on may 25, 2007 “*Norms on safe and health of agricultural workers*” is aimed to reduce risks in agriculture and in particular when the operators are hobbyists, unprofessional or occasional. It reaches now national acknowledgement on Law 81/2008 that takes into account all sectors and all people with no distinction between ordinary and independent workers.

As application of the task expected by the Regional Law 30/2007, and probably by the national law 81/2008, a specific program called “*Safety culture promotion in use of agricultural machinery*” is in progress and it has the aim to realize information and training tools addressed to unprofessional and hobbyist agricultural operators.

Very important is the participation of all categories involved in the scenery: agronomists, technicians, agricultural machine constructors , agricultural equipment dealers, local administration officials.

Because of their opportunity to meet frequently the farmers, dealers of agricultural equipment have great responsibility in training operators for safe use of machinery.

Impressive movies and pictures together with a detailed analysis of the accident are very effective on unprofessional agricultural operators who often don't know in detail the evident and potential risks.

This information and training process is extremely important in this evolution time in which hobbyists, part-time, familiar and occasional workers are undoubtedly replacing professional operators in small farms. As already highlighted this is particularly evident in the sub-urban areas where the phenomenon also called “new-urbanization” or “new-ruralisation” is strongly increasing.

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