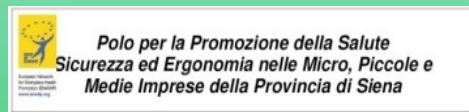


ETUI Seminar: items for discussion
ETUI SEMINAR 'MACHINERY SAFETY IN AGRICULTURE: BETTER ERGONOMICS FOR BETTER WORKING CONDITIONS'

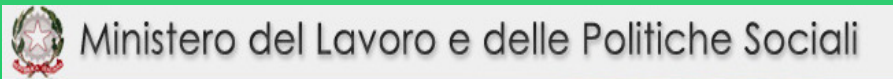


**Tractors safety and ergonomics:
the first findings of the Feedback project**

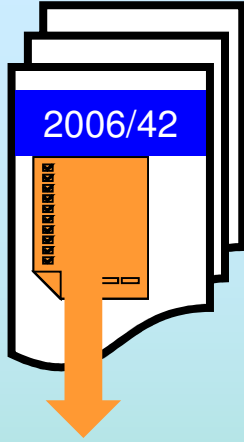
Feedback method



Gruppo regionale "Macchine e impianti"



Bruxelles 5 march 2013



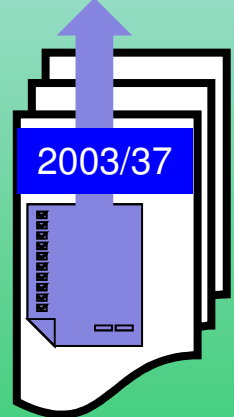
Preparatory work supervised by Commission



2012
OCTOBER

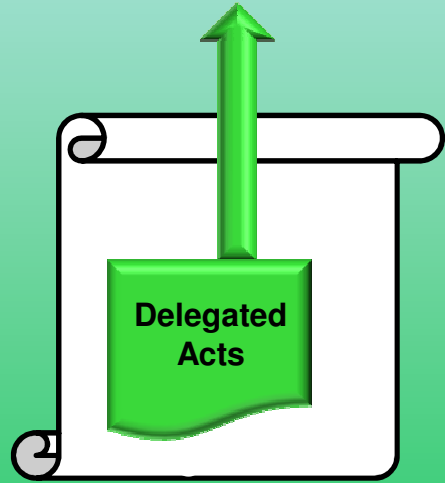


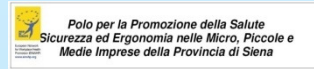
2013
OCTOBER



Feedback method

Delegated Acts





Working group

51 farmers

6 Working group

3 Working group: Wheeled tractors (minimum track > 1.150 mm)

2 Working group: tracklaying tractors

1 Working group: Wheeled tractors (minimum track < 1.150 mm)





Wheeled tractors
(minimum track > 1.150 mm)

**Tracklaying
tractors**

Wheeled tractors
(minimum track < 1.150 mm)





European Parliament
Regulation (EU) on the approval and market surveillance
of agricultural and forestry vehicles

Article 18
Requirements for occupational safety

Working group meeting results
Work phase: preliminary checks

(q) operation and maintenance including safe cleaning vehicle

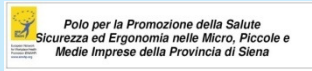
Lack of safe systems to hold the hood



Filters of the cab located at a too raised position
Difficulties to clean the glasses

**Insufficient sensitivity w
arning lighth “oil level”**





European Parliament

Regulation (EU) on the approval and market surveillance of agricultural and forestry vehicles

Article 18

Requirements for occupational safety

Working group meeting results

Work phase: preliminary checks

- (q) operation and maintenance including safe cleaning vehicle;
-
- (u) batteries.

Difficult greasing (points hardly reachable)

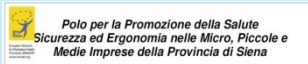


Absence of the battery switch
Battery located in an uncomfortable position
Lack of fire extinguishers



Fuel tank too small, located in an uncomfortable position





Working group meeting results

Work phase: access to the driving position

European Parliament
Regulation (EU) on the approval and market surveillance
of agricultural and forestry vehicles

Article 18

Requirements for occupational safety

(f) operating space and access to the driving position,
including protection against slipping, tripping or falling

Handle of the cab door located
in a too high position



Steps to access to the cab should be anti-slip



Working group meeting results

Work phase: connecting tools

Availability of an external device to control tractor lift movements



Tractor lift connection located at a too high position
Poor visibility of the tow hook



Frontal take-offs



European Parliament

Regulation (EU) on the approval and market surveillance of agricultural and forestry vehicles

Article 17

Requirements for the functional safety of vehicles

v) mechanical couplings, including protection against errors of fitting

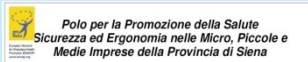
Article 18

Requirements for occupational safety

(g) power take-offs;

Standardizing of colors and coupling systems for hydraulic pipes





Working group meeting results

Work phase: Driving the tractor

European Parliament
Regulation (EU) on the approval and market surveillance
of agricultural and forestry vehicles

Article 18

Requirements for occupational safety

(j) safety belts;

.....

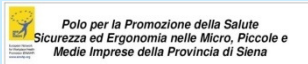
(o) controls, including safety and reliability of control systems, emergency and automatic stop devices;

Safety belt too uncomfortable to use



Safety device to allow movements only if the driver is
at the controls, with a sensibility fitting to the driver





Working group meeting results

Work phase: driving the tractor

Wide-angle mirrors, with electric control,
Could be useful
Hardly adjustable rearview mirrors



European Parliament
Regulation (EU) on the approval and market surveillance
of agricultural and forestry vehicles

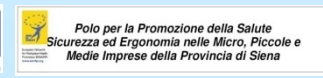
Article 18

Requirements for occupational safety

- (e) driving seat;
-
- (o) controls, including safety and reliability of control systems, emergency and automatic stop devices;
-
- (s) information, warnings and markings;
-
- (t) materials and products;

Need of improving the recommendation
of seat adjustment





Wheeled tractors (minimum track > 1.150 mm)

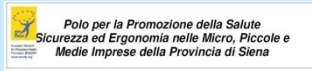


Tracklaying tractors



Wheeled tractors (minimum track < 1.150 mm)



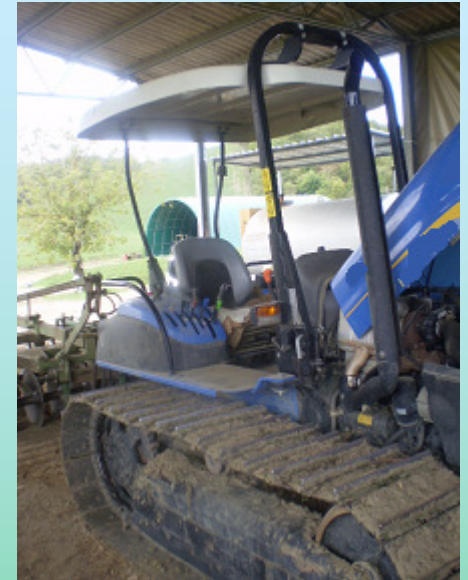


Working group meeting results

Work phase: preliminary checks

**Difficult greasing
(points hardly reachable) of caterpillars**

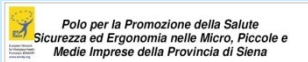
**Cleaning of air filters is too difficult
Lack of safe systems to hold the hood**



European Parliament
Regulation (EU) on the approval and market surveillance
of agricultural and forestry vehicles

Article 18
Requirements for occupational safety

(q) operation and maintenance including safe cleaning vehicle



Working group meeting results

Work phase: access to the driving position

Steps are too narrow and are located under the caterpillar



Fender size should be increased



European Parliament
Regulation (EU) on the approval and market surveillance
of agricultural and forestry vehicles

Article 18
Requirements for occupational safety

(f) operating space and access to the driving position,
including protection against slipping, tripping or falling



Working group meeting results

Work phase: driving the tractor

European Parliament
Regulation (EU) on the approval and market surveillance
of agricultural and forestry vehicles

Article 18

Requirements for occupational safety

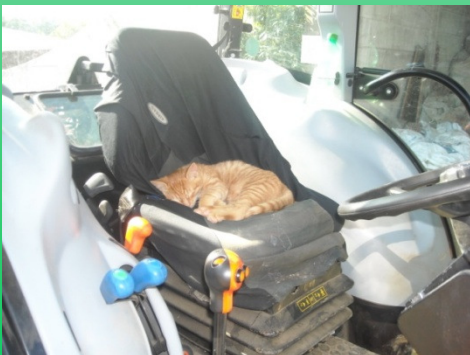
Insufficient space for the legs

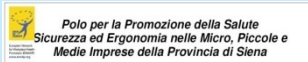


- (f) operating space and access to the driving position, including protection against slipping, tripping or falling
- (g) protection against mechanical hazards, other than the ones mentioned in points (a), (b), (g) and (k), including protection against rough surfaces, sharp edges and angles, rupture of pipes carrying fluids and uncontrolled movement of the vehicle.
-
- (o) controls, including safety and reliability of control systems, emergency and automatic stop devices;

Driving is too difficult, due to different positioning and shapes
of control devices between different models

Safety device to allow movements only
if the driver is at the controls





Working group meeting results

Work phase: driving the tractor

European Parliament
Regulation (EU) on the approval and market surveillance
of agricultural and forestry vehicles

Article 18

Requirements for occupational safety

(j) safety belts;

....

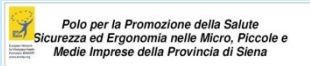
(e) driving seat;

Safety belt too uncomfortable to use



Seats need to be improved





Working group meeting results

Work phase: driving the tractor

**Air-conditioned with air filtration,
soundproof cabs are required**



Improvement of the visibility of the glasses



European Parliament
Regulation (EU) on the approval and market surveillance
of agricultural and forestry vehicles

Article 17 Requirements for the functional safety of vehicles

(c) systems to provide the driver with visibility and information on the state of the vehicle and the surrounding area, including glazing, mirrors and driver information systems;

.....
i) heating systems;

Article 18 Requirements for occupational safety

(a) roll-over protection structures ("ROPS");

.....
(d) driver's exposure to noise level;

.....
(l) protection of driver against hazardous substances;

....
(q) operation and maintenance, including safe cleaning of the vehicle;

Working group meeting results
Work phase: driving the tractor

European Parliament
Regulation (EU) on the approval and market surveillance
of agricultural and forestry vehicles

Article 18
Requirements for occupational safety

(a) roll-over protection structures ("ROPS");

.....

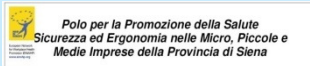
(p) protection against mechanical hazards, other than the ones mentioned in points (a), (b), (g) and (k), including protection against rough surfaces, sharp edges and angles, rupture of pipes carrying fluids and uncontrolled movement of the vehicle;

**Safety device to allow movements only
if the driver is at the controls, with a
sensitivity fitting to the driver**



Use of ROPS permanently mounted





Working group meeting results

Work phase: coupling equipment

European Parliament
Regulation (EU) on the approval and market surveillance
of agricultural and forestry vehicles

Article 17
Requirements for the functional safety of vehicles
v) mechanical couplings, including protection against errors of fitting

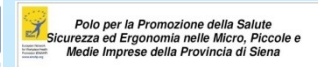
Article 18
Requirements for occupational safety
(p) protection against mechanical hazards, other than the ones mentioned in points (a), (b), (g) and (k), including protection against rough surfaces, sharp edges and angles, rupture of pipes carrying fluids and uncontrolled movement of the vehicle;

Availability of an extern device to control tractor
lift movements should be useful



Standardizing of colors and coupling systems
for hydraulic pipes





Wheeled tractors (minimum track > 1.150 mm)



Tracklaying tractors



Wheeled tractors (minimum track < 1.150 mm)



Working group - Wheeled tractors (minimum track < 1.150 mm)

Work phase: driving the tractor

Use of ROPS permanently mounted is difficult



Article 17
Requirements for the functional safety of vehicles
(j) devices to prevent unauthorised use;

Article 18
Requirements for occupational safety
(a) roll-over protection structures ("ROPS");
.....
(f) operating space and access to the driving position,
including protection against slipping, tripping or falling
....
(e) driving seat;



Safety device to allow movements only if the driver is at the controls



Seats need to be improved

Access to the driver seat should be improved





Feedback method



ISO 4254-7:2008

Agricultural machinery -- Safety -- Part 7: Combine harvesters, forage harvesters and cotton harvesters

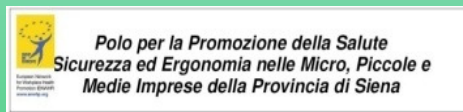
Nr.²	Comment (justification for change)²	ISO 4254-1:2008²	ISO 4254-7:2008²	Current text²	Proposed change/text²	Importance for prevention³	technical feasibility³	generality³	Cross-reference³
□	(Risk plus prevention suggestions)¶ Prevention suggestions that identify improvements needed in the manufacture of the machine itself and guidance materials such as operators' manual.²	chapter, e-1 section and e-1 paragraph²	chapter, e-1 section and e-1 paragraph²	²	²	(1, 2, 3 for high, medium, low)³	(a, b, c for easy, medium, elaborate)³	(regul. amend. necessary only in specific countries or territories) e-1 (G: global, e-1: local)³	Phase number in reference³
1.13²	Risk of slips and falls from inadequate handholds.¶ In transport position chains and rails act as tripping mechanisms when exiting cab.¶ Risk of strains from lifting and swinging ladders in and out or down. Also possible overbalance.¶ Risk of pinching injuries.¶ Operator-friendly guard rails around each ladder and high-risk areas e.g. engine bay.¶ The height of the first step is excessive and must be reduced.²	¶ ¶ ¶ ¶ ¶ 4.5.1.1¶ ¶ ¶ ¶ ¶ ¶ ¶ ¶ ¶ ¶ ¶ ¶ 4.5.1.2²	¶ 5.3.5¶ ¶ ¶ ¶ ¶ 4.5.1.1- General¶ 4.5.1.1.1- If the vertical height of the operator station floor above ground level exceeds 550 mm, measured on level ground and with the specified tires with the maximum diameter at specified inflation pressure (see 8.1.3.1), a boarding means shall be provided. The dimensions shall be as shown in Figure 3.¶ 4.5.1.1.2- Whenever the boarding means is located directly in line and forward of a wheel (i.e. within the track of the machine), provision shall be made for a railing to be located on the wheel side. This does not apply for the transport position. Shielding shall be provided on the back of steps or ladders whenever a protruding hand or foot may contact a hazardous part of the machine, e.g. wheel.¶ ¶	5.3 Operator's work station¶ 5.3.5 Boarding means¶ For boarding means, the provisions of ISO 4254-1:2008, 4.5.1.1 and 4.5.1.2, apply.¶ ¶ ISO 4254-1:2008¶ 4.5 Operator stations¶ 4.5.1 Boarding means¶ 4.5.1.1 General¶ 4.5.1.1.1 If the vertical height of the operator station floor above ground level exceeds 550 mm, measured on level ground and with the specified tires with the maximum diameter at specified inflation pressure (see 8.1.3.1), a boarding means shall be provided. The dimensions shall be as shown in Figure 3.¶ 4.5.1.1.2 Whenever the boarding means is located directly in line and forward of a wheel (i.e. within the track of the machine), provision shall be made for a railing to be located on the wheel side. This does not apply for the transport position. Shielding shall be provided on the back of steps or ladders whenever a protruding hand or foot may contact a hazardous part of the machine, e.g. wheel.¶ ¶	¶ 5.3.5 Boarding means (change)¶ For boarding means, the provisions of ISO 4254-1:2008, 4.5.1.1 and 4.5.1.2, apply.¶ The height of the first step to access the operator station must be reduced.¶ The height of the first step of boarding means to operator stations should not exceed 400 mm; for machines with slope compensation the height can be up to 550 mm at the maximum extension of levelling.¶ Difference to other machines not to be seen, in our general requirement of 550 mm is sufficient.¶ --> No change¶ ¶ The principal dimensions of the ladder shall be determined in accordance with 4.4.1 to 4.4.4-ISO 14122-4¶ ¶ 4.5.1.2.3 change¶ If ladders are used, their inclination, measured between 70° and 80° from the horizontal, shall not exceed 3°.¶ Ladders with inclination less than 70° are not acceptable¶ --> Not supported — ok¶	1²	2²	G²	2.1¶ 2.6²

ETUI Seminar: items for discussion
ETUI SEMINAR 'MACHINERY SAFETY IN AGRICULTURE: BETTER ERGONOMICS FOR BETTER WORKING CONDITIONS'



**Tractors safety and ergonomics:
the first findings of the Feedback project**

Feedback method



Gruppo regionale "Macchine e impianti"

