

5 – Point Action Plan to Reduce & Prevent On-Road Accidents with Agricultural Vehicles in the EU

March 2017

Executive Summary

The number of on-road accidents with agricultural vehicles in the EU is low – when compared to accidents with other vehicles. The risk of being involved in an on-road accident is considerably lower (-82%) per hour worked for new tractors (<13 yrs. old) than for old ones – proof of the substantial advances in active & passive road safety made in the past years. However, the percentage of a grave or fatal outcome is, comparatively speaking, higher in an on-road accident with an agricultural vehicle due to the vehicles' particular characteristics such as slow speed and wider dimensions.

To reduce & prevent on-road accidents with agricultural vehicles in the EU further, CEMA has identified the following 5 Point Action Plan as the most effective & efficient way forward:

1. Create a uniform European accident reporting system
2. Better lighting & signalling for greater visibility of old farm machines on the road
3. Boost driver training to ensure greater awareness & alertness of drivers
4. Enable Vehicle-to-Vehicle (V2V) communication
5. Enable optional installation of mirrors or camera systems at the front of farm vehicles

→ CEMA calls on the EU, Member States & stakeholders to make a joint effort to implement these actions as a matter of priority.

Introduction

Compared to accidents with other vehicles, **the number of on-road accidents with agricultural vehicles in the EU is low**. The risk of being involved in an on-road accident is lower (-82%) per hour worked for new tractors (<13 yrs. old) than for old ones. 56% of all road accidents with tractors resulting in injury (and 69% of all road accidents with fatal injuries) happen with tractors which have been in use for more than 12 years – proof of the **substantial advances in active & passive road safety that have been implemented in the past years**.

In 2014, 178 persons were killed in road accidents with an agricultural tractor in the EU, representing 0.7 % of the 25.107 persons killed that year in EU road traffic. However, the percentage of a fatal outcome is, comparatively speaking, higher in an on-road accident with an agricultural vehicle due to the vehicles' particular characteristics. In other words, **even if the risk of colliding with an agricultural vehicle on the road is low, the risk of a serious injury or fatality in case of an accident is somewhat elevated.**

The biggest factor contributing to on-road accidents with agricultural vehicles is their **slow speed**. Typically, they are the slowest vehicle on the road. Dimensions are another contributing factor: many agricultural vehicles are **much wider** than surrounding vehicles, mainly due to a wider chassis or wider tyres. When a dangerous situation arises, it is therefore important that the **other road users** (rather than the agricultural vehicle itself) are enabled and empowered to **perform evasive actions in a safe and timely manner**. This is a challenge, since traffic density in the EU is rising while the average distance between vehicles is decreasing. The approach towards future accident prevention must therefore be twofold:

1. To ensure that other road users are notified as early as possible of an approaching or manoeuvring agricultural vehicle ahead.
2. To prevent a dangerous situation with an agricultural vehicle from arising in the first place.

The necessary technologies to advance on both these points are already available or in preparation. With their help, it will be possible to reduce on-road accidents with agricultural vehicles to a minimum. In line with this, **CEMA has identified the 5 priority actions outlined below as the most effective and efficient ways forward.**

- **CEMA calls on the EU, Member States & stakeholders to make a joint effort to implement these actions as a matter of priority.**

1. Create a uniform European accident reporting system

The current accident reporting system for agricultural machinery in the EU remains nationally scattered in terms of the terminology and reporting templates used in each Member State. It also lacks suitable IT tools to collect the necessary details as well as the common analytics to extract the causes and their prevalence. In short, the current system is grossly insufficient for an in-depth understanding of the exact causes and contributing factors of accidents. The absence of reliable, representative, and comparable data effectively prevents the development of evidence-based solutions and strategies level to reduce accidents.

As a result, there is an urgent need for a harmonized accident reporting template to be rolled out across the EU and to be used consistently by all the different bodies and actors in charge of accident reporting. With the evidence gathered from harmonized accident reporting, the most effective and efficient measures for accident reduction and prevention could be evaluated and implemented at EU, national, and regional levels.

Current status & call to action:

- The industry has initiated the development of a new European standard format for reporting accidents with farm machines (CEN standard EN 16831: 2015)
- CEMA calls on the EU to fund a pilot study to test out the new standard in practice and assess the added value of a pan-European database for accidents involving farm machinery. The evidence gathered could inspire a European roll-out of the standard & inform similar activities for other industrial vehicles.

2. Better lighting & signalling for greater visibility of old farm machines on the road

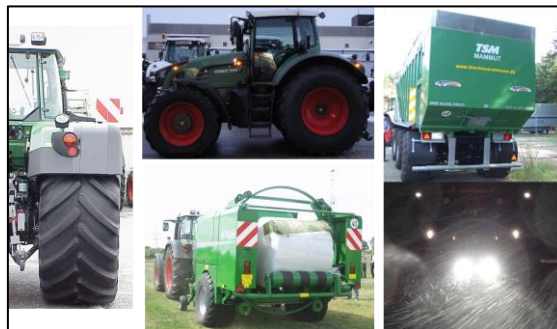
To allow drivers to adapt their behaviour when encountering farm machines on the road (and avoid potential accidents), they must be able to:

- see the vehicle *as early as possible*
- recognize its shape & understand its dimensions
- react to its low speed & properly comprehend the obstacle it may represent

Fixing appropriate lighting and signalling panels on farm machines has proven to be the most important, most effective and cost-efficient tool to reduce and prevent accidents on the road. They enable drivers of other vehicles to detect machines earlier, adapt their behaviour accordingly, and avoid accidents.

Current status & call to action:

- **New EU rules on lighting & signalling will apply to all new farm vehicles as of 2018.** Industry experts and EU Member States jointly revised UNECE Regulation 86 on lighting and signalling of farm machines. These rules were subsequently included in the new EU type approval Regulation (167/2013).
- **Boost mandatory retrofitting across the EU:** via retrofitting, the new rules can also be applied to older, existing vehicles (responsible for the lion’s share of on-road accidents). Various EU Member States (such as Belgium) have implemented such retrofit actions in the past. **CEMA calls on EU Member States to ensure that all old machines are retrofitted to be in line with the new rules.**



Lighting & signalling panels: highly effective in preventing accidents

3. Boost driver training to ensure greater awareness & alertness of drivers

For drivers of farm machines, adequate training is essential:

- to obtain the necessary driving skills; and
- to reach the necessary level of awareness and alertness about the most dangerous situations to be potentially encountered by a farm vehicle on the road.

Well-trained drivers are aware of the limits of their vehicle in terms of braking, steering and stability as well as the effect of their behaviour on the tractor-trailer combination. Moreover, they are acutely aware of the most dangerous situations that can potentially be encountered with the respective type of vehicle. Based on the knowledge and skills gained by driver training, drivers will be more alert when on the road and drive in an anticipative way, even when under pressure.

Current status & call to action:

- Farm machinery manufacturers already offer a wide array of driver training courses.
- The courses can & will be strengthened further in the future by formally including specific dangerous situations and training and preparing drivers for them.
- National & regional governments should support industry's voluntary activities with dedicated public awareness campaigns about adequate driving behaviour when encountering farm vehicles on the road.

4. Enable Vehicle-to-Vehicle (V2V) communication: the ultimate prevention tool for hazardous situations & accidents

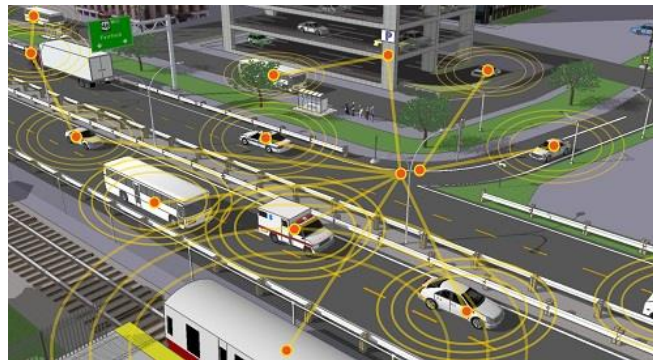
A rudimentary form of V2V is widely used in India where you can often see a short sentence placed on the backside of a truck: "When overtaking, please honk your horn!" It underlines the fundamental rationale behind V2V: to ensure that both drivers understand a changed traffic situation without one vehicle (in this case, the truck) physically seeing the other vehicle (the car). The solution lies in the proper anticipation of the changed traffic situation (i.e. the overtaking of the truck).

Many accidents happen because the traffic situation changes so suddenly and unexpectedly that the time to react is too short. The ultimate solution is to anticipate any such situational change, even situations that drivers or sensors cannot detect. Such total anticipation can be achieved by V2V: a scenario in which all on-road vehicles communicate with each other and exchange information on position, speed, type of vehicle, dimensions, and possibly even the intention of an action.

V2V will help to reduce accidents drastically – even if, in a first step, information and alerts about possibly dangerous traffic situation are merely reported to drivers. The ultimate aim is to achieve a fully integrated automatic V2V system in which vehicles decide autonomously on the best way(s) to evade other vehicles.

Current status & call to action:

- Warning drivers about slow vehicles (like farm vehicles) is a simple V2V service that should be part of the initial deployment of cooperative ITS (Intelligent Transport Systems) in Europe.
- In November 2016, the European Commission adopted a European Strategy on Cooperative Intelligent Transport Systems (C-ITS), a milestone towards cooperative, connected & automated mobility.
- The Strategy will make it possible to deploy vehicles that can talk to each other and to the infrastructure on EU roads as of 2019.



V2V: when vehicles talk to each other, accidents can be prevented

5. Enable optional installation of mirrors or camera systems at the front of the vehicle

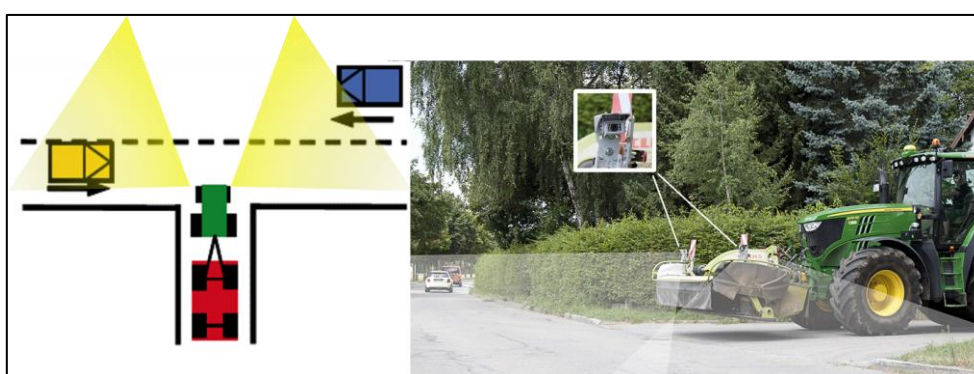
Most on-road accidents with farm machines happen at crossroads or intersections – in other words, when the farm vehicle turns left/right or enters the road from another street (or country road). In this particular situation, the operator of the farm vehicle needs good visibility in all directions of the road to see other vehicles and avoid accidents.

However, the difficulty for drivers in such a situation is that the distance between them and the front end of their vehicle can easily reach up to 3.50m – or even more, in case of front implements or front ballast. Particularly when the visibility is obstructed by external factors (house, wall, tree etc.) the front of the tractor (or combine harvester) will obtrude and effectively block most of the driving lane before the operator can actually see the surrounding traffic.

This risk needs to be addressed, particularly on roads with higher speed limits. The best solution is the attachment of appropriate mirrors or camera systems to the front of the vehicle. Such systems can provide the driver with a full visual overview of the upcoming traffic on the left and right side before obstructing or entering the road, thus allowing the driver to choose a safe moment to move forward and avoid accidents.

Current status & call to action:

- A proposal to develop such camera systems has been submitted by the industry to ISO (International Organization for Standardization).
- A new **ISO-standard** on camera systems could be ready for implementation by the industry as of 2019.
- EU Member States should follow the approach of Germany where national rules have already been defined for optional camera systems when the maximum distance of 3.5m between the front of the vehicle and the driver has been exceeded.



Camera systems: looking left & right before entering the road
