

## Is Situation Awareness Important for Safety in Agriculture?

The term situation awareness can be traced back to World War One German fighter pilot Oswald Boelcke, who described the importance of gaining an awareness of one's enemies before they are aware of you.<sup>4</sup> Situation awareness is now a key concept in aviation and a fundamental component of safe flying. Consequently, major airlines have adopted simulator training to enhance situation awareness as part of Crew Resource management (CRM) training.<sup>6</sup>

A recent interview study with farmers highlighted situation awareness as a core skill in

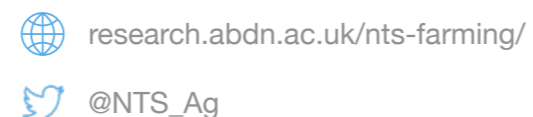
agriculture. When asked to describe recent accidents, a large proportion of farmers discussed incidents that included a lapse in situation awareness, such as poor visibility in tractors and distractions when operating machinery. In contrast, when discussing safe practice, farmers reported the importance of keeping an eye on their surroundings, monitoring any changes in the environment, and considering the outcome of any actions. Several farmers reported that their past experience allowed them to anticipate potential problems, such as spotting when cattle were unsettled.<sup>7</sup>

**If training in situation awareness has had a positive impact on the aviation industry, is it time to apply a similar approach to agriculture?**

## References

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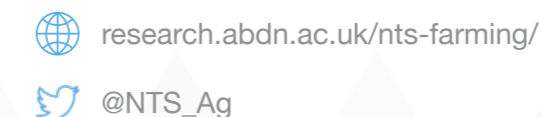
Situation awareness is an important skill in conjunction with the safety management practices and procedures recommended by the HSE.



## Situation Awareness Agriculture & Aviation

The similarities, and the differences

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# What do Farmers & Pilots have in common?

Both operate in high risk situations



Both need to maintain an awareness of risks and hazards



Both have to consider factors such as terrain, weather, and machine function. All of which have to be monitored, and can change in an instant!



Both operate in a high tech environment when operating machinery, and must use sophisticated instrumentation.



Both need **Situation Awareness** to work safely, in addition to the required technical and procedural knowledge.

Other than the obvious differences in the machinery, and mission goals, training development differs between farmers and pilots:



Pilots must undergo mandatory training in non-technical skills (crew resource management), including **Situation Awareness**, farmers do not.

## What is Situation Awareness?

Situation awareness is the mental picture of your current environment. This involves understanding information related to your surroundings, your team members and the current state of any mechanical systems: be it an aircraft's flight instruments or the various interfaces in the cabin of a tractor. This complete and integrated picture can help when making decisions and weighing up task risks.<sup>1</sup>

**Situation awareness involves three stages:**



**1. The perception of surroundings (i.e. spotting live wires)**



**2. The comprehension of the situation (i.e. live wires are dangerous if touched)**



**3. The projection of future status (i.e. if I do not lower the arm of my tractor, I will touch those wires)**

## Lapses in Situation Awareness; Accidents in Agriculture and Aviation

### Agriculture

In 2017, a farm worker died while attempting to clean a trailer on his family's farm in Lincolnshire. The trailer hit an overhead cable, electrocuting the farmer who was later pronounced dead at the scene.

This accident was caused by multiple factors, one of which was a lapse in situation awareness. According to a colleague of the farmer, he was aware of the overhead power lines but probably unaware that he had not pushed the switch to the trailer fully into the float position. Consequently, the trailer was sent upwards and made contact with the overhead wire, electrocuting him.<sup>2</sup>

#### IN BOTH INCIDENTS:

**The workers were not sufficiently aware of the surroundings**

- ▶ Proximity of the trailer to the overhead wires
- ▶ Proximity of the plane to the sea wall

### Aviation

In 2013, the tail of an Asiana Airlines plane struck a sea wall on approach to San Francisco International Airport. The plane was too low and did not have enough airspeed during the landing attempt. As the tail of the plane struck the sea wall, it was ripped off. The rest of the plane was sent spinning down the runway and caught fire while coming to a stop.

A lapse in situation awareness was one of the factors that led to this accident. A navigational aid was not working that day, meaning the pilot had to rely on his vision. One of the possible causes of this incident was the crew's failure to monitor and maintain the plane's airspeed and abort the landing when in trouble.<sup>3</sup>

**The workers were unaware of the status of controls they had used in their vehicles**

- ▶ The switch to the trailer had not been fully pushed into the float position
- ▶ The auto throttle in the plane had been turned off earlier in the flight