GUIDANCE DEVICES FOR FIELD CROPS SPRAYING MACHINES

Drocaș, I., Marian, O., Ranta, O.

University of Agricultural Sciences and Veterinary Medicine, Faculty of Agriculture, 3-5 Mănăștur Street, 3400 Cluj-Napoca, Romania, e-mail: drocas_i@yahoo.com

Key words: field crop spraying machines, foam marker devices, GPS guidance

SUMMARY

In order to reduce the environment pollution when using field crop spraying machines it is necessary to set the amount of substance correctly and to drive the machine very precise. The implement of the onboard computers onto the agricultural machines helps setting up the amount very precisely and the installations for verifying the machines helps to check the uniformity of distribution before starting spraying. The uniformity must be ±15%.

Driving correctly the spraying machines means to avoid the overlapping (too much substance) and mistakes (untreated areas).

To avoid these, one can use different means to drive the aggregate correctly during spraying: seeding in technological paths, when the width of the spraying machine is a multiple of the seeding machine; using foam marking devices; GPS guiding devices.

During research two types of foam markers were tested: ARAG foam marker mounted on MET-2500 and SALVARANI foam marker mounted on EEP-600ME.

Both installations have the following basic parts: tank for solution, a compressor driven by an electric engine (electric current supplied by the tractor’s battery), hoses for air and liquid and two foaming devices mounted on the extremities of the nozzle ramp. The foam is a mix between a biodegradable foaming agent and water. The foaming agent and the water are mixed in the tank.

The experiments revealed that the foam is visible from 1 hour up to 3 hours and depends on the consistence of the foam and the concentration of the foaming agent. It was observed that the foam is visible from the tractor cabin making very easy the drive of the aggregate. The overlapping and mistakes were avoided.

GPS guiding devices is another new and important way to drive the aggregates correctly. The GPS devices use satellites (up to 20 satellites) to determine the position of the aggregate. The movement and the deviation of the aggregate can be followed on the display mounted in the tractor cabin.

These two devices presented in this paper represent a major achievement in the agricultural engineering. The common mistakes made so far are avoided.

Reference

1. ***ARAG technical information
2. ***SALVARANI technical information
3. www.linco.com