

A boom always at the right height

SPRAYING

The automated spray height control systems help providing work comfort and quality of application on the hilly fields.

Boom height control determines directly the quality of the product applications.

«The equipment automatism should adapt to the boom behavior»

Increase in sprayer boom widths results in an increasing constraint on the monitoring of the boom height during applications. On fields with an irregular profile, one ends up toying continuously with the roll sensor and the variable geometry to maintain a satisfactory height and provide nozzle efficiency. This attention paid to the boom is very often taken to the detriment of the job efficiency and of the spraying. In these conditions, an automated spray boom height control equipment can be justified. Indeed, according to the suppliers, this provides lift control, roll control and even variable geometry control, in conjunction with continuous measures of the boom height. This is carried out by means of ultrasonic sensors installed on the boom which detect the distance between them and the soil or the crop.

This operating principle is taken up by the five suppliers on the market: The French Agtronix, the German Mueller, the Canadian Norac and the Americans Raven and John Deere.

Norac

Five units on the market

Manufacturer	Number of ultrasonic sensors	Localisation of sensors in central part	soil-crop Modes	Controlled features	
				Height and roll controls	VG

Retrofittable solutions

Agtronix

Norac

Raven

Factory-fit options

Amazone (Mueller)*

Hardi-Evrard

(Norac)*

John Deere*

Kuhn (Agtronix)*

Tecnoma (Mueller)*

Vicon Rau (Nora)*

**Supplier (if different from the manufacturer).*

FROM TWO TO FIVE ULTRASONIC SENSORS

This last one is the only sprayer manufacturer to have its own system, the four others being electronics specialists which adapt their system on any equipment type and which cooperate with some established companies. Some technical features distinguish these units. Concerning the height sensors, in every case, each boom wing gets one. For the rough terrains with wide booms, some offer a second sensor on option for each wing. Special features of the Norac and Raven systems: they incorporate a third sensor on the central frame. Depending on the systems, other sensors detect the position of the main frame, what makes easier the analysis of the boom suspension behavior. As to the hydraulic controls, Norac distinguishes itself also using its own proportional valve block. As to Raven, it offers a mechanism supplying the VG cylinders with a variable pressure, which operates in the way of a hydraulic suspension.

PROGRAMMING MAKES THE DIFFERENCE

The control features are generally simplified. To be noted is the presence of two detection modes (soil or crop) on Norac and John Deere, or still the automatic boom lift coupled with the spraying shutting off at the end of the field on Agrotrox, John Deere.

It remains that the efficiency of these units depends directly on the programming and calibration level. *The adjustment parameters are specific to each unit. "And the automatism should adapt to the boom behavior"*, emphasizes Bertrand Plessis of Norac.

Another warning from the specialist, *"a preliminary to a proper operation of the automatism is a boom suspension adapted to the terrain topography" The control is not here to compensate for a boom operating fault, but really to complement its operation».*

So caution before investing in a comparatively costly fixture: 3000 to 9 000 Euros depending from the features and the manufacturers. Michel Portier

"I do not bother anymore with the boom"

In CÔTE D'OR on his rough fields, Olivier Chauvot appreciates the Norac system for its aggressiveness and simple use, in spite of a costly investment.

Olivier Chauvot: "Spray height control has let me reduce the application height and consequently the drift risk".

The panel allows setting up the nozzle height, the sensitivity and the detection mode.

Located on the border of the Langres plateau, Olivier Chauvot's farm, in Poiseul La Grange, is characterized by a group of fields with varying profile. On 260 hectares, crops (rape, wheat, barley) are cultivated on slopes and dales (small valleys). *« I spent my days during application controlling the boom and adjusting the roll control and the VG »* remembers Olivier Chauvot. After an inconclusive experience with a first automated boom height control unit, the farmer has fitted his Meteor Evrard pull type machine with a Norac UC4 + unit for the past year and a half. *"Once spray height is set, I do not busy myself with the boom any more". So I can concentrate on the other unit settings, in particular the control of the tracking axle, what is very tricky on the slopes.* "With a 28 meter boom, Olivier Chauvot applies at a speed of **11-12** km an hour.

MANEUVERS MADE EASIER

But more than the speed, it is on the application height that the advantage is the clearest. *"The system aggressiveness and progressiveness has allowed me to apply at 60-70 centimeters to restrict drift in case of wind. A while before, I was staying at one meter for safety ».* The automatism makes also the difference at the end of the day. *« At night fall, if I still have half an hour left to complete a field, I finish it without taking any risk" asserts the farmer.* At the end of the field, *"I do not raise the boom; the automatism insures the boom stability during the maneuvers. In order to get an extra safety margin, the VG could be raised by 50 centimeters, on the condition of a quick return to the working position at the start of the spraying ».* It remains that the unit cannot compensate for everything. *On a badly leveled field, the automatism cannot analyze the multiple movements of the suspension. Then it needs to be deactivated in order not to degrade further the suspension operation. »*

COMFORT AT A HEFTY PRICE

Another limit of this unit, its price is difficult to justify from a purely economical point of view.
"About 7500 euros must be reckoned with for the system I am using. The version without VG is at less than 4000 euros, but it would not be efficient with the configuration of my plots. It is hard to put a figure, but this unit insures me a better efficiency of the applications and takes its share of the sprayer resale value. Work comfort has also its price!"

Michel Portier