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Fruit growing tractor ousted by AgBot 3x2

Info

3x2

The indication 3x2 stands for the three wheels of the narrow-track robot AgBot 3x2, two of which are powered.

At the moment, two Dutch companies are intensively engaged in making a special robot tractor for fruit growing. AgXeed and Hol Spraying Systems have joined forces to come up with a new concept for working in the orchard, starting from their own strengths and systems. On the new robot tractor, named AgBot 3x2, there is no longer a workplace for the driver.

World-wide there are a lot of developments in the field of robotics. Especially in manufacturing, many robots have already taken over the work of humans. Who does not know the photos and films of a whole line of robots putting together a car? Many people think that the work in the field is difficult to robotise or not at all. And now two companies are proving that it can certainly be done, with an AgBot (agricultural robot) that can carry out the most frequently occurring operations in the orchard.

AgXeed

Eight technicians joined forces in a new company. All eight of them gained a lot of knowledge and

experience working for renowned businesses developing and producing agricultural machines and devices. In the new AgXeed company they started on a totally new concept. In a small village of the Dutch province of Limburg they found a suitable location to shape their ideas.

Philipp Kamps is one of these technicians and at the same time responsible for the communication concerning their products. "Big companies only think about further developing their tractors and machines. Everything must be bigger, faster and therefore heavier", according to Kamps. The AgXeed motto is: 'We supply simple, autonomous machines for repetitive operations'. For the company, the starting point here is the legal safety frameworks. The company also wants to be part of the circular economy. Kamps on this: "We aim for designs with batteries approaching 55 kW. For the time being, the battery package is too heavy and the capacity is too low, but we are closely following developments in that field. Later on, there will certainly also be a place for a hydrogen power supply".

The first AgXeed product is the AgBot. This robot tractor for agriculture, has a 115 kW (156 hp) engine, stands on robust caterpillar tracks and, at back and front, is fitted out with standard lifting systems, power take-offs and hydraulic connections. Behind the engine there is a powerful generator. Electric engines use the electricity generated for driving the caterpillar tracks, power take-offs and hydraulic pumps. There is also an electric 700 Volt connection for powering machines.

Kamps: "We are looking for companies, that together with us, want to look for autonomous vehicles in various sectors. We are very happy with the interest shown and the contribution made by Hol Spraying Systems, in together looking for an optimum solution for an autonomous vehicle



The AgBot of AgXeed in action with a digging machine.

AgXeed



An impression of the AgBot 3x2: the unmanned narrow-track tractor for fruit growing.

AgXeed/H.S.S.



The AgBot, here with a seed bed combination, has the highest possible safety level by means of sensors and a certified GPS system.

AgXeed

in fruit growing.” It was recently reported that the big manufacturer of machines and tractors Claas from Germany has obtained a minority stake in the AgXeed company. At the moment, AgXeed and Claas are working out the details of this cooperation.

H.S.S. and AgXeed: ideal combination

During the past few years, Hol Spraying Systems (H.S.S.) has intensively been working on improving crop protection by collecting sensor data and subsequently site-specifically treating trees with crop protection products, fertilisation and root pruning. Hendrik Hol of H.S.S. on this: “Our Intelligent Spray Application (ISA) has been received very well in the practical field. In combination with GPS, variable and site-specific treatment is possible and the link with the Agromanager makes it quite simple to save collected data and to make task maps. Agromanager is the only management programme for fruit growing that can also make three-dimensional task maps.” He continues: “We regularly receive questions from the practical field on the autonomous application of activities in the orchard. With AgXeed we have found the ideal partner to meet this demand.” Subsequently, AgXeed and H.S.S. have drawn up a design brief for an autonomous narrow-track robot. And this led to the prototype of the AgBot 3x2, a modularly constructed three-wheeler vehicle with a 55 kW (73 hp) diesel engine and two electric engines for driving the two rear wheels.

Narrow-track robot AgBot 3x2

The rear wheels of the AgBot narrow-track robot are the same size as those of regular fruit growing tractors. The front wheel has a width of 0.75 cm and in this way the weight of the machine is spread over the whole breadth of the grass alley. The big front wheel and the good weight



When working with a rotary mower and a weed sprayer the AgBot 3x2 drives backwards.

AgXeed/H.S.S.

distribution make it possible to work with a low tire pressure of 0.6 to 0.8 bar.

The AgBot 3x2 has a spray tank with a capacity of 2,000 litres. The sprayer and mixing pump, pressure regulator and filters have got a fixed place on the basic machine. The ventilator and the spray boom are in the standard three-point lifting system and the drive is provided by an electric engine via the 700 Volt connection.

“The operation of the sprayer and the communication with the Agromanager are completely integrated in the software and accompanying electronics of the AgBot 3x2. For route planning in the orchard AgXeed has developed its own portal”, according to Hol.

Interest

For the combination of the AgBot 3x2 and the H.S.S. sprayer, H.S.S. is going to arrange sales – especially during the first few years with AgXeed – and the supply and service for the fruit growing sector worldwide. In addition, H.S.S. will also play a part in the distribution of separate AgBots for fruit growing. Meanwhile, some farms have shown a concrete interest at H.S.S. Hol: “In October we are planning a number of demonstrations in the Netherlands, Belgium and Germany. We will certainly need the next few months to make the H.S.S. components communicate optimally with the AgBot 3x2. Moreover, AgXeed has planned quite a few tests with the prototype of this AgBot.”

Linking up machinery

The three-point lifting system of the AgBot 3x2 is in the category 1+2 and is suitable for, for instance, linking up a rotary mower or a weed sprayer. The drive of the rotary mower is provided by an electric engine, which is powered via the 700 Volt connection.

Demonstrations

Further information on dates, locations and times of the demonstrations with the AgBot 3x2 narrow-track robot can be found at: hendrik@holsprayingystems.com.