

3) There's no mistaking that smart agriculture and precision farming are needed to keep up with the growing demand for food in a world with a booming population. But it's more than that. The financial strain on our farmers worldwide has been increasing with no sign of letting up – could cheap drones be the solution to stressful farm management?

Not only can they be a hell of a lot cheaper than hiring a farm hand to help with the day to day farm management, but already they are proving to be many times more efficient than humans, saving farmers even more money.

To analyse an entire field manually, picking out places that need the most spraying is such a long, arduous job that you'd be better off just spraying the entire field. With a drone, however, it's done in a flash with remarkable precision.

Drones really are epitome of precision farming. They are an incredibly useful asset in agriculture. Drones are saving us time, money and boosting productivity to efficiently grow fields of bountiful crops. The data they can collect from their viewpoint in the sky is indispensable and could hold the solution to many precision farming struggles farmers currently face.

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CHISEL PLOWS INNOVATIVE PERFORMANCE

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Abstract. The article describes the innovations for chisel plows industry. It highlights the advantages of Case IH chisel plows over its Belarusian similar models.

Keywords: agriculture, chisel plough, innovation, soil, depth, subsoiler, implement.

At present one of the major problems in agriculture is insufficient soil saturation with important elements for seed germination and yields of good quality. So as to increase the amount of useful elements, the soil tillage should be deep which allows exchanging of substances between the upper and lower soil layers. Such operations are performed with chisel ploughs, which have recently been put into use, and are constantly being improved.

The chisel plows of the company Case IH is a good example of chisel ploughs for such operations combining the best innovations of science in the field of plough development.

The Case IH Flex-Till 600 chisel plow is durably designed to handle tough tillage conditions. Its range of shank spacing and trip point load options match your soil conditions so you can get better leveling, even in high-residue fields. This model of plough demonstrates superior soil penetration and accuracy. It is designed to handle tough tillage conditions and heavy residue with ease. It's a workhorse that can handle virtually any deep-till or conversion tillage task. Its solid construction and range of options make this a versatile and efficient chisel plow that you can depend on.

A definite advantage of the plough is a flexible frame with built-in durability. The Flex-Till 600 has a heavy-duty tubular frame construction is designed to handle tough tillage conditions and heavy residue with ease. The flexibility is provided by triangular design allowing the frame to follow contours of the land, minimize frame stress, and maintain the chosen depth. Its center section and wings are constructed with diagonal hinge lines. High density polyurethane discs cushion the frame and absorb movement as the machine flexes.

As for soil leveling and depth control, the plough encompasses more accuracy for a consistent seedbed. The farmer can adjust depth quickly and easily across a variety of field conditions and maintain consistent depth control. Single point hydraulic depth control and a floating hitch mean more reliability and accuracy.

The mechanical linkage system translates the depth to the walking axles and front castors, ensuring that the depth is the same across the entire machine. The walking beam axle adds another pivot point to the machine, helping to keep consistent seeding depth.

Shank assembly is considered to be dependable, strong and versatile. Its range of shank spacing and trip point load options make this chisel plough multipurpose and reliable. The shanks are available in 9 inch (229 mm) or 12 inch (305 mm) spacing in a variety of cutting widths to match needs and field conditions.

The problem of residue management is solved by Level Tough Residue system of 3 bar HD harrows equipped with 3/8" x 16" coil spring tines. The farmers are able to get better leveling, even in high-residue fields.

suit specific conditions.

Brand name	Number of working bodies	Working width	Maximum working depth	Aggregation	Performance
FELIX-600	24-40 gr.	7.3-12.2 m.	45 cm.	330/980 l/s	8.4-16.2 h/hour
The Wil-Rich 2500 Series Chisel Plow	28-56 gr.	8-18.3 m.	25 cm.	240/960 l/s	6.8-20,4 h/hour
ПЧН – 2.3	4 gr.	2.3 m.	50 cm.	150/220 l/s	2.8 h/hour
ПЧН - 3.2	6 gr.	3.2 m.	50 cm.	250/300 l/s	3.8 h/hour
ПЧН - 4.5	8 gr.	4.5 m.	50 cm.	350/400 l/s	5.4 h/hour

When looking at the comparison of subsoilers, it can be concluded that the Belarusian implements are inferior in all respects to the Flex-Till 600, except for the required tractor power, which allows the Belarusian implements to be combined with less energy-saturated tractors. An important reason for the big difference in performance is the difference in soils between Belarusian and European soils. Belarusian soils are more clogged and heavier, which makes it impossible to use such large aggregates as the Flex-Till 600 in deep tillage on these soils.

Market research and innovations in the subsoiler industry have led to the conclusion that the Flex-Till 600 combines the very best performance, using the latest technology and quality engineering solutions to increase the working width of the tool down to 45 cm, which has outperformed many implements of its type.

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DRONES AND ROBOTS IN AGRICULTURE

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Abstract. The use of drones and robots greatly improves agricultural production.