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.

Keywords: agriculture drone, spraying drone, agriculture robot, precision agriculture, unmanned aerial vehicle, smart spraying, smart seeding, remote sensing technology, agriculture mapping drones, harvesting and picking robots, weeding robots, milking robot, mechatronics.

Over the years, farmers have found innovative ways to answer the challenges they face as much as possible with new technologies. Agriculture drones and robots are the next step in this process. Agriculture drones and robots can be used to do anything from precision agriculture, to efficiently dispersing weed control or fertilizers, to optimizing field management. The results include reduced operation costs, improved crop quality, and increased yield rate.

The farming operations of today look quite different than even a few decades ago. New technology has allowed the growers of today to optimize each part of their operations – from field spraying to grow cycles and crop health.

A big part of that transformation can be attributed to drones and other types of unmanned aerial vehicles (UAV). With an agriculture drone, farmers get in-depth data analysis and mission planning as well as new tools capable of handling physical work.

The Agras line of spraying drones from DJI can help precisely deliver fertilizers, herbicides, fungicides, pesticides, seeds and desiccants.

The efficient application of the above is a persistent challenge for any grower. If you spray too much concentrated in one place, you run up extra costs and potentially decrease the quality of your produce. Too low a concentration, however, and you leave your crops vulnerable to being overgrown with weeds, malnourished, or eaten by insects and other predators – potentially decreasing the yield rate. However, the right farming drones and spraying payloads can distribute chemicals evenly and efficiently.

The results? Improved crop quality and a higher yield rate without intense manual labor. DJI drones can be used on nearly any kind of crop, including rice, wheat, corn, citrus trees, cotton, and much more.

Smart spraying and seeding aren't the only ways to increase overall agricultural efficiency, cut costs, or increase yields. Drones can also be used to map out an area and create new insights – taking the guesswork out of much of the growing process.

One of the keys to all of this is remote sensing technology, which picks up radiation on the ground and can track everything from physical characteristics to the amount of heat an area is generating. The best agriculture mapping drones take this concept further with what's called multispectral imaging. This means that they can capture light sensors both visible and invisible within a set range.

The list of farm jobs that agricultural robots can do is also impressive. Harvesting and picking robots are most relevant for high-value crops, such as wine grapes, where harvesting is traditionally laborious and time-consuming. Innovations like nanotechnology, materials science and mechatronics allow picking robots to not only detect fruits and analyze their ripeness, but also grasp and detach them without damage.

According to Future Farming, in the near future harvest robots, and even harvest drones, could be deployed for crops including broccoli, citrus fruits, cauliflower, kiwi fruit, tomatoes, cucumbers, peppers, lettuce, mangos, and watermelon. Some field robots can even take over activities from tractors, including soil cultivation, seeding, crop care and mowing.

Again, high-value crops (including several types of lettuce, strawberries, blueberries, oranges and other citrus fruits and winery grapes) seem to present the best business cases for weeding robots. These robots are especially useful where steep terrain is dangerous for workers and equipment. Through precision technology weeding robots can also direct tailored doses of herbicides to the weeds, but not the crops, which radically reduces the amount of herbicides applied.

As milking robots help to improve the productivity and yield of the milking process, dairy farmers are shifting from traditional to automated milking methods - to meet the exponential rise in global milk demand on the one hand and tackle labor shortages on the other. The expectation is that the market share will shift from standalone units to multiple stall units and then to advanced rotary units in the coming years. Automated feeding and barn cleaning systems are also helping to improve efficiency in the industry.

Numerous innovative technologies and automation of tasks can help overcome some of the challenges that farmers face and solve the problem of producing food for the growing population.

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DIGITAL TRANSFORMATION IN AGRICULTURE

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Abstract. The article describes digital transformation in agriculture.

Keywords: digital technologies, agriculture, robotics, blockchain, Internet of Things, artificial intelligence.