

IMPROVING AGRICULTURAL TECHNIQUES

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ABSTRACT

The article describes the parameters of parallel control systems based on agricultural techniques Outback S-Lite, Outback S2, Outback Sts (S touch screen). Parameters and options for parallel control systems are presented.

Simple search for innovation in geoinformatics technology in selsozhozyustve, streamlining technology systems, sputnik navigation, automation processes.

Keyword: Outback S-Lite, Outback S2, Outback Sts (S touch screen).

QISHLOQ XO'JALIGI TEXNIKALARINI TAKOMILLASHTIRISH

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ANNOTATSIYA

Maqolada Outback S-Lite, Outback S2, Outback Sts (S sensorli ekran) qishloq xo'jaligi texnikalariga asoslangan parallel boshqaruv tizimlarining parametrlari tavsiflangan. Parallel boshqaruv tizimlarining parametrlari va variantlari keltirilgan.

Selsozhozyustveda geoinformatika texnologiyasida yangiliklarni sodda izlash, texnologiya tizimlarini soddalashtirish, sputnik navigatsiyasi, avtomatlashtirish jarayonlari.

Kalit so'z: Outback S-Lite, Outback S2, Outback Sts (S sensorli ekran).

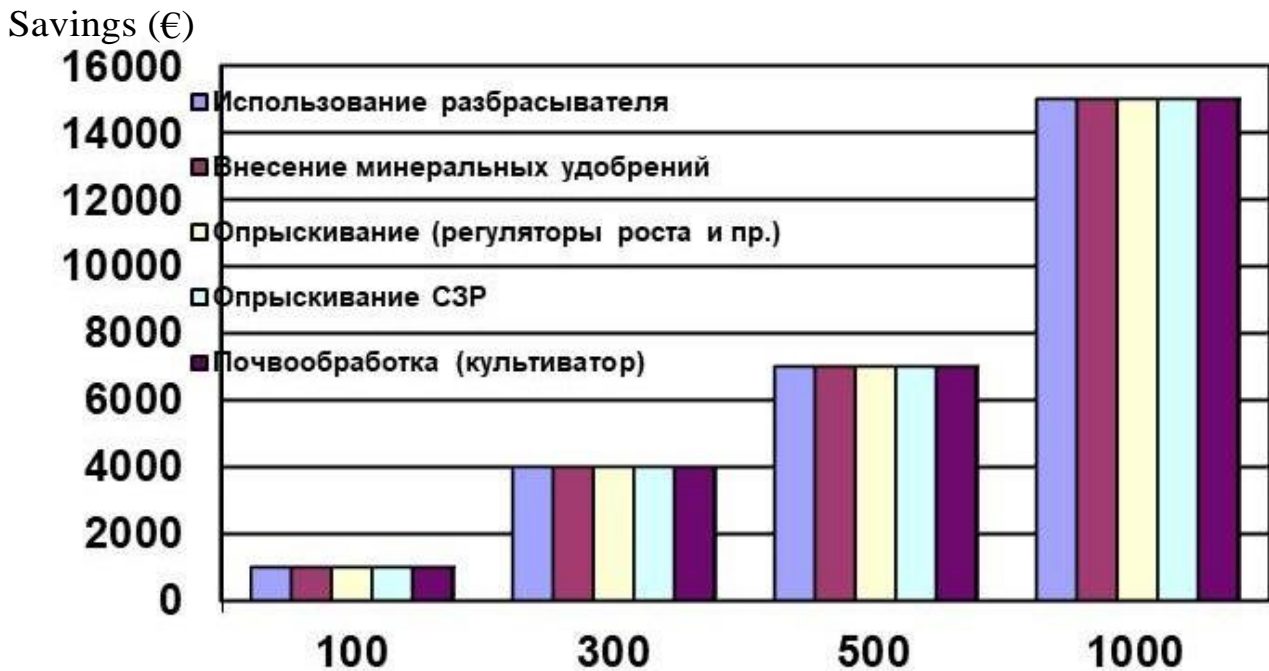
Introduction. Parallel driving systems are primarily intended for high-precision driving of agricultural machinery along a given route within the field.

Table 1. Suitability of systems for use in various agricultural operations.

Parallel driving systems can be divided into three classes:

1. Systems that do not have the ability to upgrade to autopilots;
2. Systems with the ability to upgrade to the installation of a thruster ("Steer");

3. Systems with the ability to fully upgrade to automatic driving systems (autopilots).



Area, ha

Figure 1. Cost reduction based on area.

The main elements of parallel driving systems:

- Course indicator (necessary to configure the system, decrypt satellite signals received by the antenna, process data, display the course indicator). The course indicator can be equipped with a liquid crystal screen or show the course (deviation from the course) using LED indicators. By and large, the method of displaying the course is not critical, however, devices equipped with LCD screens, as a rule, have more various useful additional functions and are more convenient for perception;
- Receiver of satellite navigation signals. At the moment, GPS / GLONASS receivers are beginning to appear, designed to work with the signals of both navigation systems with a large number of channels for receiving a signal.

The parallel driving system operates as follows:

- An electronic marker is installed (course indicator);
- The machine-tractor unit leaves for the field;
- The parallel driving system is activated;
- The width of the machine mounted on the tractor is set;

- An electronic marker determines the location of the machine-tractor unit based on signals received from satellites. As a rule, the signal state is reflected by indicators: red

indicates the lack of information for determining the location, yellow - the device works with the accuracy provided by the navigation system without differential correction, green - the differential correction is taken into account in the device. After the indicator appears, the parallel driving system is ready for operation;

- The machine operator fixes the starting point of the movement (processing);
- Having traveled to the end of the rut or having driven off at a distance of at least 30 meters from the point of start of movement, the machine operator fixes the point of end of movement;

- The computer of the parallel driving system builds in its memory a line connecting these two points. The electronic marker creates routes in memory that are parallel to the baseline at a distance of the implement's working width based on location data, aggregate width, and calculated values and directions of deviation of the machine from a given course. Routes can be either direct or curved;

- The machine operator can process the field, focusing on LED indicators or a field map displayed on the display, where the direction and magnitude of the deviation of the tractor from the route laid by the direction indicator are also recorded;

- On the display, in real time, the electronic map is redrawn taking into account the movement of the machine and tractor unit, its current position is displayed by some symbol in the center of the map window, the necessary data are recorded, additional characteristics are displayed;

- All of the above "tips" indicate to the operator - which direction and how much to turn the steering wheel for the correct passage of the row.

Figure 1.

The parallel driving systems of agricultural machinery in the domestic market are represented by the following models:

Outback S-Lite is the basic device in the Outback line of parallel driving

systems. It is installed on almost any machine, has an intuitive and easy to read interface. To master the system and work with it, no special theoretical training is required. It is possible to select parallel or contour driving modes, continue driving from the stopping point, calculate the field area [1]. Figure 2.



Figure 2. The base unit of the Outback S-Lite parallel driving system.

The

system supports the following driving options: straight rows parallel to the baseline defined by two points at the beginning and at the end of the first row; curved rows, with each successive row repeating the previous one; combined with pre-processing of pivot zones along the field contour with subsequent processing in parallel straight rows. The maximum accuracy of driving the Outback S-Lite system is 10-15 cm (taking into account the use of the technology of free differential correction e-Dif) [2].

Outback S2 is a functionally more advanced autopilot-oriented system than Outback S-Lite (for example, e-Drive). When working with a base station (RTK, BaseLine HD), the driving accuracy reaches 1-3 cm. The system can use WAAS and e-Dif differential corrections in work.

Conclusions

Outback S-ts (S touch screen) is the latest addition to the Outback line of

parallel driving systems. Combining the most popular features of the widely sold Outback S2 with the user-friendly user interface and Outback S3 touchscreen, Outback Sts offers a complete, productive solution with fairly simple controls. Outback Sts is equipped with a large, high-resolution color touchscreen display using GPS data and specific job information. It has a set of easy-to-use add-ons and the ability to set and change directions. The system provides a wide range of work management options, including setting perimeters, setting landing sites, creating templates and recording specific information on work, such as type of landings, wind direction and temperature. All this information can be stored in internal memory or transferred via USB port[5].

Figure 4

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