

Influence of selected design and operational parameters of the seed drill on the process of spot sowing of maize seeds in no-till cultivation

Summary

The paper presents the problems of no-till corn cultivation and the quality of corn sowing using different cultivation technologies. The focus was on the process of point seeding of maize seeds using no-till technology, where, after analysing the technical solutions of seeding mechanisms available in the world, two proprietary solutions were proposed, which were then validated in terms of the quality of operation. Thus, the purpose of the work was to build a seeding section as an original technical solution with such design and exploitative parameters of the seeder that it meets the basic requirements for precision seeders for seeding maize. The paper analyses the solutions currently in use and, on this basis, presents the main assumptions of simplified maize cultivation technology, specifies the agrotechnical requirements for sowing, reviews and evaluates the existing designs of seeder coulter assemblies for this maize cultivation technology, and presents the results of studies on the effectiveness of the application of simplified maize cultivation technology conducted by domestic and foreign research units. Based on these analyses, proprietary solutions for model seeding sections were proposed.

The remainder of the paper presents the research problems, presents the proposed research objects, and discusses the research program and its methodology. An important part of the work is the description of the experimental research (laboratory and field) and the presentation of the research results. Based on the results obtained, the seeding quality and functionality of the proposed model test sections were evaluated.

In the final part of the paper, based on the obtained research results, a summary was made and final conclusions were presented. This study will form the basis for the development of a concept of a precision seeder for sowing maize seed in simplified (no-tillage) technology.