

Introduction

No-tillage seeding is an important part of conservation tillage technology. The quality of no-tillage seeding operation is closely related to production cost, work efficiency and crop yield. As an important part of the sowing operation, the soil covering operation realizes the uniform distribution and coverage of seeds, while the suppression operation achieves the required soil compactness according to different agronomic requirements to create conditions for the germination and growth of seeds. As a key component of soil, the overlay suppression device has a direct effect on the consistency of sowing depth and emergence rate of seeds. In the actual field sowing, the soil thickness is not uniform, which affects the consistency of sowing depth. The suppression intensity is too low, the soil compactness is not enough to play the role of entropy raising; Excessive repression, The soil tends to harden and thus affect the emergence rate. Therefore, the research of active soil covering suppression under the requirements of agronomy provides a theoretical basis for the design and transformation of the key parts of soil of the subsequent seeding machine. And then realize the sowing operation quality improvement and increase the purpose of income.



Figure 1. Different types of seeder with overburden suppression function

Effects of no-tillage sowing on soil physical and chemical properties

As the foundation of crop growth, good physical and chemical properties of soil are particularly important. The purpose of no-tillage sowing is to create a good soil environment and achieve a high yield and harvest of food. In recent years, with the development of green agriculture adapted to ecological environment, conservation tillage mode has been paid more and more attention. Under conservation tillage mode, no-tillage sowing has a positive effect on soil physical and chemical properties, including soil water storage capacity, soil temperature and soil respiration, etc.

Main research contents

In recent years, with the progress of science and technology and the continuous attention in the field of agriculture, machines and tools with different functions in no-tillage sowing mechanization have sprung up like bamboo shoots after a spring rain, which not only improves the work efficiency but also reduces the production cost. On the basis of summarizing and analyzing previous studies, through electronic control and hydraulic transmission and other technologies to realize the active suppression function of soil covering, the purpose of the soil covering in the process of soil covering uniform, consistent thickness and in line with the requirements of planting agronomic suppression intensity and other requirements.

The main research content of this paper is to design an active trench overlaying mechanism and active suppression technology based on the defects of the above existing technologies. Through the action of the planting ditch overlaying device and the return soil and limit deep wheel, the soil can actively fall back and fill the soil during the sowing operation, so as to ensure the thickness of the overlaying and improve the uniformity of the overlaying. Through the research progress of suppression technology at home and abroad and the classification of suppression devices, an active suppression mechanism and control system is designed to realize real-time profiling control and adjust effective pressure suppression. Make the soil reach the suitable soil compactness required by the crop.

Conclusion

In this paper, the effects of no-tillage sowing on soil physical and chemical properties under conservation tillage mode were analyzed. Existing studies have shown that the effects of no-tillage and sowing operations have a direct impact on soil water storage and moisture retention capacity, soil temperature and soil respiration. As an important part of no-tillage sowing operation, a new technology based on electric control technology and hydraulic transmission is proposed as the main research direction to solve the above mentioned initiative of soil covering and suppression.