

## DESIGN AND TESTING OF A PINELLIA TERNATA SEEDER

Mao PengHui

Master student of Qingdao Agricultural University, China

e-mail: 2216413408@qq.com

**Summary.** At present, the degree of mechanization of *Pinellia ternata* seeding is low, and mainly adopts manual spot seeding, which is difficult to accurately control the spacing between rows and plants, and at the same time, it is very easy to cause inconsistency in the depth of seeding and other problems, which affects the quality of seeding and yield of *Pinellia ternata*. Based on the agronomic requirements of *Pinellia ternata* planting, this paper designs a *Pinellia ternata* seeder that integrates screw leveling, precision seeding, furrowing and fertilizer application, mulching and compression, etc., and is capable of realizing the adjustment of plant spacing, row spacing and sowing depth of *Pinellia ternata* seeding [1].

*Pinellia ternata* seeder is a hanging seeder, driven by the tractor to implement the operation, mainly by the frame, spiral soil leveling device, seed discharge device, seed box, furrowing device, suppression rollers, transmission system, etc., the transmission system is mainly composed of sprockets, seed discharge gearbox and transmission chain, etc., the structure is shown in figure 1 [2].

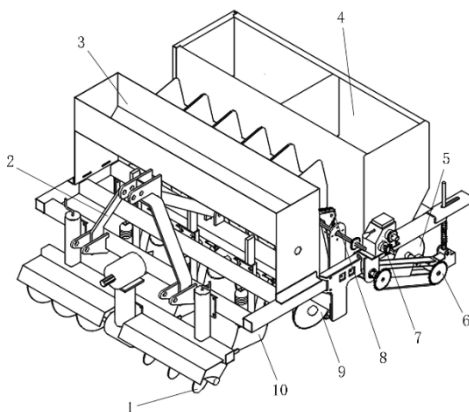


Figure 1 – The structure sketch of pinellia planter:

- 1 – spiral soil leveler; 2 – frame; 3 – fertilizer box; 4 – seed box; 5 – suppression roller;  
6 – transmission gear; 7 – seed discharge gearbox; 8 – seed discharge chain; 9 – disc opener;  
10 – core share opener

The main processes of *Pinellia ternata* seeder are screw leveler, open furrow for fertilizer application, precision seeding, mulching and suppression. Operation, the seeder is suspended on the tractor, the tractor output shaft will power transfer to the spiral soil leveler driven by its rotation; by the core spade type furrow opener to open the fertilizer furrow for fertilizer operations; tractor driven seeder forward process, suppression rollers and then rotate, through the

transmission chain will be the power to the row of transmission, the row of transmission speed drives the row of chain movement, installed in the row of chain spoon in the seed box After the chain spoon completes the seeding movement to the highest position of the seed discharge chain, *Pinellia ternata* seeds fall from the chain spoon to the back of the previous chain spoon, and under the continuous conveyance of the seed discharge chain, the seeds fall to the lowest point of the seed discharge chain in turn to the seed furrow opened by the disc furrow opener into the soil, and then the suppression rollers carry out mulching and suppression to complete the whole sowing operation process [3].

As a key component of the seeder, the seed displacing device, its structural parameters directly affect the seed displacing performance. Seed displacing device mainly includes seed displacing chain spoon, seed displacing driving chain, seed displacing cylinder, driving device, seed cylinder fixing device and other components, the structure is shown in Figure 2. The seed discharging chain spoon is fixed on the seed discharging driving chain, the driving device is mounted on the frame, the seed clearing device is mounted on the shell of the seed discharging channel, the seed discharging cylinder channel is fixed on the seed box, and there is a baffle plate mounted on the bottom of the seed box, which prevents the *Pinellia ternata* seeds from dropping out from the bottom of the seed box [4].

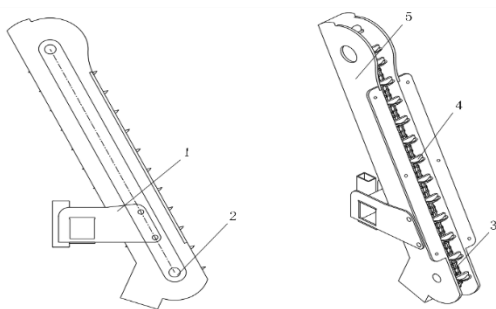


Figure 2 – Seed metering device structure:

- 1 – seed discharge cylinder fixing device; 2 – driving device; 3 – seed discharge chain;  
4 – chain scoop; 5 – seed discharge cylinder fig.; 6 – structure of seed discharger

**Conclusion.** According to the agronomic requirements of *Pinellia ternata* planting, a tractor-type *Pinellia ternata* seeder is designed, which can complete a number of processes at one time, such as soil leveling, furrowing, fertilizer, seeding, mulching, and suppression, and the sowing depth, plant spacing, and row spacing can be adjusted, and the working performance is stable, and the working efficiency is greatly improved.

### References

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