# IMPROVING THE PROCESS OF PELLETING SEEDS IN COTTON GROWERS

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***Abstract.*** *This article is aimed at improving the quality of panning and saving energy; instead of an additional element inside the drum, a thin sheet with staggered oval tubercles is attached around the circumference and mixing seeds with an adhesive mass, making a rotational movement along the inner circumference of the drum, they encounter tubercles that force them to turn left or right*

***Keywords.*** *Cotton plant, drum, circumference, material, agricultural technology, tubercles, seeds, leaf, pelleting.*

Seed pelleting is one of the stages of encrustation - complex production preparation of seeds, which includes treatment with fungicides for preventive purposes, treatment with growth stimulants, fertilizers and other plant protection agents. For inlaying, special drum-type industrial equipment, a paneer or a granulator are used (the design principle is similar to a concrete mixer). When rotating, the device mixes the seeds and allows you to apply the desired compounds in strictly controlled doses evenly. With the help of adhesives, the seeds are coated with the necessary preparations and take on a spherical shape.

High-quality pelleted seeds are sown in the ground dry, since the shell of the granules dissolves when soaked. But when sowing, it is necessary to moisten the soil well. The treated seed always germinates several days later than conventional seeds, but during the growing season it quickly overtakes and outstrips traditional ones.

Experiments have proven that pre-sowing preparation is extremely important to protect the future crop from diseases and stimulate the growth of healthy plants. When using seed pelleting, the yield can increase by up to 15%, so this method is effective and popular.

In Uzbekistan, scientists from the Research Institute of Agricultural Mechanization (NIIMSH) were engaged in pelleting cotton seeds. They developed a device for pelleting cotton seeds that ensured the required flowability of the seeds.

The device consists of (Fig. 1): conveyor 1, sprayer 2, pipeline 3, working element 4, additional element 5, flange 6, support bearings 7, through shaft 8, pulley 9, mechanism for adjusting the position of additional element 10, lock 11, frame 13, unloading opening 14 and conveyor for receiving finished products 15.

The platter-drum device works as follows. The drum is installed relative to the horizon at an angle φ=35-45o and, using conveyor 1, unsown cotton seeds in the range of 100-120 kg are loaded. The electric motor is turned on, the drum begins to rotate, the unplanted seeds are soaked with liquid stimulants and adhesives with sprayer 2. After the seed shells are evenly soaked, they are treated with chemicals against diseases and insect pests.

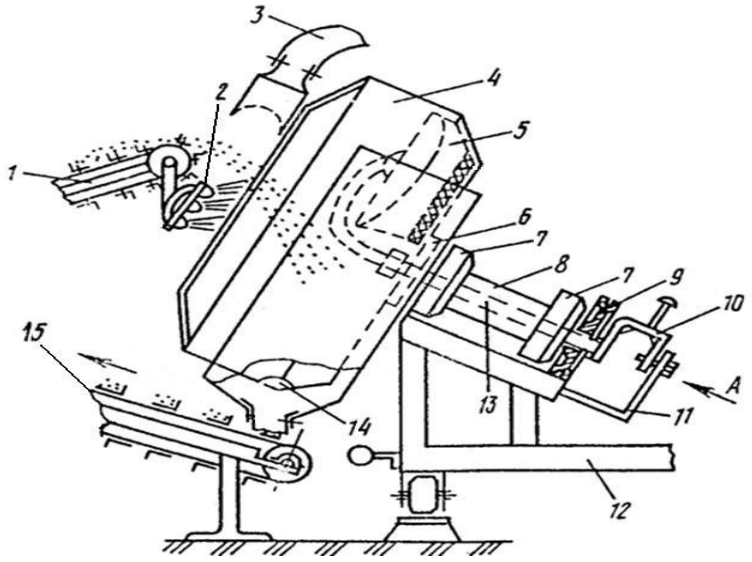


***Fig1. Schematic diagram of the operation of a plate-drum pan.***

After the chemicals are evenly distributed, the seeds are mixed with lignin.

At the end of the process, the seed shells become smooth and have a round shape. At this time the process stops. The finished product is poured through opening 14 into conveyor 15 and then sent for drying.

The device may be suitable for farmers to prepare the daily required quantity of pelleted seeds. The disadvantage of this device is that due to the presence of an additional element inside the drum, some of the pelleted seeds are little involved in the process.

In order to improve the quality of panning and save energy, instead of an additional element inside the drum, a thin sheet with staggered oval tubercles is attached around the circumference. In the process of mixing the seeds with the adhesive mass, they make a rotational movement along the inner circumference of the drum and collide with tubercles, which force them to turn left or right. Continuing their movement, the seeds collide with the next tubercles and perform many rotational movements, which ensure high-quality mixing of seeds with chemicals. The installation diagram of parabolic elements is shown in Fig.2

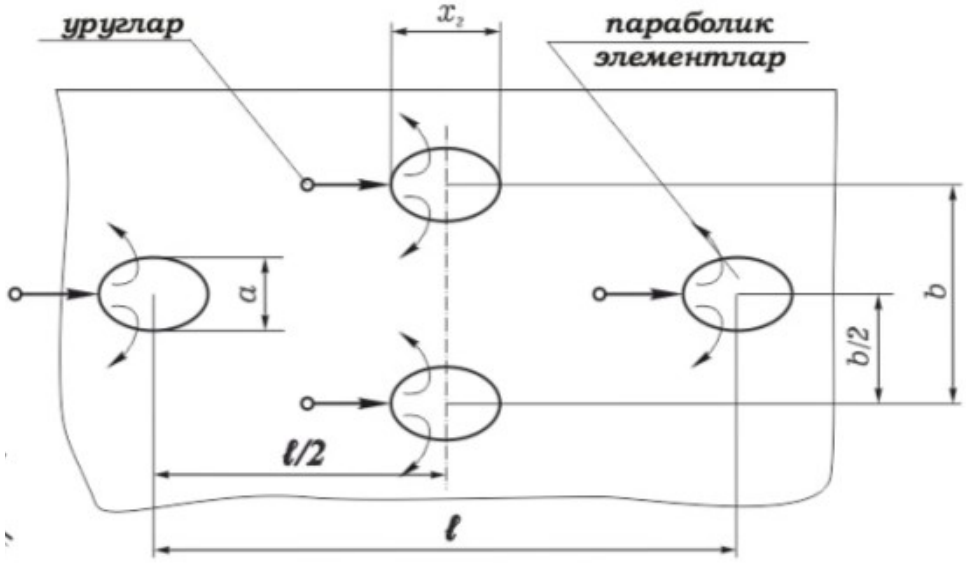


***Fig-2. Diagram of the arrangement of parabolic elements along the inner circular surface of the drum.***

Sheet parameters: sheet thickness t=1mm; width B=40 cm; length L= nD = 3786 mm. Two options for the radius of the parabolic element R=6 mm and R=8 mm; distance between elements around the drum circumference l=30 mm; width

b=45 mm. The radius of the pan is R = 0.7 m; the drum is installed to the horizontal plane at an angle β = 400; drum speed n = 25 1/min; electric motor power N = 30 kW. The parameters of the dragator are scientifically proven by scientists from the Scientific Research Institute of Agriculture.

The test gave the following results.

| Radius curvature ( mm ) | Power (kW) | Time process (min) | Power wasted (kW) | Time existing process options (min) | Power existing process options (kW) | Difference (kW) | ( % ) |
|---|---|---|---|---|---|---|---|
| 6 | 30 | 14 | 6,9 | 17 | 8,4 | 1,5 | 17.0 |
| | | 16 | 7,8 | 17 | 8,4 | 0,6 | 7,41 |
| 8 | 30 | 14 | 6,95 | 17 | 8,4 | 1.45 | 7,57 |
| | | 16 | 7,85 | 17 | 8,4 | 1.5 | 7,46 |

Conclusions:

- during panning, all seeds participate in the process;
- during the process, the seeds do not hit hard objects, no damage occurs;
- no additional element is required, as a result of which metal and electricity are saved;

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