

THEORETICAL FOUNDATIONS OF THE CORRECT ORGANIZATION OF THE COTTON HARVESTING

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The ripening of the cotton plant follows a certain pattern, as in flowering, the bolls gradually open towards the lower cone. Therefore, they do not open at once.

Early ripening early pods are restrained and of good quality. In general, the quality of the main part of the cotton in the bags opened before the cold falls is at the required level. The time between the opening of the lower sac and the opening of the upper sac takes 1.5-2 months or more. As a result, the cotton crop has to be picked several times.

Cotton buds begin to open at the end of August and close by the end of September and the beginning of October. It is recommended to pick cotton 3-4 times in order to increase the productivity of pickers, reduce the labor spent on picking and improve the quality of picked cotton.

Cotton is picked by hand or on cotton picking machines. One cotton farm should have 3-4 special small areas for receiving hand-picked cotton and drying it in the open air. In order not to pollute the picked cotton and to prevent stones and soil from mixing with it, the fields should be asphalted or watered with straw clay.

Preparatory events for cotton harvesting

Preparation measures for picking the cotton crop include the following activities:

- available equipment in order to make efficient use of labor resources and finish the harvesting of the cultivated crop in a certain period;
- conducting training among cotton pickers, preparing the necessary means of transport for transporting cotton without dust, preparing areas for drying cotton in the fields;
- preparing the necessary hems for picking cotton by hand;
- ensuring timely operation of cotton and cotton picking machines and other equipment;
- regulation of roads and bridges;
- conditions for providing good cultural and household services to cotton farmers in field sheds, and at the same time to develop all organizational measures.

Machine-picked cotton fields are marked before cotton is planted, as such fields must be large and well leveled. Timely defoliation and desiccation of cotton accelerates the opening of the bolls, and increases the amount of cotton picked before frost.

These measures are taken, it becomes easier for the sunlight to reach the upper parts of the cotton bushes and for the bulbs to light up. As a result, the cases of rotting of lower pods and

pollution of picked cotton are reduced, and the operation of cotton picking machines becomes easier.

5-7 days in defoliated areas, cotton leaves begin to dry up and after 10-12 days, 60-67% of leaves fall off. Cotton bolls ripen 8-12 days earlier when cotton is properly treated with defoliants. In order to pick cotton in a short period of time without destroying it, it is necessary to use cotton picking machines on a large scale and efficiently.

Cotton picking machines

According to the principles of operation, cotton picking machines are divided into three main types: mechanical, pneumatic and pneumo - mechanical types. Fields where cotton is picked by machine should be free of weeds, the bolls should be leveled, and 75-80% of the cotton leaves should be artificially shed.

Currently, harvesting machines of different brands with vertical spindles produced in our country are used. These are XVN-1.2A, XVB-1.8, XVA-1.2, XNP-1.8 and the American horizontal spindle "Case" harvesting machines are widely used.

The cotton picking machine should pick 90-95% of the cotton from the opened bags in one pass, not spilling more than 2% on the ground; not to spill raw bags more 10 m than 3 times a day, they should not be damaged; it is necessary that there are no burrs, branches and raw pockets in the picked cotton. Cotton picked with boll pickers is dried and cleaned in the field, its moisture and dirt content is reduced to a maximum of 22%.

XVB-1.8 and XVA-1.2 cotton picking machines were created on the basis of the double-row 17XV 1.8B machine, they are seed cotton from cotton planted in rows of 90 and 60 cm (lower tier) and is designed for picking technical cotton (high layer). The fineness of cotton fibers picked from the lower and upper layers is 0.2-0.3 g or 5% difference.

It gives a constant additional yield of 2-4 quintals per hectare compared to hand-picked cotton seeds. The first machine harvest begins after at least 60% of the bolls have been removed from the cotton bolls, and the second harvest occurs 12-15 days after the first harvest, i.e., an additional 25-30% of the bolls. bags are released after opening.

II and III reproduction cotton fields are separated for picking seed cotton with XVB-1.8 and XVA-1.2 two-tier picking machines. Seed cotton is picked during the day.

Seed cotton is picked once by machine when at least 80% of the cotton leaves are shed and 70-75% of the bolls on the cotton bolls are removed.

the seed cotton preparation station or the cotton cleaning station with a bill of lading in the specified formula (No. ZX-1) with a thick green line drawn across it (for cotton picked from the lower layer) will be sent. This bill of lading is different from the bill of lading intended for the shipment of technical cotton picked from the upper layer of cotton.

As mentioned above, "Case" machines are used in the harvesting fields of the American continent.

After picking the cotton crop by machine or by hand, cotton pieces, unopened and unopened bolls left on the cotton bolls SK O -2.4 or SK O -3.6 boll picking machines collected with Punching machines can work in three different technological schemes. He washes the picked pods and cleans them from weeds; the harvested pods are transferred to the hopper after being crushed or the harvested pods are transferred to the hopper without being crushed. A drum cleaner is installed on the machine, which is used for cleaning the picked pods and cleaning them from various weeds. Machine-picked cotton from cotton bushes and the ground, as well as hand-picked and machine-picked bolls, are cleaned in field conditions in a universal cotton cleaner UPX-1.5 V and loaded on one-way tractor trailers.

In this cleaning machine, the technological gaps between the drums and between them and the nets 13 mm should be 11-. The machine washes 1500 k gand cleans every hour. The cleaning effect is 75-85%. The bags are sucked into the machine by hand or by air and transferred to the drums.

Hand- and machine-picked cottons are accepted at the processing points according to the requirements of the state standard. When picked by hand, the pollution standard for cotton of type I is up to 3%, for type II 5%, for type III 8% and for type IV not more than 12%, in general, pollution does not exceed 13 %.

Seed cotton is divided into 5 types depending on the breaking strength (sometimes also called fiber hardness) and appearance, color, ripeness, elasticity, density of cotton pieces:

Type I - the tensile strength is 4.4 sN, and it is picked from normally opened pods, when squeezed by hand, elasticity and density are felt well.

Type II - tensile strength 3.9 sN, selected from sufficiently formed and opened cysts. Part of the cotton was picked from bolls that opened early due to the drying of the cotton and black growth. The elasticity is not very noticeable when squeezed by hand.

Grade III - breaking strength of 3.2 sN, mainly immature cotton, picked from unopened and under-opened bolls, mixed with raw cotton.

Type IV - the breaking strength is less than 3.0 sN, the cottons picked from the ground after the cotton picking machines are picked from the ground after the under-formed, slow-opening and spindle-picking machines.

Type V - cotton picked from unginned bolls and picked with boll picking machines.

percentage of machine-picked cotton is 17%, 10% for different varieties; 12; 16% humidity and 12; 13; 15 and 17% are allowed.

Picked cotton should be free of stones, cuts, raw buds, twigs, green leaves, grasses, and pieces of cotton that have been touched by oil. Diseased cottons are picked separately and dried.

Preparing the field for harvesting. Before the beginning of the cotton harvesting season, several measures must be taken.

Areas, schemes, scales and necessary blanks for receiving the new harvest at the cotton reception centers (points) must be prepared in advance:

2) In cotton farms, threshing floors (asphalt) where cotton is dried are cleaned, field sheds, transport vehicles, cotton picking skirts, blanks for packing cotton are made.

Fields are cleared of weeds, if cotton is harvested by machine, the stubble is buried, and the edges of the field are leveled to a width of 10 for the harvester to turn 12 m.

How many harvesters are there in the farm, how many transport equipment are there, how many areas are harvested by hand, and how much is harvested by machine. If seed cotton is to be grown, the fields must be subject to approval, in which case the commission will issue a special permit to pick seed cotton. Seed cottons are pressed separately.

The cotton field is harvested up to 4 times. Cotton is defoliated and desiccated for quick and short day ripening. Before the beginning of the cotton harvest, there should be at least 2-3 fully ripe bolls on the cotton bush.

cotton that is ripe, from the bolls, as well as picking a healthy crop, without any impurities, will be of additional economic benefit to this farm.

I-term -20-25% (2-3) when the pods are opened.

II-harvest - when 35-40% of the remaining crop is harvested.

III-harvest - it is harvested 10-15 days after the II harvest (or after falls).

I- and II-harvest cottons are pressed into the I category.

If the III harvest is good (of good quality), it is classified as I - grade, and if there are unripe raw cottons, it is graded as II - grade.

In the fourth harvest, depending on the yield of bolls and cotton, it is accepted as grade III or IV.

85-90% of the cotton can be classified as I-type if the picking is carried out with good quality.

In seed farms, the seed cotton field is picked and stored in the common cotton field if it is found to be unfit for seed, according to the quality of the approval commission. In the seed plots, the I- picking is done when the buds open on the cotton bush on average 3-5 days. Cotton for seeds is harvested for the third time, i.e. by October 10-15. The rest is left to the technical seed. All picked cotton, whether technical or seed, must meet the requirements of the accepted State Standard. Hand-picked cotton also consists of four varieties similar to machine-picked cotton, and its characteristics are as follows:

Cotton of type I, when pressed by hand, springs back to its original shape, the fibers are well-ripened, strong cotton stands out. The tensile strength of fiber is 4.4 g/k and more. The color is white or light brown depending on the type of cotton and care. Under the influence of dew and rain, small yellow spots can be found on the roof.

type II is smaller than that of type I and has less whiteness. The tensile strength of the fiber is 3.9-4.3 g/k, it is picked from the pods that are opened after the cold, even if they open faster

or are not ripe due to lack of water. The color is white or light brown, depending on the variety and care. As a result of dew or rain, small yellow spots appear on the surface of the roof.

Type III single seed white cotton is smaller and less fluffy than type II, it is usually picked from open and under - opened bolls. The fiber of the III-grade cotton is immature, sometimes raw, and its color is tanned from pale to light brown. There will be yellow spots on the surface of the skin. Its tensile strength is 3.2-3.8 g/k.

Type IV is harvested from immature pods that meet the state standard and stop ripening after being cold. New cotton contains many dead fibers. The color of this type of cotton varies from light to dark brown, with brown spots, the tensile strength of the fiber is 2.1 g / k and it will be even less.

Method of picking cotton by hand and by machine. Cotton is picked by machine or by hand, and its moisture and pollution are stones, gravel, pieces of thread gauze, blue burrs, large leaves (more than 4 cm² in size), blue foreign mixed, will not be accepted. If there is a disagreement between the sender and the receiver (classifier of the point or enterprise) regarding some grade, in such cases, an analysis is carried out in laboratory conditions according to the breaking strength of the fiber using a special device LPS-4, and the grade is accepted based on this.

Each farm's cotton is stored in separate bins according to the type of cotton, machine-picked and hand-picked. The weight percentage of dirt and moisture of hand-picked cotton is shown in Table 1.

Table 1 Dirt and moisture of hand-picked cotton

Cotton type	The standard of weight percentage and moisture ratio and dirty mixtures according to the qualities of cotton					
	1st class		2nd class		3rd class	
	Dirty mix. weight percentage	Moisture. weight ratio	The weight percentage of the impurity mixture	Moisture. weight ratio	Dirty mix. weight percentage	Moisture. weight ratio
I	3	10	10.0	12.0	16.0	14.0
II	5	10	10.0	13.0	16.0	16.0
III	8	11.0	12.0	15.0	18.0	18.0
IV	12	13.0	16.0	17.0	20.0	20.0
V					22.0	22.0

According to the standard, the following rules must be observed when picking cotton by machine: it is not allowed to use the machine when preparing seed from fine-fiber cotton and picking elite and 1st reproduction crops of medium-fiber cotton.

Procedure for picking seed cotton

For defoliation of cotton in the fields where the seed is prepared, only a drug that has a mild effect on the plant is used. Seed cotton is picked only once with a two-tier cotton picker. In this case, more than 80% of the cotton leaves have been shed and 70-75% of the crop on the cotton bush should be removed. It is necessary that the mechanical damage of the seed does not exceed 1%. When sending cotton to the processing point, all documents are written according to the quality of hand-picked cotton, for example: first type-I, second type-II, etc.

If the cotton being shipped is picked by a machine, the letter "M" (machine) is written on the waybill. The letter "P" is written if the spilled cotton is picked by hand or by machine. If the spilled cotton is picked by hand or by machine, the III grade is written "ShP".

If the shed cotton and bolls are hand-picked and threshed in the field with a bolling machine, it is considered as hand-picked according to the relevant standard variety. Acceptance conditions for machine-picked cotton varieties are as follows: (for medium- tall cotton varieties).

Type I cotton expands and returns to its original shape when pressed by hand. Depending on the type of cotton, the quality of care, cotton of the first type will be of different colors. High tensile strength 4,4 g/k and higher. After dew and rain, yellow spots may appear on the roof. The cotton is single-seeded cotton, and the boll (cotton in the seed coat) is slightly stretched and the fibers are slightly twisted.

II-type cotton grows less than I type and is usually fully matured. It is picked from the pods opened in low water, low temperature and other favorable conditions. The color of this type of cotton is white or light brown depending on the type and care method. After dew or rain, there may be yellow spots on the tree. The tensile strength of the fiber is 3.9-4.3 g/k. Elongated fibers can be found in a piece of cotton with 1 seed per cotton. The surface of this type of fiber is shiny and shiny.

Type III is harvested from open and half - opened bolls, the cotton is not mature enough, and unripe seeds are also mixed in it. Cotton belonging to this type grows less than type II.

It rarely returns to its original shape when squeezed by hand. The color is from pale white to light brown, with orange spots on the surface. The piece is elongated, the leaves are twisted. It is mixed with immature and non - elongated pieces. The cotton is shiny white, reminiscent of raw cotton of various sizes in smooth grains. The tensile strength of the wire is 3.2 - 3,8 g/k.

IV-type wheat is harvested from immature, half - opened and unopened pods. The cotton does not expand when pressed by hand, does not return to its original state, the color is from pale white or light blue to dark blue, dark on the fiber surface (thin In tall cotton varieties, the color of the cotton is from light to pale yellow, and there are orange dots in the tall cotton varieties. They are more dead fibers in it compared to type III, and they are shiny and almost cover the grain. This type of cotton is usually passed through ginning machines after ginning and cleaned. In this type, the tensile strength of steel 3,1 g/is k and below.

Cotton picking machine -4XV2, XNP-1.8, XVA-1.2, XVB-1.8; USA (Keys); Picker - SK O - 3.6, SK O -2.4; Trolley - PTS-4-793; V O R O X -UPX-1.5; P o db o rshik-PXS-3.6, PX-2.4; K o rchevka - KV4A, KV3.6A; Stacker -VShK -3.6; Loader -PGX-0.5; Grinding machine - KP-1.2, KP-1.8, KPV4.

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