THE EFFECTIVENESS OF COMPARING DESCRIPTIONS OF "AIR HEATERS" USED IN JOINT SOLAR DRYERS

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Abstract: The article presents the results of laboratory experiments to determine the productivity and some other parameters of the disk working body, working with the scheduler bucket in order to improve the process of leveling fields that meet the agrotechnical requirements of pre-sowing background.

Key words: productivity, disk, bucket filling coefficient, disk diameter, drawing prism.

One of the main elements of solar dryers used to dry agricultural products is considered to be solar air heaters.

Air heaters used in convective solar fruit dryers are called "hot crates". Increasing the working efficiency of solar fruit dryers will depend on the construction of air heaters.

The study of the thermal regime of solar air heaters is also one of the main issues of the correct choice of its construction. Research and verification of the characteristic of solar air heaters is given in many works.[1,2]

But, until now, the dependence of air heaters on the material and structure of thermal regimes has not been studied so much.Therefore, in this work, comparing the heat loss and work efficiency of air heaters of the same size, made of two different materials, one made of wood material and the other made of metal

$$\mathbf{Q_{iyyo}=Q_{iysh}+Q_{iytag}+Q_{iyyot}} \qquad \textbf{(1)}$$

Here:

Heat loss of "hot crate" made of wood

Bias-heat loss of the surface of the heat-conducting glass

Qitag-loss of heat by the" hot crate " base

Qiyyot-loss of heat from the side of the "hot crate"

The heat loss of a double-layer heat-conducting glass surface is defined as follows.

$$Q_{iysh}=K_{sh}(t_i - t_t) \quad (2)$$

Where Ksh is the kooeficent of the heat loss in the conductive glass is defined as follows.

$$K_{sh} = \frac{1}{\frac{2\delta_{sh}}{\lambda_{sh}} + \frac{1}{\alpha_1} + \frac{1}{\alpha_2} + \frac{\delta_i}{\lambda_i}} \quad (3)$$

Where δ_{sh} -is the thickness of the glass, a_1 and a_2 are the internal and external thermal conductivity kooeficents.

The loss of heat by the base of the device is found as follows.

$$Q_{i.y.tag} = K_{tag} (t_{tag}-t_t) \quad (4)$$

Here $K_{tag} = \frac{1}{\frac{\delta_t}{\lambda_{tag}} + \frac{1}{\alpha_1} + \frac{\delta_k}{\lambda_k} + \frac{\delta_{mst}}{\lambda_{mst}} + \frac{1}{a_1}}$ **(5)**

K_{tag} is the heat conductive kooeficent of the base of the device

δt-thickness of the bottom of the crate (mm)

The loss of lateral heat is defined as follows.

$$Q_{yon}=K_{yo.st}(t_u-t_t) \quad (6)$$

Here Kyo.st -cooeficent of heat transfer by side.

tu-temperature inside the heat crate.

$$K_{yo.st} = \frac{1}{\frac{1}{a_{t1}} + \frac{\delta_m}{\lambda_m} + \frac{1}{a_1} + \frac{\delta_k}{\lambda_k} + \frac{\delta_{mst}}{\lambda_{mst}}} \quad (7)$$

The temperature inside is t=45-50° while the temperature of the outside environment is t=28-30° when the hot crate made of a wooden base is a double-layer heat-conducting glass.

$$Q_{i.y.sh}=223 \text{ vt.s.}$$

That is, the heat loss of the device from the base and side walls.

$$Q_{i.y.yon}=424{,}3 \text{ vt.s.}$$

The hot crate made of metal is fastened with mineral steklavata and cardboard to prevent heat from escaping, determining heat loss(1) using the formula.

Experiments carried out show that the heat loss of a hot crate made of metal is equal to that of a well

$$Q_{i.y.m.}=170{,}6 \text{ vt.s}$$

The total heat loss is as follows $Q_{i.y.m.}=170{,}6+223=393{,}6$ **vt.s**

The difference in heat loss in a hot Jack made of wood and metal, so that the steklavata chosen to ensure that the heat does not escape is an inexpensive and good heat-retaining material

$$\Delta Q= 30{,}7 \text{ vt.s}$$

The formula shows that a hot Jack made of metal loses 13% less heat than a “hot

Jack" made of wood.

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