

ergonomic relations should systematically combine these elements in korelyuvalni system ergonomics. The synthesis of these categories need to justify their values synergy that is good value for a broad understanding of the meaning of modern ergonomics and comprehensive knowledge about human adaptation to production conditions (ergonomics production), manufacturing transformation of nature (entropiynist) and coordination of the production needs of reproduction of the environment ( environmental).

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*In Article pryvodytsya sovremennoho STATUS analysis and development trends ʔrhonomyky razvytyh countries in the world.*

**ʔrhonomyka, chelovechesky factor, ergonomic indicators.**

*In paper the analysis of current state and tendencies of development of ergonomics in developed countries of world is resulted.*

**Ergonomics, human factor, ergonomic indexes.**

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## TEMPERATURE STATE LONOSOLOMY TAPES SPREAD OUT WHILE COOKING ROSHENTSEVOYI TRUSTS

**AS Limont, Ph.D.**

**Zhytomyr National Agroecological University**

*Highlighted Us temperatures in the ground and spread out lonosolomy tapes while cooking roshentsevoyi trusts. Investigated the temperature difference on the surface and under the belts to fit them in light density and night periods of the day.*

**Flax straw, tape density, roshentseva trusts, cooking temperature.**

**Problem.** With flax straw treatments known cold-mochinnya, aerobic and anaerobic and aerobic-anaerobic combined enzymatic and

mochinnya. There are warm-mochinnya flax straw and chemical and physico-chemical methods of cooking linen trusts [1]. These treatments include flax straw to polluting, energy intensive and such, which is very costly [2, 3, 4]. The most environmentally friendly, energy-consuming and less cost-effective is prepared by lonotresty dewy mochinnya. However, preparation roshentsevoyi trusts depends on weather conditions Flax period and in particular ambient temperature. The proposed statement provided to highlight some of the issues of evaluation of temperature condition tapes spread out straw in the general problem of scientific support preparation roshentsevoyi lonotresty.

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**Analysis of recent research.** Preparation trusts dewy mochinnyam going to stelyschah which combine for harvesting is the field where grown and harvested flax. This is due to the action of microorganisms production, the development of which has been successful for the corresponding ambient temperature. According ME Egorov, VP Kliavin, VV Makarova, JJ Piunovskoho, AN Sivtsova, AF Skorchenko, KF Terpilovskoho, SE Chesnokov et al. best (best, most supportive, which gives adequate results) are at extreme temperatures (lowest and highest) of values that is 15 ... 20 ° C. Quality roshentsevoyi lonotresty and fibers derived from it depends on the density of bands spread out straw, which is determined by the density steblostoyu before building and working widths combine. The density tapes estimate the number of spread out mainly stems per 1 meter length of tape (pcs. / M) or spread out straw weight per 1 hectare (t / ha). According to the literature that, given the real steblostoyu density and width bralok machines Flax straw studied tapes density from 600 to 5000 pcs. / M, and the mass spread out straw - up to 8 t / ha. Research NG Interregional and BF Slonyevskoho show that the quantity and quality of microorganisms that affect vylezhuvannya trusts, varies in the lower and upper bands spread out. NG Interregional indicates that early maceration of straw mass increase its spreading over 4 ... 5 t / ha because of the decrease in the intensity of drying stalks pektynruynuyuchyh number of fungi can be reduced, and a decrease in temperature at night temperature in thick strips 1. ..1,5 ° C higher than the fine. Quoted researcher notes that temperature conditions in strips of linen spread out with increasing density tapes are less dependent on fluctuations in air temperature. According to [5] with increasing density spread out straw bands from 500 to 4,000 stems per 1 m of tape length variability in temperature tape decreases hyperbolic dependence.

Since cooking is roshentsevoyi trusts in the tapes straw spread out on the ground, which is covered with grass, it is natural to find and

evaluate the relationship between the temperature in the respective layers tapes spread out straw and temperature on the surface of the soil. The minimum temperature in the ground there is for the most part before sunrise that during the preparation roshentsevoyi trusts in August [2, 3] accounts for approximately six hours, and the maximum temperature is most often observed in 15 hours, although in some years there at 12 or 18 hours [5].

**The purpose of research** was to increase the efficiency of environmentally directed production of flax by knowledge dew temperature conditions mochinnya straw. *Research Objectives* 1) to investigate the change in surface temperature tapes straw spread out in the light of day and night periods depending on the temperature of the ground; 2) analyze the impact of density tapes spread out straw to "warm up" period films in the light of the day and their "cool" in the night period.

*Object and method of study.* The object of the study was technological process of preparation roshentsevoyi trusts definition of temperature in the tapes spread out straw given temperature the ground. During the three-year observations of temperature in the tapes at vylezhuvanni flax straw collecting unit consisting combine LC-4T. On the day of collection of films formed outspread combine research with tape density, which varied in the range from 500 to 4,000 pcs. / M at intervals of 500 stems per meter length of the string. Bands spread out with. Hrozino Korosten district, Zhytomyr region in the field of grass with an average density of 967 g / m<sup>2</sup> at 67.9% moisture grass. Surface temperature tapes and underneath determined if indicated thermometers TM-3. The temperature of the ground selected with appropriate reporting forms Korosten weather station. Treatment of experimental data carried out on the basis of mathematical statistics, using standard software.

**Results.** In light during the day (afternoon) at 9, 12, 15 and 18 hours of tapes surface temperature is lower than the temperature of the ground (sometimes observed cases vice versa). From sunset and before sunrise (we say "night") at 21, 24 (0), 3 and 6 hours spread out on the surface temperature tapes also lower than the temperature of the ground.

In the light of day period in August arithmetic average surface temperature of the soil, standard deviation and coefficient of variation were respectively 28.5 and 7,2 ° C and 25.3%. In the same time period analyzed figures spread out on the surface of the films were slightly lower and amounted to 27,1 and 6,3 ° C and 23.2%. At night time the arithmetic mean and standard deviation and coefficient of variation of temperature on the ground and 14.3 respectively equal to 2,3 ° C and 16.2%. In the same period a day similar to the temperatures on the surface spread out tapes were 12,0 and 2,4 ° C and 20.0%.

From the analysis of the variability of temperatures investigated by the coefficient of variation implies that in light during a variable temperature at the ground compared to the variability of surface temperature tapes. At night, during the day the contrary - the variability of surface temperature exceeds tapes variability of temperature on the ground.

The observations suggest that during the night the temperature in the ground  $t_g$  always higher than the temperature on the surface spread out tapes  $t_{ns}$  ( $t_g > t_{ns}$ ). In light period mainly  $t_g > t_{ns}$ . But there are cases in which  $t_g < t_{ns}$ . It is accepted by the resultant variable temperature spread out on the surface of films, as well as factorial - the temperature of the ground. Correlation analysis showed that between effective and factorial signs revealed a positive correlation. This regression model surface temperature tapes  $t_{ns}$  (° C) temperature on the ground  $t_g$  (° C) are as follows:

- in relation to the light of day period

$$t_{ns} = 4.72 + 0.788 t_g \quad (1)$$

at  $r = 0.902$ ;  $\lambda_{\text{Visitor Messages}} = 0.10$ ;  $S_{in} = 2,72^\circ \text{C}$  and  $k_d = 0.814$ ;

- respect night period

$$t_{ns} = 0.68 + 0.791 t_g \quad (2)$$

at  $r = 0.763$ ;  $\lambda_{\text{Visitor Messages}} = 0.13$ ;  $S_{in} = 1,56^\circ \text{C}$  and  $k_d = 0.582$ ,

where  $r$  - The correlation coefficient between the studied effective and factorial signs;  $\lambda_{\text{Visitor Messages}}$  - Evaluation index alignment experimental values of surface temperature tape straight regression equation with positive slope, which is the ratio of core alignment error to the mean effective signs;  $S_{in}$  - Error equations (1) and (2) the straight regression, which was determined by the standard deviation of resultant variable and correlation coefficient between the studied traits;  $k_d$  - Coefficient of determination, which determines the strength of the impact factorial signs in the results.

Less correlation coefficient inherent connection between evaluation temperature on the surface of tapes and the ground temperature at night during the day. The calculated rate  $\lambda_{\text{Visitor Messages}}$  Equal to 0.10 and 0.13, there is evidence of a satisfactory alignment of experimental data processed equations. For errors  $S_{in}$  Equations (1) and (2) found that in the area that defines the limits of temperature changes on the surface of films based on these errors included 70.6 and 68.8% of values  $t_{ns}$  Used to calculate these equations. For values of coefficients of determination of temperature variation in the ground during the light of day in 81%, and at night - a 58% variation leads cause surface temperature tapes.

Correlation field, interpret the relationship between surface temperature and temperature strips on the ground in the light of day and night periods, and the straight line regression model, built by equations

(1) and (2) are shown in Fig. 1.

From Fig. 1 and equations (1) and (2) shows that the range of temperature changes on the ground in the light period is 2.5 times higher than the range of temperature change on the ground at night. For regression model lines traced that light and night periods of temperature on the surface of the films is lower than the temperature of the ground.

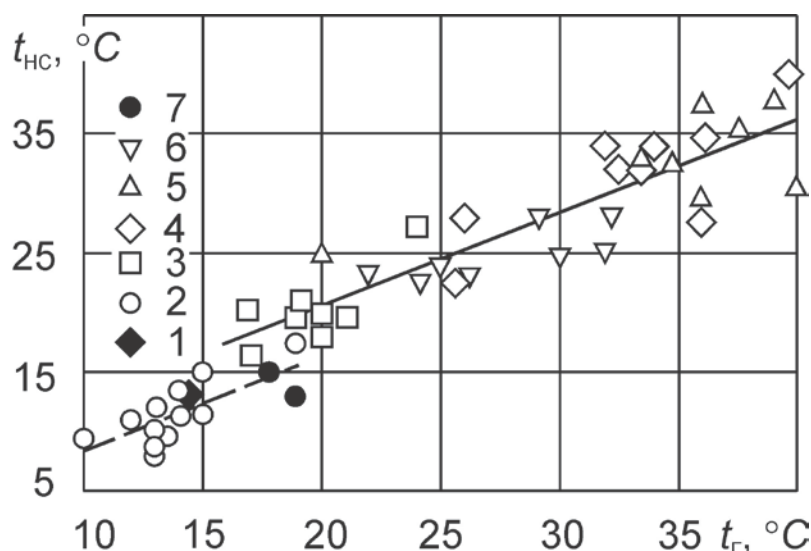


Fig. 1. Changes in surface temperature tapes  $t_{ns}$  in light (solid line) and at night (dashed) day period, depending on the temperature of the ground  $t_g$  1 - zero hour; 2 - sixth; 3 - ninth; 4 - twelfth; 5 - Fifteenth; 6 - eighteenth; 7 - twenty first hour.

With increasing density tapes spread out from 500 to 4,000 stems per 1 m length of tape underneath temperature  $t_{ps}$  at 6 o'clock in the power dependence increases from 12.0 to 14,8 ° C, indicating a decrease in "cooling" of the lower layers of tape while increasing their density. At 6 o'clock in the surface temperature tapes  $t_{ns}$  lower than the temperature underneath  $t_{ps}$ . The difference between  $t_{ps}$  and  $t_{ns}$  determined reduction "cooling"  $t_{oh,s}$  lower layers of the films compared with the temperature on the surface with increasing density (Fig. 2). This reduction increases from 0.9 to 4,0 ° C and describes the power dependence of the form:

$$t_{oh,s} = 0.0115 n_{sm0,707} , \quad (3)$$

where  $n_{cm}$  - Density of stems in ribbon spread out straw pcs. / M.

The fundamental error equalization of temperature difference  $t_{oh,s}$  at 6 pm, depending on the density of bands spread out straw equation (3) power function was 0,52 ° C in relation to this error to the mean difference of 0.20 determined. Alignment experimental values  $t_{oh,s}$  Straight from the positive slope of the provided value  $R^2$  coefficient of

0.726, exponential and exponential function - 0.677, hyperbole - 0.793, a power (3) - 0.837, and logarithmic - 0.842. From the analysis of the equation changes straight  $t_{oh.s}$  according to  $n_{cm}$  followed that with increasing density films for 1000 pcs. / m "cool" environment under the tape can be reduced by 7 ° C. According to the equation of the hyperbola asymptotic decrease was observed "cooling" during ribbons to 4 ° C.

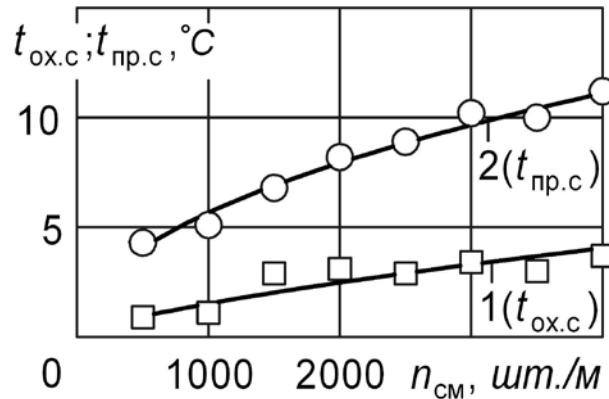


Fig. 2. Quantitative evaluation of the "cool" environment during tapes  $t_{oh.s}$  (1) at 6 o'clock and his "warm-up"  $t_{pr.s}$  (2) at 15 o'clock on the surface thermometer readings and films under them, depending on the density of stems  $n_{cm}$

$R^2 = 0.960$ ), hyperbole ( $R^2 = 0.774$ ), exponential and exponential functions ( $R^2 = 0.918$ ) and power-law dependence ( $R^2 = 0.975$ ). Consequently, the  $R^2$  coefficient of best approximation to the experimental data provides an approximation of their power dependence. Equation rectilinear growth reduction "warming up" the lower layers of films followed that with increasing density spread out tapes in 1000 stems per 1 m length film "warming" decreased by 2 ° C. If you analyze the change of "warm-up" for the equation growing hyperbole that she might predict the asymptotic limit reduction "warming up" with increasing density tapes that can reach about 11 ° C. Fig. 2 shows the experimental data studied changes in temperature spread out straw ribbons at 15 o'clock shows the difference in surface thermometers on tapes and they [ $t_{pr.s} = (t_{ns} - t_{ps})$ ], Depending on the density strips and projected change increase decrease "warm-up" for curve 2. Curve 2 is a graphical representation of the power function form:

$t_{pr.s} = 0.198 n_{sm0,48556}$  at  $\sigma_{about} = 0.37$  and  $\lambda_{Visitor\ Messages} = 0.045$ , (4)  
 where  $t_{pr.s}$  - Reduction of "warming up" the lower layers of ribbons straw spread out the difference thermometer hits the surface and underneath the tape at 15 o'clock, ° C;  $n_{cm}$  - Density tape spread out stems straw pcs. / M;  $\sigma_{about}$  - Basic alignment error of experimental data specified power function;  $\lambda_{Visitor\ Messages}$  - Evaluation index alignment experimental

values  $t_{pr.s}$  Equation (4).

**Conclusion.** In light during the day temperature at the ground more variable than the temperature on the surface of tapes, and at night during a minlyvisha surface temperature tapes. At night time temperature of the ground is always higher than the temperature on the surface spread out tapes. In light period - mainly the ground temperature exceeds the temperature of the ground, but there are cases in which the ground temperature is lower than the temperature on the surface of films. Between the temperature on the surface of tapes and the ground temperature detected positive correlation, that for the light period is estimated correlation coefficient of 0.902 and night - 0.763. Since the model equations and straight line regression shows that in periods of daylight and night temperature on the surface of the films is lower than the temperature of the ground. "Cooling" tapes evaluated the difference in views thermometers tape and ribbons on the surface at 6 pm, and "warm-up" - the difference thermometer hits the surface and beneath tapes at 15 o'clock. With increasing density bands from 500 to 4000 pcs. / M decrease "cooling" and reduce "heating" films grow on POWER dependencies. With the presentation of these increases of year hyperbolic curve intensity changes in temperature slows with increasing density tapes over 2,000 pcs. / M. And analyzed the quantitative changes in temperature reveal the contents of the impact of density tapes straw yield and quality of the fibers obtained from roshentsevoyi trusts [6]. The direction of future research should focus on the study of the temperature condition tapes spread out straw for their different densities depending on the temperature of the air and the ground.

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*Osveschena Communications temperatures on the surface of soil*

*and tapes razostlannoy Inosolomy at pryhotovlenyy stlantsevoy tresty. Of research on surface temperature drop pod and tapes them with uchetom s and density in dnevnoy Night peryody days.*

***Len-dolhunets, straw, ribbon, density, stlantsevaya trusts, pryhotovlenye temperature.***

*There was highlighted the connection of temperature of soil surface and strips of outspread straw during the preparation of scrub rotted straw. There was studied the temperature difference at the strips surface and under them, including their density at day and night periods of day.*

***Fiber flax, straw, ribbon, thickness, dew-retted flax straw, preparation, temperature.***

UDC 6.31

## **BACKGROUND REQUIREMENTS seed drill For farms UKRAINE**

***VG Opalko Engineer***

*The ground needs a seed drill in terms of their use in agriculture.*

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*In the analysis used the State Statistics Service of Ukraine. Identified specific number of farms where grain drills should be used type SZ 3.6. These include farms with acreage from 250 to 1,000 hectares. The share of these households is 15.5%.*

***Grain drill, sown area, grains and legumes.***

**Problem.** Production of cereals are the main focus in agriculture Ukraine. The area under cultivation of grain after 2000 almost stabilized within 14-15 mln. Ha. The main crops in the structure of grain production in Ukraine are wheat (40-50%), barley (20-30%) and corn (20-25%).

The largest proportion of grain crops Wheat - accounting for almost half of all grain production in the country (45%). Its growing up of more than 24 thousand. Farms, the vast majority of them are sowing winter wheat varieties.

Wheat production (within the last three years of its gross yield averaged 21.2 million. Tons) exceeds domestic consumption almost doubled, making this export-oriented culture. After wheat barley - the second in terms of production culture in Ukraine grain farming. It accounts for about 25% of the structure of grain crops. Production of