

TECHNIQUE OF HELIO-DRYING OF SKIN BASED ON TOOLS PARAMETERS

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Abstract

In the article, the scabies use heliodryer that use solar energy in the process of drying the skin, providing enough moisture and the temperature necessary for drying the skin, at the same time, the fact that it is desirable to tighten them mechanically during the drying process in order to prevent the volumetric penetration of the skin is revealed in the literature reviews and the design of the heliodryer taking into account these conditions and theoretically-conducting experimental research, the scheme of semi-cylindrical shelf heliodryer cited and studied.

Keywords: Drying; astrakhan leather; Dagbit; hydrometeorological station; air temperature; precipitation; rama; pile; chess; a half-cylindrical metal shelf; hygroscopic fabric; tape; spring; board; meat layer; wool cover; solar dryer; radiation; polyethylene film; simsinch.

INTRODUCTION

Enter. In order to use the seasonal weather analysis of the regions where the Karakol farms are located and the possibilities of using solar energy for drying, the indicators obtained from the hydrometeorological stations of AGMS Dahbet and MS Payshanba of Samarkand region for the months of February-March were analyzed (Tables 1-2). The duration of sunshine in Uzbekistan is 4455-4475 hours a year. In fact, annual sunshine here is 3000-3100 hours, which is 65-70% of the possible. The amount of total heat radiation of the sun is in the range of 140-160 kcal/year or 586-670.4 kJ/year.

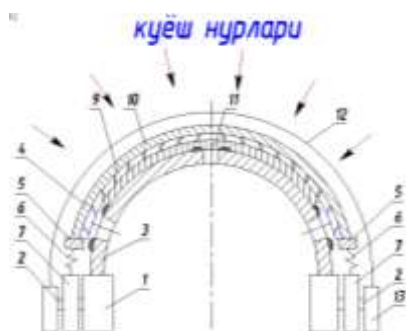
Samarkand region AGMS Dagbit, for the month of March
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years	Average air temperature(°C)	The highest air temperature (°C)	The lowest air temperature(°C)	Average relative humidity (%)	Amount of precipitation (mm)	Average and maximum wind speed (m/sec)
2011	8,7	15,3	3,6	69,7	4,5	2/6
2012	6,83	13,18	2,11	72,97	6,16	2/8
2013	10,33	16,83	5,56	73,61	8,38	2/7
2014	8,63	14,19	4,08	70,23	3,69	2/10
2015	7,12	13,39	2,8	75,13	5,08	3/7
2016	12,19	17,81	7,54	71,97	6,69	3/6
2017	7,84	13,24	3,55	74,84	4,3	3/6
2018	13,32	20,32	8,07	66	2,95	2/7
2019	11,46	17,73	6,82	67,32	3,76	3/9
2020	11,06	17,28	6,17	67,26	6,22	3/8
O'rtacha	9,74	15,97	5,03	70,9	5,17	2,3/7,4

Samarkand region MS for Thursday, March						
2011	8,9	16	3,21	67,10	3,51	3/5,5
2012	7,17	13,32	2,95	76,16	5,75	2/5
2013	10,4	16,52	5,82	75,85	9,7	3/6
2014	8,9	15,13	4,09	69,71	4,74	2/6
2015	7,52	13,54	2,74	75,58	5,32	3/7
2016	12,56	18,71	7,34	76,19	4,75	3/6
2017	8,53	16,57	3,82	71,71	5,72	2/5
2018	13,35	20,72	7,24	65,94	2,98	4/7
2019	11,57	18,04	6,21	70,26	3,57	3/6
2020	11,68	18,43	6,31	69,26	5,87	4/7
O'rtacha	10	16,7	4,97	71,8	5,2	2,9/6,5

Materials and methods. In these regions, the season for slaughtering lambs and preparing black leather – from February 15 to the end of March, the average temperature is 9.5 0C, the highest average temperature is 16 0C, the average temperature is low temperature is 4.8 0C. Average relative humidity is 64.8%, average and maximum wind speed is 2.5 and 6.7 m/sec. These indicators make it possible to use helio-dryers that use solar energy during the black leather tanning season. This allows to provide sufficient moisture and the necessary temperature for skin drying.

At the same time, it was determined in the literature analysis that it is necessary to mechanically pull them during the drying process in order to prevent the volume penetration of the skin. Therefore, it is necessary to create a design of the heliokuritchich taking into account these conditions and to conduct theoretical and experimental research. Solving this problem is an urgent issue. The diagram of a semi-cylindrical shelf solar heater is shown in Fig. 1.



1-picture Cross-section of the Karakol leather heliocurer with a shelf: frame 1; 2nd pile; 3-semi-cylindrical metal rack with checkerboard-shaped holes and rough surface; 4-hygroscopic fabric; 5-hard band; 6-spring; 7-row long board with holes; 8-long board holes; 9-drying blackberry skin; 10th layer of skin; 11-caracal skin wool cover; 12- thin wire with polyethylene film, 13-parallel plank.

Results and their analysis. The skin layer 10 is covered with a hygroscopic fabric 4 with feathers 9 of the skin of the cowhide, the fibers of the fabric are directed opposite to each other from the center. The fabric 4 is pulled taut by rigid straps 5 and spring 6. Long boards 7 are fixed (fastened) to frame 1 with pegs 2. As a result of the tension of the hygroscopic fabric 4 in the opposite direction from the center, the feather hairs are pressed against the perforated and undulating surface of the metal semi-cylindrical rack 3 with holes in the side 11 with the side 11 of the woolen covering, and the hygroscopic fabric 4 is feathered. The surface of the skin adheres to the fleshy layer 10 and is compressed. At a certain distance (6...10 cm) from the upper part of the fabric, the polyethylene-covered cinch (frame) 12 is installed in the special holes of the plank 13 parallel to the frame. The sun's rays (radiation) are refracted through the polyethylene film and the ultraviolet rays are converted into heat rays and heat the fabric and therefore the skin. At the same time, heat rays reflected from the fabric do not return from the film, resulting in a "greenhouse" effect. Due to the fact that the developed solar dryer is installed at a certain angle to the south, the air mixed with moisture evaporated from the fabric under the influence of sunlight (radiation) moves to the upper part of the slope due to the difference in densities. As a result, the air mixture saturated with water vapor between the bottom of the film and the top of the fabric takes the vaporized moisture from the fabric to the surrounding environment. The general view of the helio-dryer is shown in Fig. 2, and the diagram of the longitudinal section is shown in Fig. 3.

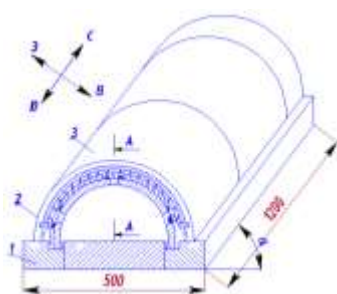


Figure 2. General appearance of the heliodryer:
1st general frame; 2-sinch (frame); 3-polyethylene film.

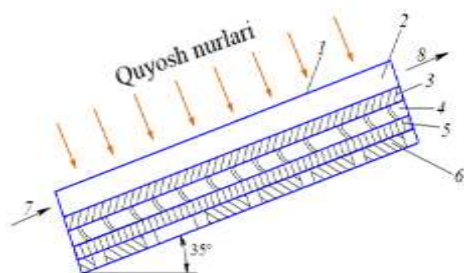


Figure 3. The scheme of the longitudinal section of the helio-dryer: 1-polyethylene film; 2- the air gap between the film and the fabric; 3-hygroscopic fabric; 4. The fleshy part of the skin; 5. The fur part of the skin; Longitudinal section of a half-cylindrical shelf with 6 holes; 8th air inlet; Air outlet 9.

The helio-dryer has a common frame 1, where the frame and the screw are placed, and the frame is installed on the conveyor belts. The following technological system is proposed for organizing the drying of Karakol hides in a helio-dryer in the conditions of the Karakol farms (Fig. 4).

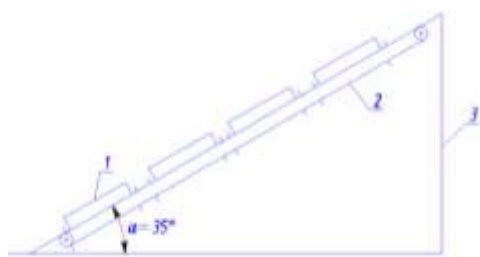


Figure 4. Technology system of using solar dryers for drying Karakol skin:

- 1 – semi-cylindrical shelf helio-heaters;
2 - transporter for lifting and placing solar heaters; 3 – base hammer.

The system consists of semi-cylindrical shelf helioheaters 1, helioheaters lifting and placing transporter 2, and the support jack 3, which is placed at a certain angle α relative to the south. Skins to be dried in helio-dryers are fixed on semi-cylindrical racks and installed on a conveyor. After placing solar panels on the lower rows of the conveyor, moving the conveyor chain with the help of a motor-reducer, solar panels are moved up the slope. After drying, the conveyor chain is reversed, and the helioheaters in each row are unloaded.

TSN-3.0 shovel element transporters are used for their reliable installation when lifting the solar dryers up the slope (Fig. 5).

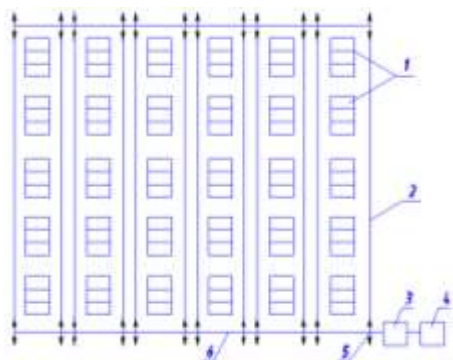


Figure 5. Top view scheme of the technological system of drying Karakol leather in solar dryers: solar dryers; 2nd conveyor chain; 3 - reducer; 4- electric motor; 5- chain drive star; 6 - the drive shaft that drives the stars.

Loading and unloading of solar dryers allows for mechanization.

Summary. 1. It is advisable to prevent the drying of the leather in a helio-dryer with a rack and mechanically pull the skins during the drying process.

2. The use of conveyors with shovel elements for the purpose of their reliable installation when lifting the solar dryers up the slope allows for the mechanization of the loading and unloading of the solar dryers.

3. When drying Karakol skin, solar dryers are placed at a certain angle α to the south.

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