STUDIES CONCERNIG TOBACCO DRYING REGIME

STUDII PRIVIND REGIMUL DE USCARE LA TUTUN

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***Abstract**: In this paper we present several results regarding the tobacco leaves drying conditions, the influence of drying method upon the period length and also dates regarding the surface and specific weight of tobacco leaves at TN 86 tobacco cultivar in the climatic conditions from Cluj-Napoca, 2004*

***Rezumat**: În această lucrare prezentăm câteva rezultate privind condiţiile de uscare a frunzelor de tutun, influenţa modului de uscare asupra lungimii perioadei de uscare precum şi date privind suprafaţa şi masa specifică a frunzelor de tutun la soiul TN 86 în condiţiile de Cluj-Napoca din anul 2004.*

Key words: *tobacco, tobacco drying, foliar surface, drying rate*
Cuvinte cheie: *tutun, uscarea tutunului, suprafaţa foliară, masa specifică, randament de uscare*

INTRODUCTION

Tobacco although more limited in its main usage, smoking, is still needed by the profile industry and offers significant incomes to the breeders. An important stage in obtaining tobacco technology is also the leaves drying. The most efficient method which offers an optimal tobacco leaves quality is natural drying. We present the results obtained in this process in Cluj-Napoca.

MATERIAL AND METHOD

Research was made in the year 2004 at USAMV Cluj-Napoca, in experimental field from Şapca Verde. The tobacco cultivar cultivated was Tennessee TN 86 belonging to Burley. Research was partially financed by the firm „Dimon International Tabac" SRL, in Bucharest.

The crop, of 5000 mp surface, was placed as seedlings on 21.05.2004, at a density of 21.978 plants/ha (70 x 65 cm). Harvest was made on phase, as the tobacco leaves reached the technological maturity. The first harvest began on 12th August, the second one on 2nd September and the last one on 9th Sept. 2004. Each harvest stage took 2-3 days.

It was determined the foliar surface and specific weight of some average samples of fresh harvested leaves. The leaves were weight immediately after harvest, and then they were lined up on wire and dried in different conditions. To determine the rate of drying there were harvested 9 samples of 10 leaves, in 3 average samples at each harvest, and put to dry out in laboratory conditions (20ºC 60% atmosphere humidity). After 3 weeks after drying, the samples were measured again. For the drying of tobacco there were used for the first time different locations with different destinations.

On 12th August there were put to dry tobacco leaves in a shed built of tin and exposed to sun.

Between 18 and 25th August there were lined up for drying the leaves in the second shed, in shadow conditions.

Between the 26th of Aug. and the 5th of Oct. the leaves were put to dry in a ferro concrete shed, in condition of shadow.

On the 6-7th of Oct. the tobacco leaves were lined up in a shed without lateral walls, so exposed to air currents.

In the beginning of October several tobacco leaves were put experimentally to dry, in the laboratory. In drying spaces there were made some measurements and determination for atmospheric humidity and temperature parameters.

RESULTS AND DISCUSSIONS

The total green production from the three harvests was of 13.413 kg.

The average foliar surface of the harvested leaves was of 197 cmp, with green specific weight of 3.88 g/100 cmp, that is 0.388 kg/mp. By reporting this value to the green production harvested from 1 ha it can be appreciated that the total foliar harvested surface was of 34.570 mp, i.e. more than three times than the surface of the plot.

The estimation is shown as follows:

Sfr = Pt / Ms that is 13413 / 0,388 = **34570** mp, in which:

Sfr = The total green foliar surface harvested mp;
Pt = Total production, kg leaves / ha;
Ms = Specific weight, kg/mp;

The results of drying rate determination at tobacco leaves are shown in the table 1. In the table there is presented, also, the average weight of a tobacco leaf, at each of the 9 repetitions, before and after drying.

Table 1

Average tobacco leaves weight before and after drying and its drying rate (Cluj-Napoca, 2004)

Parameters	Average weight of a leaf in the 9 repetitions, g									Average
Green leaves	37,5	40,1	39,9	37,3	40,2	42,4	40,8	39,5	43,7	40,2
Dry leaves	7,7	7,8	7,5	7,8	8,0	8,6	8,9	9,0	8,8	8,2
Drying rate	4,87	5,14	5,32	4,78	5,03	4,93	4,58	4,39	4,97	**4,89**

In the table 2 there are presented the average temperature and atmospheric humidity in drying places and also outside (shadow) at 2 o'clock p.m., in October and also the time necessary to for drying. It can be noticed that the shorter period for drying was in the case of the shed 1, where the average temperature at 2 o'clock p.m., was the highest, and the air humidity the lowest. The opposite case is in the case of the concrete shed where the temperature was the lowest and atmospheric humidity the highest.

Table 2

Conditions of temperature and humidity inside and outside the drying places for tobacco and also the period needed to dry (Cluj-Napoca, 2004)

Parameters	Drying area					Outside in shadow
	Shed 1	Shed 2	Current hall	Open shed	Laboratory	
Temperature, °C	23	17	16	21	20	20
Atmospheric humidity, %	63	70	78	67	70	65
Drying period, days	19	32	65	35	21	-

Aspects from the drying are presented in figures 1, 2 and 3.

At lining up on wire it was maintained in all the cases, the distance between leaves of about 1.5 cm for a better air circulation among leaves. The leaves were considered dried when leafstalk broke producing a noise (as a brushwood), and the colour of the leaves became brown.

Figure 1. Aspects of tobacco leaves put to dry in shed 1.

Fig. 2. Aspects of tobacco leaves put to dry in shed 2.

Fig. 3. Aspects of tobacco leaves lined up in the concrete hall

The total dried leaves production calculated by applying the rate of drying to the green leaves production was of 2.743 kg/ha.

CONCLUSIONS

Research made lead to the following conclusions:

1. The average foliar harvested surface was of 197 cmc, with specific weight of 3.88 g / 100 cmp. So, it can be calculated =the total surface of leaves harvested in the three stages as being of 34.570 mp.
2. The average drying rate in the conditions of the year 2004 at Cluj-Napoca was of 4.89.
3. The length of drying period was direct proportional with the humidity in the storing areas and in reverse order with the temperature in these places
4. Taking into account the obtained production and the existent drying possibilities it can be said that in the conditions from Cluj-Napoca. Barley tobacco can be cultivated and conditioned with good results

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