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EVALUATION OF ANGORA WOOL, STANDARDIZATION OF TESTING METHODS

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Prelude for the discussion

I. Angora wool is an industrial material issued by a living animal : the angora rabbit, with two purposes :

1) fine thread to process underwear clothes, (in association with other textiles).

2) thicker threads and fluffed to process knitted fashionable pull over. Composition of this thread can be up to 100 % of angora wool in top quality items.

Angora wool evaluation have to integrate the two different purposes through technical criteria among which hair length and structure of angora fleece are the most important.

Hair lengh

The strenght of a yarn depends only on the cohesion between the fibres. This cohesion is obtained by lining up the fibres parallel to each other to form a ribbon as regular as possible by twisting the ribbon. Of course, in such a process, a minimal lenght of fibre is compulsory ; the greater the fibre diameter is, the lower the friction factor is and the longer should be the fibre.

Rabbit hair is known for its softness ; this means its friction coefficient is very low increasing the tendancy of hair slippery inside the thread. Thus the minimum lenght of first quality angora wool is 6 cm., in spite of fibre fineness (mean underfur fineness : 15 µm) and its use in the carding process.

Relation ship between angora wool lenght and harvesting interval

The lenght of angora wool is depending only of hair growth phase, which corresponds to the phase of hair follicle activity (anagen), and is in no way connected with an change in the rate of hair growth. The hair follicle activity phase lasts exactly 5 weeks in New-Zealand rabbits

and about 14 weeks in angora rabbits : the hair follicle phases in the angora rabbit fleece are much longer and do not last for a fixed time so that their duration can be modified by selection.

Composition and structure of angora rabbit fleece : the fine, woolly German angora rabbit fleece and the stiff well-formed French angora fleece

Lenght of hair has no effect on coat composition. There are two types of guard hair : the rector hair or bristle (10-11 cm. long ; 90-100 µm thick in the larger upper part or shield of the shaft, 50-60 µm in the middle and lower part) and the tector hair or awns (8.5 cm. long ; 75-80 µm thick in the shield ; 25-30 µm thick in the middle and lower part. The guard hair covers the fine undercoat hair (7.5 cm. long, 15 µm thick). Therefore the angora wool staple is mixed. Now, the finest and the most homogeneous the textile fibers are, the finest and the most regular the yarn processed.

In order to process smouth, fine yarn for underwear selection to boost the number of underfurs (downs) has been ran on german type. On the other hand, when fluffy yarns are needed for pull overs or jersey dresses, angora wool with coarse, total guard hair have to be selected.

II. Historically, the two different processes lead breeders to select two large types of animals, now spread all over the world :

- the german type is convenient for the 1st purpose, it usually produces fine hairs and more homogeneous coat, features under dependance of physiological items.

- the french type is convenient for the 2nd purpose, in order to process fluffed threads, the proportion of long and large diameter bristles must be higher.

Breeders of the french type strove to obtain a whole body coat with a large proportion of bristles, in a plucking system of harvesting. They intended to enlarge the "back coat". To day the best french type rabbit wears a back coat even on the front. Plucking protects the flame shape of bristle heads.

Breeders of the german type strove to obtain a whole body coat with a few proportion of bristles, in a shearing system of harvesting. They intended to enlarge the "front coat". Today the best german type rabbit wears a front coat even on the back and the diameters of awns are under 12 meters.

III. During the production processing period of time, evaluation is done first when harvesting by the farmer, then when purchasing by the spinning plan technician.

- When harvesting, either the french type or the german type as well, the farmer usually sort hair to be specially processed : clean felt, dirty hairs, and short hairs, on one hand. Long clean unfelted hair on the other hand, among this second class of wool, different grades of hair are sorted according to the type and the hair length.

Table 1 shows the actual known classifications.

This round table is organized in order to propose a standardized description of angora wool with their testing methods. Discussion will be lead through 4 topics.

-1- It is usefull to standardize the different classes of angora wool at the world level ?

-2- What is the difference beween a short angora hair and a white savage rabbit hair ? most of New zealand white rabbits own bristles till 40 mm., and downs til 30 mm.

Suggestion is done to accept the designation of angora wool for hair longer than 35 mm.; the international standardization organisation designs rabbit hair HK and angora wool WA. Proposal is set up a limit of 35 mm. between HK and WA. WA is angora rabbit wool made of 35 mm. hair at least.

-3- Proposal for a International classification of angora wool WA (Table 2).

-4- Testing methods

41. Sample, methods similar as wool trade sampling method.

42. Difference between W and J.

Weight of a full staple
Weight of bristles.

It is given if : $\frac{\text{weight of bristles}}{\text{total weigh}}$ 17 %

Diameter of bristles 45 µ used in wool industry.

Have we to keep two criterias ?

43. Length

- Schumberger's method
- Others ?

CONCLUSION

We intend to give out a short outline of the discussion before dead line of the Congress.

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TABLE 1 : ACTUAL CLASSIFICATION

FRANCE	GERMANY + EAST EUROPA	CHINA	OTHERS ?
1A : Clean, jarreux > 60 mm	Supergrade : Clean woolly >63,5 mm	Special grade > 57,5 mm	
1B : Clean woolly > 60 mm	I Class woolly > 50,8 mm	I Class > 47,5 mm	
2 : Clean jarreux > 40 mm	II Class woolly > 38,1 mm	II Class > 37,5 mm	
FP : Clean felted	III Class woolly > 25,4 mm	III Class > 25,0 mm	
S : Dirty	Off grade dirty > 25,4 mm	Dirty	
C : Short < 40 mm	Inferior : felted	Felted	

TABLE 2 : PROPOSALS

JARREUX		WOOLLY	
Coarsed headedbristles in the fleece bristle head Ø >80 µm - bristle body > 45 µm		Fine and homogeneous Ø of hair < 45 µm	
	NAME		NAME
Class I > 60 mm	WA J I	Class I > 60 mm	WA W I
Class II 60>>35 mm	WA JII	Class II 60>>50 mm	WA W II
		Class III 50>>35 mm	WA WIII

World Rabbit Science Association