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PART 2: SURVEY OF THE QUALITY OF FIBRE GROWN BY AUSTRALIAN ALPACAS

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Preliminary data are presented from the survey of fleece quality which is part of the research project 'Productivity and marketing improvement of the Alpaca fibre industry in Australia'.

In previous progress reports the property means and ranges in fibre characteristics were given (McGregor 1995) and the mean fibre diameter, coefficient of variation of mean fibre diameter CV(D), raw fibre production and body weights for various age classes of huacaya and suri were presented (Tuckwell et al 1996).

METHODS USED IN THE SURVEY

Five alpaca farms were visited at shearing each spring for three years.

Fibre samples were collected from the midside position of each alpaca shorn. Samples were tested at the Fibre Testing Service, Fibre Quality Department, Victorian Institute of Animal Science, Agriculture Victoria.

The fibre was tested for:
• mean fibre diameter;
• the absolute distribution of fibre diameter (standard deviation, SD);
• the relative distribution of fibre diameter (the coefficient of variation, CV(D));
• the effective spinning fineness of fibres (the mean fibre diameter adjusted for CV(D));
• the proportion of fibres with diameter over 30 µm;
• the incidence of medullated fibres in white and light fawn fibre; and
• the staple length.

Data from all properties and shearings in year 2 and year 3 of the study have been pooled (huacaya n = 536, suri n = 86) and histograms of the proportion of fleeces in various classes have been calculated.

RESULTS AND DISCUSSION

Mean fibre diameter

About 25% of suris had fleeces with mean fibre diameters < 24 µm while only 18% of huacayas had fleeces < 24 µm (Figure 2). Huacayas had 11% more fleeces with mean fibre diameter > 30 µm compared to suris (42% compared with 31%).

Coefficient of variation of midside mean fibre diameter and spinning fineness

Nearly 50% of all fleeces had CV(D) < 24% and only 11% had CV(D) > 30% (Figure 3). However the resultant effects on spinning fineness requires further study as the proportion of fleeces with spinning fineness < 24 µm, when compared to the distribution of mean fibre diameter, declined 2% for both huacayas and suris. There was also a fall of 2% in the proportion of fleeces with spinning fineness > 30 µm, when compared to the distribution of mean fibre diameter, for both huacayas and suris (Figure 4).

Proportion of midside fibres with diameters over 30 µm

Both huacaya and suri had only 3.5% of fleeces with < 5% of fibres over 30 µm and over 80% of fleeces had more than 10% of fibres over 30 µm (Figure 4).

Incidence of medullated fibres

This was lower than is generally acknowledged (Figure 6) with only 22% of white fleeces having more than 50% of their fibres medullated. A third of huacaya fleeces had < 20% of fibres medullated, while one in five suri fleeces had < 10% of fibres medullated and almost half of suri fleeces had < 20% of fibres medullated.

Midside staple length

Midside staple lengths were mainly between 7.5 and 15 cm (Figure 7). However 10% of huacaya fibre was not suitable for worsted processing (< 7.5 cm) and 18% was too long (> 15 cm). A third of suri fibre was too long for most worsted processors (> 15 cm).

CONCLUSIONS

The progress results of this survey reveal that, within the existing Australian alpaca population, there are a significant number of animals growing high quality alpaca fibre. However:
• approximately 35% of animals were growing fibre which was too coarse to meet the International Alpaca Association Trade Mark definition of alpaca fibre. This fibre could only be sold under the IAA Trade Mark definition of Huarizo fibre.
• As a priority, the industry must seek to reduce the proportion of coarse fleeces grown by alpacas;
• the variation in mean fibre diameter (CV(D)) showed that further improvement is desirable with one in three alpacas having CV(D) > 26%.

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Figure 2a: The distribution of mean midside fibre diameter of fibre grown by huacaya alpacas in southern Australia on five cooperating commercial alpaca properties during 1995 and 1996.

Figure 2b: The distribution of mean midside fibre diameter of fibre grown by suri alpacas in southern Australia on five cooperating commercial alpaca properties during 1995 and 1996.

Figure 3a: The distribution of the coefficient of variation of midside mean fibre diameter (CV(D)) of fibre grown by huacaya alpacas in southern Australia on five cooperating commercial alpaca properties during 1995 and 1996.

Figure 3b: The distribution of the coefficient of variation of midside mean fibre diameter (CV(D)) of fibre grown by suri alpacas in southern Australia on five cooperating commercial alpaca properties during 1995 and 1996.

Figure 4a: The distribution of spinning fineness of fibre grown on the midside by huacaya alpacas in southern Australia on five cooperating commercial alpaca properties during 1995 and 1996.

Figure 4b: The distribution of spinning fineness of fibre grown on the midside by suri alpacas in southern Australia on five cooperating commercial alpaca properties during 1995 and 1996.
Figure 5a: The distribution of the proportion of midside fibres with diameters over 30 µm in fibre grown by huacaya alpacas in southern Australia on five cooperating commercial alpaca properties during 1995 and 1996.

Figure 5b: The distribution of the proportion of midside fibres with diameters over 30 µm in fibre grown by suri alpacas in southern Australia on five cooperating commercial alpaca properties during 1995 and 1996.

Figure 6a: The distribution of the incidence of medullated fibres in white and light fawn fibre grown on the midside by huacaya alpacas in southern Australia on five cooperating commercial alpaca properties during 1995 and 1996.

Figure 6b: The distribution of the incidence of medullated fibres in white and light fawn fibre grown on the midside by suri alpacas in southern Australia on five cooperating commercial alpaca properties during 1995 and 1996.

Figure 7a: The distribution of midside staple length of fibre grown by huacaya alpacas in southern Australia on five cooperating commercial alpaca properties during 1995 and 1996.

Figure 7b: The distribution of midside staple length of fibre grown by suri alpacas in southern Australia on five cooperating commercial alpaca properties during 1995 and 1996.
• the large proportion of fleeces with mean fibre diameter over 28 pm, and with high CV(D) resulted in a eight out of ten fleeces having more than 20% of fibres coarser than 30 pm;
• the incidence of medullated fibres was low compared to overseas reports; and
• there was a significant proportion of overgrown fibre which would not be suitable for worsted processing. Alpaca breeders must shear their animals at a time when the fibre is of the correct length if they wish to obtain maximum value for their fibre.

Scope exists for the astute alpaca breeder to select and use superior sires to improve the quality of fibre grown by their alpacas. Marketing arrangements for the current alpaca clip have to include lines which, in the longer term, will not be economic to maintain at their current size.

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