

A Note on the Delineated Patch Technique as a Measure of Wool Growth

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A CRITICAL examination of the validity of the midside patch technique as a measure of both wool growth rate and total fleece weight was undertaken. Two adjacent 10 cm² patches were tattooed on the midside of each of 23 Fleisch Merino ewes. The front patch was clipped four times at trimonthly intervals while the rear one was clipped once after twelve months growth. The frequently clipped wool was 23.87 % greater in weight than that cut annually. The weight of the midside wool clipped annually was significantly correlated ($r = 0.80$) with that of the whole clean fleece weight.

The delineated patch technique is an accepted method for determining wool growth rhythm. The technique implies clipping wool at fixed time intervals from a midside tattooed area. Several investigators adopted the technique for studying the response of wool growth to seasonal variations (Stewart *et al.*, 1961, McManus *et al.*, 1964; McFarlane, 1965; Doney, 1966 and nutritional planes (Dolling and Moore, 1961; Sharkey *et al.*, 1942; Williams and Winston, 1964; Williams, 1965), pregnancy and lactation and Doney, 1964). Two assumptions were believed whenever applying the patch technique: first wool growth rate undergoes a non-significant change by subsequent cutting; second, there is a linear correlation between wool growth of the delineated patch and that of the whole fleece *i.e.* wool growth of the midside patch is expressive of the total wool production.

Material and Methods

The animals used were 23 mature Fleisch Merino ewes taken at random from an experimental flock at Koam O'sheem Sheep Breeding Station, some sixty km southern Cairo. After their usual shearing in April, the right midside area of each ewe was clipped by fine scissors, approximately mm of wool being left, and two adjacent 10×10 cm patches were tattooed on the clipped area. The ewes were normally mated in June and lambed in November. They were fed as one group. Each ewe received a constant daily amount of 1750 g of clover hay. During the last six weeks of gestation and the first twelve weeks of suckling every ewe was given a daily allowance of

1/3 kg of a concentrate mixture. The front patch was clipped four times at tri-monthly intervals. Sampling intervals were similar to but did not coincide with the periods of the four seasons of the year. At the last gathering of the front patch which took place next April, the rear patch and a left midside sample were also collected. The rear patch wool which represented a whole year growth was used to get the difference between growth of intact and repeatedly cut wool. The left midside sample was utilized for determining the shrinkage % of the whole fleece. The experimented ewes were shorn at the end of the experiment and the greasy-fleece weight was recorded to the nearest 00.05 kg. The patch wool together with the left midside samples were scoured after Chapman (1960). The ewes were kept in a separate semi-open pen. Initial and final average body weight were 46.4 and 46.9 kg.

All data were analysed using an analysis of variance.

Results and Discussion

The average wool weight of the front patch which is the cumulative weight of the four tri-monthly gatherings was 21.9804 ± 0.75 g. The concomitant rear patch which was clipped once after a complete year yielded 17.7444 ± 0.96 g. The difference (4.2360 g or 23.87%) was highly significant ($P < 0.01$). The promoted wool growth of the periodically clipped patch contrasts with the findings of Coop (1953), Story and Ross (1960, Wodzicka (1960), Doney and Smith (1961) and Bigham (1974) who reported a slight (only 3.0%) or non-significant increase in wool weight of frequently clipped patches. The attainable result, however, receives confirmity from the observations of Sharkey *et al.* (1962) McManus *et al.* (1964) Wodzicka Toaszewska and Bigham (1968), on fibre thickness, staple length, or wool growth rate of frequently cut patches.

The stimulating effect of repeated cutting is not easy to explain. But it may be reasonable to suggest some physiological and /or physical mechanisms as responsible for the effect. It is well established (Ashmawy, 1972) that temperature practises a pronounced effect on wool growth rate of the Fleisch Merino sheep. It is likely that the inhibiting influence of hot temperature prevailing during spring and summer months was reduced to a minimum by eliminating the burden of long fibres on the clipped patches. This effect would have to far overweight that of reduced growth during winter months. The local cooling was claimed by Wodzicka and Bigham (1968) to depress wool growth rate on the midside patches. But this assumption was opposed later by one of the authors (Bigham, 1974). It seems that the stimulated wool growth observed in the present work was so locally confined that no interaction between the adjacent patches tookplace. It may be added that erythema of clipping might have contributed to the effect. On the other side, it may be possible that the physical hindrance of the shortest fibres to the increase in length of the longer ones (Short, 1964) did not practise a significant role in case of the repeatedly clipped patch.

The present work also revealed a highly significant correlation ($r=0.8003$) between clean fleece weight which averaged 1.64 ± 0.71 and the annual wool yield of the patch. This could be interpreted to mean that wool growth of the midside patch clipped annually is a function of the whole fleece growth.

The results arrived at cast doubt on the findings attained by many research workers using the midside technique for measuring periodical wool growth and suggests the validity of using the annual patch wool as a function of the whole fleece weight.

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طريقة الرقعة المخططة كمقياس لنمو الصوف

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أجرى قص الرقعة الأمامية أربع مرات على فترات كل منها ثلاثة أشهر ،
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وجد أن ألياف الصوف متكررة القص كانت ٧٣٣ر٨٧٪ أثقل عن تلك التي
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صوف منتصف الجانب المتصوص مرة واحدة فى السنة ووزن الجزء النظيف .