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ASSESSMENT OF BEEF CATTLE FOR TICK RESISTANCE

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INTRODUCTION

Methods to control cattle tick have evolved from ad hoc chemical treatment, through planned chemical treatment and pasture spelling, to the use of tick resistant cattle and minimum chemical control. Due to the development of resistance to pesticides by ticks (Wharton 1976), the possibility of residues, and the high cost of chemical treatment the use of resistant cattle has gained importance.

While Zebu x British cattle have demonstrated high resistance to cattle ticks and their effect (Seifert,1971a; Turner and Short,1972), there is large individual variation in tick resistance within these genotypes (Utech *et al*, 1978a). Some of this variation has been shown to be heritable (Seifert, 1971b); therefore, further improvement can be made in this trait.

MEASURING VARIATION IN TICK RESISTANCE

The relative resistance of individual animals within a group can be assessed by counting semi engorged female ticks 4.5 to 8 mm in length on one side of the animal.

Due to the effect of stress from either lactation or nutrition on resistance status (Utech *et al*,1978b) and the need for previous tick challenge for development of characteristic expressions of resistance (Wagland,1978) care should be taken when comparing animals. Additionally, assessment for tick resistance is more reliable in spring-summer than in autumn-winter (Utech *et al*,1978b).

In most commercial situations only herd replacement bulls and heifers need be assessed. A set of guidelines to ensure valid and useful comparisons would include:-

- Compare within sexes and age groups. Between 12 and 18 months of age is preferable. The information is required by this age, and cattle in this age range are relatively easy to restrain given adequate facilities.

- Cattle have been paddocked together for at least six months and have had tick challenge for at least six weeks.

- Assessment should be done from September to April to avoid the less reliable winter period, but avoiding periods of gross nutritional stress.

- One count yielding an average of 25 or more ticks per side, or two counts of more than 10 ticks per side should give reliable discrimination between individuals.

Assessment from either field or artificial infestation can be expected to give the same result (Utech *et al*,1978b). Choice of the method to use depends on convenience. Cattle may have to be mustered and observed a number of times before field infestations reach sufficiently high levels to ensure discrimination between individuals. Artificial infestation depends on obtaining larvae and a separate muster to infest animals for counting 21 or 22 days later.

USE OF RESULTS

Information from tick assessment should be used in conjunction with final weight for age. The weighting given to each measurement depends on sex, the importance of tick in the region, and the type of matings envisaged.

Because a large proportion of heifers is needed and each heifer will leave relatively few progeny accuracy is less important in heifers than in bulls. Visual assessment to identify the lowly resistant animals would suffice in many cases.

Bulls can be highly selected, and have the potential to leave a relatively large number of offspring. Therefore, accuracy of assessment is important. The importance of tick resistance and weight for age depends on the severity of tick in the particular region, e.g. where tick is of low to moderate importance weight for age would be the primary factor with tick resistance second.

If the bulls are to be joined with relatively lowly resistant females tick resistance is more important that if they are to be joined with highly resistant females.

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