

TABLE 2: Correlations of between Annexe and Hot Room Performance, and Heritability Estimates

	Heifers	Sires	H ² _{HR}	H ² _A
RR	0.41	0.50	0.45	0.36
SW	0.22	0.08	0.18	0.26
RT	0.31	0.17	0.14	0.11
Feed	0.66	0.65	0	0
Water	0.63	0.61	0.10	0

An examination of the correlations between hot room performance and subsequent production at Lismore (Table 3) shows a strongly negative correlation between annexe rectal temperature and production and this, together with the positive correlation between annexe feed and water intakes and production, supports the view that in a non-stress environment animals with a higher metabolic turnover are the higher producers. The fact that performance in the annexe is more strongly correlated with subsequent production than is performance in the hot room suggests that the environment at Lismore is too temperate to stress the cattle.

TABLE 3: Correlations between Hot Room Performance and Subsequent Production.

	RR	SW	RT	Feed	Water
Milk A	0.10	0.13	-0.24	0.35	0.28
HR	-0.02	-0.30	-0.01	0.15	0.16
Fat A	0.12	0.11	-0.28	0.34	0.26
HR	-0.04	-0.10	-0.07	0.13	0.18

These data illustrate the complexity of selecting for heat tolerance in climate rooms, and provide critical information for the design of selection programs for adaptation to tropical environments.

TICK RESISTANCE EVALUATIONS IN A DAIRY BREED DEVELOPMENT PROGRAM

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Resistance of dairy animals to cattle tick (*Boophilus microplus*) is of major importance as ticks are endemic to approximately 70% of Queensland dairy properties. The continued use of acaracides has caused problems due

to the development of acaricide resistant strains of tick. A crossbred animal based on a $\frac{1}{2}$ Sahiwal $\frac{1}{2}$ Friesian genotype, the Australian Friesian Sahiwal (A.F.S.) has been developed to provide a dairy animal with useful tick resistance characteristics to provide effective biological control of the tick population.

The tick resistance of sires in bull proving groups has been estimated since A.F.S. bull proving commenced in 1976. Bulls used in 1976 and 1977 were selected from a group which was ranked on counts of ticks resulting from paddock infestations.

Selections for the 1978 and 1979 groups were based on artificial infestation. The young bulls were infested with 20,000 tick larvae and the number of engorged female ticks appearing on the rear side of the bulls was counted over a 5 day period. Counting commenced 18 days after infestation with the larvae. Estimations of tick resistance using this method have now been adopted as a standard for the A.F.S. breed development program.

Resistance of bulls in 1978 and 1979 groups as well as those used for bull breeding in 1979-80 has now been determined. Results are as follows:

	<u>No. of Bulls Tested</u>	<u>Mean Resist.</u>	<u>Range</u>
1978 B. Proving	8	98.0%	95.6 - 99.3%
1979 B. Proving	9	97.7%	95.2 - 99.2%
1979 B. Breeding	15	99.1%	98.4 - 99.9%

A tick resistance standard of 98% larval mortality has been set as a selection criteria for all A.F.S. bulls.

THE IMPORTANCE OF OBJECTIVE MEASUREMENT IN A MODERN BREEDING PROGRAM WITH PARTICULAR REFERENCE TO MILKING SPEED

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The Australian dairy farmer at present has to rely on subjective appraisal of some traits used in his breeding program. When these can be objectively measured, more accurate and, in some cases, different information is available. The present system is a legacy of the early use of artificial insemination (AI) when farmers involved in progeny testing were so impressed by this new technology that their subjective assessments were biased in favour of sires used in AI.

One of the main concerns of the dairy-farmer today is herd health. However, despite improvements such as better milking machines and techniques, higher standards of shed hygiene and the use of antibiotics in dry cow therapy, mastitis is still a major problem in the dairy industry costing millions of dollars each year in lost production, increased herd replacement costs and providing competitive industries (e.g. margarine, soft drinks) with a very useful tool with which to permanently damage the orderly marketing of dairy products. In the absence of a readily available and reliable mastitis -