Determining the Parity of Bali Cattle (Bos sondaicus) Cows in West Timor, Indonesia Based on the Number of Horn Growth Rings

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In West Timor, the short wet season (December to March) and long dry season (April to November) result in a period of nutritional stress (Jelan tik, 2001) which accentuates the annual horn growth rings (HGRs), especially in pregnant and lactating cows where the HGRs are quite marked. The approximate age of cows in years = number of HGRs plus 1 (Poespo 1986, Propta 1991). HGRs are shown in plate 1. The parity of cows over a period of time is an important index of reproductive efficiency. Parity may be obtained through recording, but a direct measure of parity where no records are available would be a valuable management tool. The aim of this study was to determine the realtionship between the number of HGRs and parity of of grazing Bali Cattle cows.

Plate 1. Horn of Bali Cow (Bos sondaicus) showing horn growth rings

The cows were grazed on native pastures during the day and yarded at night in the traditional extensive system. Mating was not controlled and calves were not weaned. HGR data was obtained by examining the horns of 40 adult Bali Cattle (Bos sondaicus) cows of various ages and parities during January 2010. The cows were selected for the detailed individual parity information that was available from their owners (farmers owned a small number of cows which were named). In other respects the sample of 40 cows was similar to other breeding cows in West Timor. HGR data was collected by counting all horn rings that were clearly visible (Plate 1), and parity data was supplied by the owners at the same time. The data was analyzed by using SPSS 17.0.

The number of HGRs counted varied from 1 to 13 (mean 5.7, SD 3.1), while the parity varied from 2 to 13 pregnancies (mean 5.7, SD 2.9). There were 226 calves born between 1997 and 2009 to the 40 cows in this study. These results indicate that the parity of cows may be accurately estimated from the number of HGRs by the regression:

Parity = 0.638 + 0.883 \times \text{Number of horn growth rings} (R=0.929, p<0.05).

Counting the distinctively marked HGRs can be powerful and yet useful means of evaluating the reproductive efficiency of Bali cows run under the traditional grazing system in West Timor where no records are kept. Studies are continuing on ways to differentiate the HGRs in dry cows from those that are pregnant and lactating (all HGRs were counted in this study). Early indications are that the depth of the groove is deeper and the distance between the rings is less in lactating cows but analysis is not yet complete. An intact cow’s horn is potentially a recording of the nutrition and reproductive life history of the cow. Examination of the horn requires less restraint than that required to examine the teeth and yields information for a longer period. Studies are continuing on how this information can be utilized to improve herd management.

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