

# READY RECOGNER USING TEST DAY MILK YIELD FOR PRDICTING 300 DAYS PRODUCTION IN CROSSBRED COWS AND ITS ACCURACY

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## SUMMARY

The data for present study were obtained from J.N.K.V.V. Dairy Farm Jabalpur. A total of 300 lactation records of 121 crossbred cows for the period of 6 years (1990-95) were used. The ratio method were used to predict 300 days yield from the milk samples collected at 4 weekly interval. Average error were found below 0.5% in predicted yield. Absolute error percentage were smallest(4.9%) in combination of 11 T.D. yield & were below 10% in estimates where at least 6 test records were used. Similariy correlation coefficient were found maximum (0.97) at 11 T.D. and above 0.8 starting from 6 T. D. suggest that Ready Recokner (ratio Factors) of predicting 300 days production starting from 6 or more T.D. can guide safely in predicting yield.

**Key words** : Test day, Prediction of milk yield, Accuracy of prediction.

## INTRODUCTION

Accumulated daily milk weight provide the most precise measure of a cow's total lactation yield. Less expense and time are required when milk weights are sampled less frequently. The reliability of test days yield in estimating the lactation milk yield using systematic sampling method was investigated by some workers (Agarwal *et al.* 1987, Amin *et al.* 1983 and Pradhan 1985) in zebu and crosbred cattle in India. However, most studies have been reported on the sampling techniques tacking into consideration the shape of the lactation curves of the animals, which has not proved its utility to the farmers. Vary few workers have paid attention to the more easy methods of developinng weights for prediction of full lactation production using test day yield which is directly applicable under farmer's conditions.

The study investigated the effect of various sampling with equal interval on the accuracy and precision of estimating total lactation yield by ratio method and thereby developing ready recokner for estimating 300 days production whoch is most suitable to the farmers.

## MATERIALS AND METHODS

A total of 300 lactation records of 121 crossbred cows for the period of 6 years (1990-95) were obtained from J.N.K.V.V. Dairy Farm Jabalpur. The data on daily milk yield records collected at 4 weekly interval with 1<sup>st</sup> test day started from 14<sup>th</sup> day after calving was used to generate systematic samples.

The ratio factors (R<sub>j</sub>) for predicting 300 days lactation milk yield was calculated as per Dass (1991).

$$R_j = \frac{\sum_{i=1}^n Y_i}{\sum_{i=1}^n X_{ij}}$$

Where, Y<sub>i</sub> = The actual lactation yield of i<sup>th</sup> animal  
 X<sub>ij</sub> = j<sup>th</sup> test yield of i<sup>th</sup> animal calculated for different combination of test day record i.e. 2,4,6,8 & 11.

The estimated lactation yield (Y<sub>ij</sub>) was : Y<sub>ij</sub> = R<sub>j</sub> . X<sub>ij</sub>

The accuracy of the estimated yield using varied test day record was tested by average error, average error percentage, average absolute error, average absolute error percentage and by correlation coefficient.

## RESULTS AND DISCUSSION

The ratio factors used for estimating 300 days yield from different cumulative combination of 2,4,6,8 and 11 test days yield are presented in Table-1

**Table 1. Ratio factors for extending cumulative test days yield**

no. of T.D.	2	4	6	8	11
	120.61	60.92	42.12	33.33	27.07

**Table2. Estimated means ± S.E. of 300 day Lactation yield by ratio method**

No. of T.D.	Mean ± S.E.
Actual Yield	2428.10 ± 36.60
2	2428.10 ± 40.30
4	2428.10 ± 37.60
6	2428.10 ± 36.80
8	2428.10 ± 36.00
11	2428.10 ± 36.80

The mean and S.E. of the predicted estimates are presented in Table-2. Means were almost similar as that of the actual yield. S.E. of the estimates starting from the 4 T.D. were almost

similar as that of the 11 T.D. yield which shows that first 4 months yield may give results close to that of 10 months yield. Results are in agreement with the findings of Madden *et al.* (1959) and Lamb and McGilliard (1967)

To test the accuracy of the above methods the errors and S.D. of errors of the predicted yields are presented in Table -3.

**Table 3. Prediction errors and S.D. of sampling error of the estimated yield**

No. of T.D.	Average error	Error %	Average absolute error	Absolute error %	SD of error
2	0.3316	0.0137	367.45	15.13	491.99
4	0.3316	0.0137	303.24	12.50	391.76
6	0.3317	0.0137	253.40	10.44	344.18
8	0.0555	0.0023	166.90	6.88	217.96
11	0.0450	0.0019	119.50	4.90	162.40

The average error % were less than 0.5% in all the combination of T.D. Average percent absolute deviation showed a steady decrease with increase in number of test days included in estimating lactation yield. Percentage of absolute error were below 10% in estimates, where at least 6 test records were used in estimating total yield. This revealed that a minimum of 5 or 6 records were required for estimating total lactation yield. The results are in accordance with Madden *et al.* (1959) and Dass and Sharma (1994).

To assess the accuracy of prediction correlation coefficient among predicted and actual record is one of the important parameter which needs consideration. Correlation coefficient are presented in Table-4. A consistent increase in correlation coefficient were observed with increasing number of test days in predicted estimates which was expected. Maximum correlation coefficient was observed in predicted estimates using all 11 T.D. yield ( 0.97) which gives the best results.

**Table 4. Correlation coefficient between estimated yields and actual yield**

No. of T.D.	2	4	6	8	11
Correlation coefficient	0.73	0.81	0.85	0.94	0.97

Values of correlation coefficient was observed 0.8 and above starting from cumulative combination of 6 test day yield indicating that a minimum of 5 or 6 test days can be used in predicting total lactation yield. Correlation coefficients observed in the study were in accordance with the findings of Madden et al.(1959) and Khoda and Trivedi(1987)

On the basis of the above results and discussion it is concluded that relatively simpler ratio method using 6 or more test day yield although appear slightly less efficient appear more applicable and can safely guide in selection for progeny testing under field conditions.

The ready recokner for predicting yield using 6 or more records are given below.

No. of T.D.	r	Weights (Wj)
6	0.85	42.12
8	0.94	33.33
11	0.97	29.32

$$Y_{ij} = W_j \cdot X_{ij}$$

r = correlation coefficient i.e. accuracy

$Y_{ij}$  = Predicted estimated yield

$W_j$  = Weights

$X_{ij}$  = cumulative test yield

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