



THE GLOBAL STANDARD
FOR LIVESTOCK DATA

Section 17 – Guidelines for Buffalo Milk Recording

Section 17 - Buffalo
Version October, 2017

Network. Guidelines. Certification.

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Change Summary

Date of Change	Nature of Change
July 17	Removed Buffalo from Section 2.4 and created new Section 17.
July 17	Reformatted using new template.
July 17	Table of contents added.
July 17	Heading numbers and heading text edited for clarity and removal of redundant text.
August 17	Stopped Track change sand accepted all previous changes.
August 17	Moved the file to the new template (v2017_08_29).
Oct. 2017	Date of the version updated

1 Purpose

Milk recording in buffalo concerns:

- a. Milk yield produced in lactation.
- b. Fat content (optional).
- c. Protein content (optional).

2 Organization in charge

Buffalo milk recording activity in a country, a region or district should be developed and supervised under a single organization, through its national, regional and/or local structures. The organization could be a public or private institution such as a research institute, farmers co-operative, an NGO or even a private company. To be sustainable it needs the official recognition of the concerned government ministry and the promotion and support of the stakeholders benefitting from milk recording.

To become internationally recognised the country and the milk recording organization needs to seek the membership of ICAR.

This organization is responsible for:

- a. preparing sheets and books for data collection;
- b. processing the data;
- c. printing of the lactation certificate;
- d. publishing an annual report;
- e. supervising all activities in the farm and in the offices.

3 Farmers duties

The farmer wanting to participate in milk recording must:

- a. Accept the regulations of the recording organization.
- b. Register his buffaloes under the animal identification system provided by the recording organization.
- c. Put under milk recording all buffaloes of the herd.

Note: A herd could also refer to a group of herds in a village in cases where the individual herds are composed of very small number of animals

4 Control technicians

Milk recording activity is performed by trained technicians who have the following tasks:

- a. Provide the farmer with the identifications for all newborn calves.
- b. Visit the herds according to the calendar established by the recording activity.
- c. Register inseminations, matings, calving, deaths, dates of drying-off, diseases.

- d. Weigh the milk produced by each individual buffalo at the two daily milkings. Milk must be weighed on a scale with sensitivity of at least 250 grams or volumetrically measured with calibrated measures with sensitivity of 250 cc. Icar authorised measuring devices can be also used.
- e. Register the milk productions on the forms established by the recording organization

5 Milk recording

- a. Milk recording has to be carried out during the whole lactation.
- b. Milk recording has to be carried out on all the buffaloes of the herd.
- c. Milk yield must be registered.
- d. Fat and protein percentage can be determined.
- e. The first milk recording cannot be performed before the evening of the 5th day after calving.
- f. The first milk recording must be performed within the 75th day after calving.
- g. Minimum interval between two tests should be 25 days.
- h. Maximum interval between two tests should be 46 days.
- i. When the average interval between two tests calculated on the whole lactation falls between 28 and 33 days, the recording will be considered of A4 method; when it falls between 38 and 46 days it will be considered A6 method. The method has to be stated in the documents in which the lactation records are reported.
- j. Due to proved and justified reasons, only one longer interval in one lactation can be accepted, provided that the number of days between two consecutive records does not exceed 75.
- k. The milk record must be performed on all 24 hours milkings of the recorded herd; time at which record is performed must be registered.
- l. Milk yield can be expressed either in kg or in litres.
- m. Milk must be weighed on a scale with sensitivity of at least 250 g or volumetrically with calibrated measures.
- n. Milk meters and recording jars can be approved by the ICAR member organization of each country after appropriate trial. Results of the trial will be sent to ICAR. Approved [milk meters are here](#) and [recording jars here](#) on the ICAR website.
- o. In case fat/protein contents are determined, samples must be collected from all buffaloes and for the whole recording duration. Samples may be taken by any of the following methods:
 - A sample for each milking.
 - A proportional composite sample for all milkings within the 24 hour test period.
 - Alternate (i.e. Am/pm) samples on consecutive sampling days.
 - Samples must all be added with the allowed preserving drug according to the analysis system used.
 - Milk analysis must be performed no later that four days from the day of recording.

- Methods for the analysis of milk components are the official ones approved by icar for cattle.
- p. When, at the recording visit, the animal is found to have dried-off, the date of the drying-off of that animal is fixed at 14 days after the date of the last milk recording when she was still in milk;
- q. In case the animal is found to have dried-off after the longer recording interval (46-75 days), the milk recorder is requested to ask the farmer the effective date for the drying-off. If the effective date falls within 30 days from the last recording, the date of the drying-off of that animal is fixed at 14 days after the last recording; otherwise, it is fixed at 44 days after the date of the last milk recording when the animal was still in milk.

5.1 Calculation of total lactation production

The calculation of total lactation production will be done as follows:

- a. Partial production from calving to first milk recording: multiply milk production at first recording by the number of days from calving to first recording.
Example: date of calving march 10; date first recording april 6; milk production on april 6: 3.2 kg. Therefore, partial production from calving to first milk recording = $3.2 \text{ kg} \times 27 \text{ days} = 86.4 \text{ kg}$.
- b. Partial production during all milk recordings: multiply the average milk yield of two subsequent recordings by the interval between the two recording.
- c. Partial production from last milk recording do drying-off day: multiply milk production at last recording by the number of days from last milk recording to drying-off:
 - The date of milk recording when the animal is found to have dried off is February 1: multiply milk production of last recording by 14 = $2 \text{ kg} \times 14 = 28 \text{ kg}$.
 - The date of milk recording when the animal is found to have dried off is February 23 and the farmer states that the buffalo dried-off on February 20: multiply the milk yield of last recording by 30 and add $(\text{last recording yield} + (\text{last recording yield}/2)/2) \times 14$. Therefore: $(2 \times 30) + ((2+1)/2) \times 14 = 81 \text{ kg}$

Total lactation production is given by the sum of partial lactations (a) + (b) + (c).

Example

Date of recording	Milk yield (kg)	Interval (days)	Average kg milk of two subsequent recordings	Yield of two subsequent recordings kg	Cumulative yield (kg)
March 10	Calving	27	3.2	86.4	
April 6	3.2				
May 16	3.2	40	3.2	128	214.4
June 22	3.9	37	3.55	131.35	345.75
July 30	5.0	38	4.45	169.1	514.85
Sept 10	6.5	42	5.75	241.5	756.35
Oct 17	6.0	37	6.25	231.25	987.6
Nov 23	3.0	37	4.5	166.5	1,154.1
Jan 3	2.0	41	2.5	102.5	1,256.6
		299 days			

Feb 1		Dried		14		2		28.0	
	Feb 23		Dried		44		2+1.5		81.0
Sum				313	343			1,284.6	1,337.6

5.2 Calculation of lactation production until 270 days

The calculation of lactation production until 270 days will be done as follows:

When the buffalo is still in milk at the recording date falling after 270 days, the average milk production of the two recordings bracketing 270 days is multiplied by 270 minus the number of days from the last recording before 270 days.

Example: In the above table the two recordings bracketing 270 days are Nov 23 (3 kg milk) and Jan 3 (2 kg milk).

Nov 23 falls 258 days from calving; milk yield up to Nov 23 is 1,154.1 kg; therefore:

$$(270-258) \times ((3+2)/2) = 12 \times 2.5 = 30. \text{ Then } 1,154.1 + 30 = 1,184.1 \text{ kg.}$$

The buffalo in the example will have a total lactation of 313 (or 343) days, total milk yield of 1,284.6 kg (or 1,337.6 kg) and 270 days yield of 1,184.1 kg.

When the buffalo dries-off before 270 days, total lactation yield and 270 days yield have the same value.

270 days lactation production must be equal to or lower than total lactation production, never higher.

Note 1: Lactation milk yields, both total and 270 days, are production parameters; they are not meant to express the genetic merit of the buffalo. Therefore they should not be projected using extension factors. In case the lactation is very short for involuntary reasons, the reason

will be mentioned in individual certificates by a code to be indicated beside the individual production. E.g. (1)=sale; (2) accident, etc.

Note 2: When the 270 days milk production will be used to calculate the average values by herd, village and total covered area, only the information from lactations having reached a minimum of 150 days will be used

6 Data processing

The organization in charge is responsible of collecting and processing all the information registered by the technician.

The organization in charge will process and calculate the following:

- a. Milk production of each buffalo during all the days she was in milking (total lactation production).
- b. Milk production of each buffalo from calving to 270 days (270 days milk production).
- c. Average values of total lactation production and 270 days milk production by herd, village, total covered area.
- d. Average age at calving by herd, village, total covered area.
- e. Average number of calvings by herd, village, total covered area.
- f. Average days open by herd, village, total covered area.
- g. Average days of lactation by herd, village, total covered area.

Parameters 1 and 2 will be used to produce individual buffalo certificates and will be processed whenever requested by the farmers.

Parameters from 3 to 7 will be processed at periods fixed by the organization in charge, according to the needs of the participating herds. In any case, annual average values of parameters 3 to 7 will be calculated for the total covered area to be sent yearly to ICAR.

Calculation (optional) of fat yield (kg) and protein yield (kg) will be done in the same way as for milk.

Calculation (optional) of average fat and protein percentage will be calculated as follows:

$$[\text{kg fat (or protein)} \times 100] / \text{kg milk.}$$

When calculated, the last two parameters can be included in the processing as the parameters 1 to 7 above.

7 Output produced by the organization in charge

The organization in charge should produce three types of output:

- a. Feedback reports to the farmers to help in management decisions. The reports should include: 1. Individual productivity sheet for each animal, including: genealogy; date of birth; date of the calvings; total lactation production (number of days and total produced milk) for each lactation; 270 days lactation production (number of days and total produced milk) for each lactation; indication of interrupted lactation. 2. Average values of total lactation production, number of days in milking, 270 days lactation production (*), calving intervals, age at first calving, lactation number, by herd,

- b. Information on buffalo milk productivity at village, region, and/or national levels to extensionists, dairy industry, government authorities and policy makers including: (average values of total lactation production, number of days in milking, 270 days lactation production¹, calving intervals, age at first calving, lactation number by village, area).
- c. Information on buffalo milk productivity in the covered area to ICAR for international comparisons (same parameters as in a. above).

8 Authorised milk measuring systems

Name	Type	Country of approval
Milko Scope II	Milk meter	Italy
Alfa-Laval 7274031-80	Recording jar	Italy
Tecnozoo	Recording jar	Italy

¹ Only the lactations over 150 days will be considered when the average 270 days production is calculated.