

A CASE STUDY

Quality control practices at BMC centre – A comparative study

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ABSTRACT

Raw milk quality is one of the most important factor before processing of milk and milk products. It is the main factor which is responsible for deciding the quality of end products. The present study was carried out at the selected BMC centre of a FPO owned dairy unit in Chittoor district of Andhra Pradesh. The principal objective of the study was to draw a comparison between BMC standards of NDDB and standards of selected BMC centre. The findings of the study show that there are no major deviations except delay in opening and closing timings for milk collection. As a result preparation time is reduced hindering the efficiency of milk collection process. BMC unit is well-being running manually by operator and switch was being turned off once BMC centre milk temperature touches 4°C and starts at 6°C, due to this delay in manual cutoff the milk is being crystallized. As per NDDB standards auto mode is recommended so that the BMC switches off automatically once the milk temperature reaches 4°C and restarts at 6°C at BMC centre.

KEY WORDS : Quality control practices, BMC (Bulk milk chilling) centers, NDDB (National dairy development board)

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Milk is a fragile substance, thus, preserving its quality right from milking until it is processed in the dairy industry has been a challenge and a permanent concern. To achieve this, it is essential to obtain good quality milk from primary production and to maintain it until it is processed in the dairy industry by keeping any possible disruption to a minimum. In India milking of animal is done either at community milking

centre or at the houses of the farmers. In most of the areas milking is done at the farmers home and then delivered to the milk pooling points in the village. From the milk pooling points milk is sent to bulk milk chilling centres. It is very essential to cool the milk immediately after milking to maintain the quality of milk, since pooling from the dairy farmers and transporting in bulk to processing plant may take eight hours from the time of milking. The chilling of milk to about 4°C or less is done to check the growth of bacteria and preserve the quality as produced, until it is subjected to pasteurization process. Chilling not only destroys the bacteria present in the milk but also lowers the growth of bacteria which will otherwise be very rapid at the high ambient temperature. Hence, by considering the above the present study is taken upto compare the quality control practices followed at selected bulk milk chilling centre with NDDB

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standards.

METHODOLOGY

Farmer Producer Organization (FPO) owned milk Producer Company in South India was selected purposively. The present study was undertaken in Chittoor district of Andhra Pradesh in view of presence of highest milk procuring bulk milk chilling centers in the district. Primary data was collected from the selected BMC centre by using a well-defined schedule through personal interview and observation. A matrix was developed to indicate the quality control practices at BMC centre, which also suggests the standards to be improved in the selected BMC centre of the study area.

ANALYSIS AND DISCUSSION

Table 1 presents the comparison between National Dairy Development Board (NDDB) BMC quality control standards and FPO's BMC in quality control practices revealed that there were no major deviations observed, except that it was observed that delay in opening and closing timings by the in-charge and operator. They were reporting 40 to 50 min delay than the NDDB standards as a result preparation time is reduced hindering the efficiency of milk collection process. As per the NDDB standards auto mode is recommended so that the BMC switches off automatically once the milk temperature reaches 4°C and restarts at 6°C at BMC centre. But it was observed that BMC unit well-being running manually by operator and the switch was being turned off once the BMC milk temperature touches 4°C and starts at 6°C, due to this delay in manual cut off the milk is being crystallized. The observed BMC unit followed all NDDB standards except opening and closing timings for milk collection and in running the BMC unit in auto mode.

Quality control practices followed at Bulk Milk Chilling Centres (BMC):

The quality control practice for Bulk Milk Chilling Centre (BMC) were presented in matrix indicating the effect of practice on overall quality of milk and nature of practice was mandatory to meet the milk standards of NDDB or voluntary in nature. The matrix was developed to improve the standards at BMC further. The matrix was classified into four categories *viz.*, must to have, good to have, optional to have and must not have based on overall effect on milk quality and nature of practices. The overall effect of these quality control

practices on milk quality was categorized into two groups *i.e.*, high and low. Quality practices were divided into two groups *i.e.*, voluntary practices and mandatory practices which are used to understand the important factors should be consider.

It was inferred from the above Table 2 that among the above quality control practices under “Must have” indicate all those practices to be followed mandatory at BMC level to meet NDDB standards and have high effect on overall quality of milk. The BMC in the study area was meeting all these must have standards like filtration of milk after receiving the milk cans from each MPP, testing the milk sample from each can, cleaning of cans with surfactants (Potassium hydroxide), proper drying of cans after washing, maintaining the milk temperature at 4°C and usage of cap and gloves by labour. “Must not have” indicate all those practices to be followed mandatory at BMC level to meet NDDB standards and have low effect on overall quality of milk practices. The BMC in study area should follow all these “must not have” practices like preventing milk temperature below 4°C, milk crystallization, unhygienic conditions around BMC, garbage inside the BMC unit and improper ventilation to meet the quality milk standards.

“Good to have” practices are those practices that can be followed voluntarily at BMC level and have high effect on overall quality of milk. Following “Good to have” practices would set new industry standards, achieve high quality milk and lead to control on over all procurement quality control practices. The “good to have” practices identified are cleaning of milk cans with hot water, checking the time of the can arrival and temperature of the can, organoleptic testing of milk from each milk can received, proper handling of milk can, usage of housefly and insect traps, mobile application with Qr code or Bar code for reporting and tracking and surveillance cameras to monitor activities. The “Optional to have” are those practices that can be followed voluntarily at BMC level and have low direct effect on overall quality of milk. Following “Optional to have” practices would lead to setting industry bench mark, highest quality milk and lead to highest control on over all procurement quality control practices. The “Optional to have” practices identified at BMC level are separate space to keep chemicals, live temperature and time tracking, using of IRDF or GPS tags, computerization of the activities.

Table 1: Comparison between National Dairy Development Board (NDDB) standards and in BMC standards in study area

Sr. No.	National Dairy Development Board (NDDB) BMC standards	Observed quality practices followed at BMC	Deviation	Impact of deviation
Preliminary activities				
1.	The BMC In-charge and operator should report at least one hour before the notified time of milk collection.	The BMC In-charge and operator reported 10 to 20 min earlier than the notified time of milk collection	In-charge and operator reported 40 to 50 min delay in reporting	Milk quality will deteriorate.
2.	Clean and sanitize all milk collection accessories prior to milk collection.	All the milk collection accessories are cleaned and sanitized prior to milk collection.	No deviation observed	-
3.	Ensure that nylon sieve and nylon/ muslin cloth used for milk filtration which is clean and not damaged.	Clean and undamaged muslin cloth are used for filtration of milk	No deviation observed	-
Maintain good personnel hygiene				
1.	Hand washing on a frequent basis, especially at all times after the employees use the washrooms/toilets and also prior to milk collection.	Washing their hands on a frequent basis, especially at all times after the employees use washrooms/toilets and also prior to milk collection.	No deviation observed	-
2.	Avoid handling milk if there are any open wounds or sores especially on the hands and arms or if suffering from cough/cold or sneezing. Treat and bandage wounds and sores immediately.	Staffs avoid milk handling if there are any open wounds or sores especially on the hands and arms or if suffering from cough/cold or sneezing.	No deviation observed	-
3.	Hair must be trimmed and kept short, not covering the forehead and not touching the shirt collar at the back (for men). For women hair must always be tied.	Women's hair is always tied and use head caps.	No deviation observed	-
Bulk milk cooler and connected equipment				
1.	Presence of dust, particles, insects, deposition of milk solids should be removed with necessary cleaning-in-place (CIP) and thorough rinsing with hot water.	Operator inspect the BMC tank for proper cleanliness and rinse thoroughly with hot water	No deviation observed	-
2.	Check that milk pump seal is not leaking during operation	Personnel check that milk pump seal is not leaking during operation.	No deviation observed	-
3.	Drain water if any, from the BMC.	From the operators drain water if there is any.	No deviation observed	-
Milk collection activities				
Milk collection, sampling and testing				
1.	Check the milk for any extraneous material such as dirt, hair, dead flies, straw etc. and educate the producer.	Personnel check the milk for any extraneous material such as dirt, hair, dead flies, straw etc. and educate the producer	No deviation observed	-
2.	Advise milk producers to filter milk using a clean filter before bringing to collection centre.	Personnel advise milk producers to filter milk using a clean filter before bringing to collection centre.	No deviation observed	-
3.	Check the milk for presence of adulterants organoleptically and if suspected, keep it aside for test.	Personnel perform organoleptic test to the milk in random from milk cans and if suspected, keep it aside for test.	No deviation observed	-
4.	Reject the milk if found adulterated.	Personnel reject the milk if found adulterated.	No deviation observed	-
Post milk collection activities:				
1.	Check and record the milk temperature during storage and fill all the entries in the log book.	Personnel check and record the milk temperature during storage and fill all the entries in the log book.	No deviation observed	-
2.	In the auto mode, the BMC switches off automatically once the milk temperature touches 4°C and restarts at 6°C.	Personnel switch off the BMC once the milk temperature touches 4°C and restarts at 6°C.	Deviation was observed as milk temperature reaching below 4°C due to manual operation	Due to this delay, milk crystallization will takes place

