



Adoption gap of scientific management practices among the commercial dairy farmers of Punjab

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Punjab has made commendable achievement in milk production, contributing 7% of the nation's total milk production with less than 2% of total cattle and buffalo population. Also it has the highest per capita milk availability of 1,075 g/day (Basic Animal Husbandry Statistics, 2017). Moreover, urbanization, population growth, changing food habits and income growth have fueled for the increase in milk production thereby giving a tremendous impetus for practicing commercial dairy farming on scientific lines. Therefore, the present study was undertaken to understand the gap in adoption of scientific management practices by the commercial dairy farmers of Punjab to improve the milk production making dairying more remunerative to the farmers.

The study was conducted during 2017–2018 in Punjab state as it accounts for the highest milk productivity of 12.42 kg/day for exotic and crossbred cattle and 8.21 kg/day for buffalo in India (Basic Animal Husbandry Statistics, 2017). For the purpose of study two high productivity regions were selected, i.e. Ludhiana and its surrounding area as it has highest milk productivity of 13.15 kg/day for exotic and crossbred cattle and 8.36 kg/day for buffalo (Annual Report, National Dairy Development Board, 2014–15) and another one is Chandigarh with its surrounding areas as it ranks 2nd after Punjab in higher milk productivity of 10.38 kg/day in India (BAHS, 2017). The sample of the study was commercial dairy farmers who were categorized into two groups having herd size of 25–50 animals (small dairy farmers) and more than 50 animals (large dairy farmers) respectively. Total of 60 respondents, 30 from each group of commercial dairy farmers were selected. Since there was no list of commercial dairy farmers available, therefore snowball sampling technique was followed.

Data was collected through pre tested semi-structured interview schedule and observation. To know the adoption gap in scientific management practices, total of 55 practices were selected, grouped under 7 major categories, i.e. breeding management, feeding management, health care management, housing management, general management, milking management and calf management. To assess the

adoption gap for each practice, the response of the respondents was taken on three point continuum as always followed (2), sometimes followed (1) and never followed (0). These were categorized into low, medium and high. Adoption gap was studied by calculating the gap in the number of scientific practices followed by the respondents to the total number of practices under each major head and categorizing them into low, medium and high gap. Respondents having adoption gap less than 33% were categorized as low gap, between 33–66% as medium gap and more than 66% as high gap categories. Mean adoption gap score was the sum of the total adoption gap score divided by the number of respondents and adoption gap % was calculated as obtained mean score/maximum gap score expected under each major head * 100.

Breeding management: The results revealed that the scientific practices of keeping herd breeding record, insemination after 12–18 h of heat detection, practicing AI, service after 60–80 days of calving and pregnancy diagnosis after 2 months of AI and routine reproductive examination was always followed by majority of the respondents (96.6, 95, 81.6, 73.3, 73.3 and 41.7%), while 96.7% of the respondents never followed advanced heat detection tools. High rate of practicing AI may be attributed to the state government livestock breeding policy and Integrated Buffalo Development Centres programme which provides AI services even in odd hours of day at doorstep of the farmer. The results were close with the findings of Chowdhary *et al.* (2006) who conducted a research in Gujarat and concluded that majority (98%) of the respondents allowed breeding of female at 12–18 h after heat detection.

Feeding management: The results revealed that cent per cent of the respondents always followed practices of concentrate feeding, regular supply of clean water and feeding of chaffed fodder. Scientific practices of feeding mineral mixture, feeding of bypass fat, challenge feeding and feeding of feed supplements was always followed by majority of the respondents (93.3, 86.7, 80, 50%) while only 43.3% of the respondents followed silage feeding. Majority of the respondents never followed processing of feed and urea molasses mineral block feeding (95, 86.7%).

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Small farmers group had high mean gap score (8.96). Results revealed no significant difference between small and large farmers groups with respect to the feeding practices. The major reason for not feeding silage among farmers may be regular availability of green fodder or by cultivating different fodder crops in rotation pattern to ensure round the year supply.

Health care management: The results revealed that scientific practices of vaccination, deworming and isolation of sick animals was always followed by majority of the respondents (83.3, 58.3, 78.3%) while only 8.3% and 28.3% of the respondents always followed practice of screening herd for tuberculosis and mastitis. Practise of routine check up of animals was sometimes followed by majority of the respondents (53.3%).

Housing management: The results revealed that cent per cent of the respondents always followed daily cleaning of manger and water trough. Majority of the respondents (98.3, 83.3, 60, 55%) always followed practice of proper drainage of urine, regular disinfection of shed, use of sprinkler during heat stress and white washing of walls twice a year while only 28.3% of the respondents always followed whitewashing of water trough. Practice of availability of foot dips at entrance was never followed by 51.7% of respondents. The results were in concurrence with the findings of Tiwari *et al.* (2007) who conducted research in Uttar Pradesh and concluded that majority of the farmers cleaned their shed.

General management: The results revealed that majority of the respondents (100, 91.7, 88.3, 61.7, 55%) always followed proper record maintenance, practice of culling animals, proper disposal of carcass, identification of animals and transferring of pregnant animals to calving pens. Hoof trimming was sometimes followed by majority of the respondents (63.3%). The result were not in concurrence with the findings of Balaraju (2016) who conducted research in Karnataka and revealed that majority of the respondents always practiced hoof trimming. Practice of insurance of animals was never followed by majority of the respondents (65%). The observations were in concurrence with the findings of Sathisha (2017) who conducted research on dairy farmers of Karnataka with reference to insurance.

Milking management: The results revealed that cent per cent of the respondents always followed complete milking in 5–7 mins while majority always followed practice of full hand milking (56.7%), machine milking (65%), cleaning of udder and teats before milking (73.3%), washing of hands and clean clothes before milking (78.3%), dry cow therapy (83.3%), dry period for 60 days (96.7%) and cleaning of milk utensils (98.3%). Practice of milking animals in milk barn was never followed by 55% of the respondents. The observations were found in concurrence with the findings of Tapas *et al.* (2015) who conducted study in Gujarat and found that majority of the respondents followed cleaning of udder and teat (91.2%) and washing of hands before milking (87.1%). Majority of the

respondents were consistently following practices like cleaning of udder and washing of hands before milking, cleaning of milk utensils and following withdrawal period indicating the strict regulations followed by the milk cooperatives in collecting milk with regards to quality of milk.

Calf management: It was found that all of the respondents always followed ligation of naval cord and antiseptic application after calf birth. None of the respondents practiced feeding milk replacer. Majority of the respondents always followed practice of weaning (93.7%), disbudding within 15 days (87.5%), colostrum feeding between 2–4 h of birth (81.2%), calf starter (56.2%) and calf deworming (43.7%). Practice of calf scour management was sometimes followed by 40.6% of the respondents. The results were not in concurrence with the findings of Sathisha (2017) with respect to ligation of naval cord where only about 34.7% of the respondents adopted naval cord cutting and 2.6% followed disbudding but results were in agreement with respect to colostrum feeding and deworming which was followed by majority of the farmers. These practices were consistently followed because they were aware about the importance of timely colostrum feeding to calves and disbudding was followed to manage the herd properly.

Adoption gap: Results revealed that almost all of the respondents belonged to low and medium adoption gap categories for different scientific dairy management practices, health care, feeding management and calf management practices, fell under medium adoption gap categories (33–66%) and breeding, housing, general, milking management fell under low adoption gap categories (<33%). Results revealed no significant difference in mean gap score between small and large farmers groups with respect to different scientific dairy management practices except breeding management.

SUMMARY

Result revealed that although of the respondents fell under low and medium adoption gap categories for most of the scientific management practices but still major adoption gap percentage was found in health care (47.4%), feeding management (42.9%) and calf management (31%). The health care practices which were not followed included screening of herd for mastitis and tuberculosis. Medium gap in feeding practices was observed in silage making, processing of feed and UMB feeding. Practice of calf scour management was sometimes followed by majority of the respondents. Other practices which were never followed by majority of the respondents include practice of availability of foot dips at entrance, feeding milk replacer to calves, milking animals in milk barn and insurance of animals. State animal husbandry department, dairy cooperatives and farmers organisation working in those areas should disseminate knowledge about fodder preservation, health care and hygiene of animals as well as clean milk production which in return would prevent them

from incurring economic losses due to disease outbreak and fetching them high price for the clean milk produced.

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