Indian Journal of Animal Sciences **86** (2): 213–215, February 2016/Article
https://doi.org/10.56093/ijans.v86i2.55843

An innovative approach to measure skill about artificial insemination in buffaloes

V B DIXIT[1], R K SHARMA[2], A BHARADWAJ[3], P SIKKA[4] and S K PHULIA[5]

ICAR-Central Institute for Research on Buffaloes, Hisar, Haryana 125001 India

Received: 12 February 2015; Accepted: 2 July 2015

ABSTRACT

Data pertaining to 3 trainings on artificial insemination (AI) were analyzed and 44 farmers constituted as the study sample. The respondents selected for the study were those who had earlier exposure to AI as they were doing it in the field but needed further refinement of skills. To study skill development in AI, the process was broken into different steps, viz. estrus check, washing of buffaloes, thawing, loading, passage of AI gun and important precautions. Each step was assigned scores of 10, 10, 10, 40, 10 and 20, respectively, by seeking the response from 30 scientists working in the Institute and LUVAS (Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar). Scores were assigned to each step and summated to arrive at final score of a respondent based on their skill of each step. Thus, individual pre- and post-training scores attained by the respondents during these training programs were calculated. Mean pre-training score of respondents was 51.36 while their post-training score was 67.73 out of 100. Thus, scores of respondents were worked for the AI process- before and after the training program. The difference between the pre- and post-training scores of the respondents was 6.56 (z=6.56), which was significant. Thus, significant gain in skill of the respondents who had undergone this training was observed.

Keywords: Artificial insemination, Buffaloes, Skill

India has over 111.3 million buffaloes constituting about 57.3 % of the world population (FAO 2012). Though less in population as compared to cattle (199.08 million), buffaloes currently produce 62.35 million tonne of milk contributing 51.2 % of the total milk (FAO 2012). Besides milk, 1.525 million tonne of meat is produced from buffaloes. Buffalo draft power also accounts for about 10 % of the total draft power contributed by the work animals in the country. In addition to milk, meat and draft, buffaloes also produce 0.52 million tonne of skin and hides in the country. Thus, buffalo has great significance for the country as well as for the farmers (FAO 2012).

There are about 54.5 million breedable buffaloes in the country, out of which barely 15–20 % are bred through AI while 80–85 % are covered by natural service mostly by scrub bulls. To effectively cover this population, we require about 75,000 superior breeding bulls to be selected initially and 10,000 bulls for the replacement, for semen production for artificial insemination and for breeding through natural service, every year (CIRB: Vision 2030). To support the genetic improvement programme in the country, there is a need to produce quality semen from genetically superior bulls and adoption of AI on a large scale.

However, there are some problems in the adoption of AI in buffaloes. Primary cause for this problem is non adoption of artificial insemination in buffaloes (Singh and Tiwari 2006). The secondary causes are the poor conception rate of AI (Singh and Jain 1988, Kunzuru *et al.* 1989) and lack of AI facilities at doorstep. Other causes for this problem are improper heat detection and untimely insemination of buffaloes as reported by Sawarkar *et al.* (2001).

Artificial Insemination has potential benefits in genetic improvement and costs of production. The degree to which these benefits are realized depends upon the efficiency of AI system. The smallholder buffalo farmer cannot afford to rear good quality buffalo bulls, but adopting AI can change the breed quality of small farms. Therefore, management skills of the farmers and their knowledge about the modern buffalo husbandry practices are the major determinants of future buffalo production in our country which can be honed through training as mentioned by Mayani and Seth (1978) and Pawar (1979). Training is an overt process, a sequence of experiences, a series of opportunities to learn, in which the trainee is exposed in a systematic way to certain materials or events (Lynton and Pareek 1967). A systematically arranged training programme helps in the production of desirable changes in the behavior of people. Kokate and Tyagi (1988) also mentioned the need for introducing AI in buffaloes in a big way. Therefore, it was considered imperative to organize skill development trainings on Artificial Insemination. In these training programmes, efforts were made that the participants further improved their skills as they had some

Present Address: [1,2,3,4]Principal Scientist (vbdixit @scientist.com, rksharma@scientist.com, abharadwaj @scientist.com, drsikapunam@gmail.com), [5]Senior Scientist (phulia@rediffmail.com).

exposure of the practice. Since there are few studies on measurement of skills, therefore, a new methodology was followed to study skill development about AI amongst the participants of these training programmes.

MATERIALS AND METHODS

In this study, it was endeavored to enhance the skills of rural youth about AI. In order to measure skill development in AI, it was considered imperative to split the process of AI into different steps. Response was elicited from 30 scientists of LUVAS and CIRB who were asked to mention steps in AI and give score to each step out of 100 in view of its importance. The respondents identified 6 steps and data regarding their range, mean and standard deviation pertaining to each step is given in Table 1.

Table 1. Mean scoring of different steps in AI process

Steps in AI	Range	Mean	SD
Estrus check	7–12	9.57	1.57
Washing of buffalo	9–11	10.17	1.05
Thawing	8–12	9.7	1.51
Loading	35–44	40.13	2.93
Passage of AI gun	8–13	10.13	1.92
Important precautions	17–23	20.3	2.25

Thus, the mean scores given to each step were rounded up and weightage of 10, 10, 10, 40, 10 and 20 was assigned out of 100 to estrus check, washing of buffaloes, thawing, loading, passage of AI gun and important precautions respectively. Loading included steps like straw wiping, straw cutting, straw fitting, sheath application and hygienic maintenance upto AI. Important precautions were providing instructions to owner like proper feeding, watering and housing, heat to be checked on day 21 and pregnancy diagnosis on day 60.

Three trainings of 10 days duration on AI were organized during 2012–13. In these trainings, 44 respondents mainly village youth participated who had some earlier exposure about AI. Thus, all the 44 respondents who undertook training at the Institute were selected for the study. To measure their total score, each trainee was called individually for scoring on each step based on his skill. A team of three scientists observed the trainee on each step and gave their scores which were averaged. Thus, scores assigned to each step were summated to arrive at total score of a respondent. Similarly, pre and post training scores of 44 respondents were worked out.

RESULTS AND DISCUSSION

Mean scores of all the respondents on the steps identified in the process of AI were calculated along with range and standard deviation. Pre-training scores of 44 respondents as described in methodology were calculated and are presented in Table 2. Steps like estrus check, washing of buffalo, thawing, loading, passage of AI gun and important precautions were assigned 9.54, 3.86, 7.5, 18.64, 6.60 and 5.23, respectively. It is obvious from the table that there was wide range in the scores obtained by the respondents (0–80). The average pre-training score of loading the gun and precautions in AI was 18.64 and 5.23, respectively. The overall average pre-training score of the respondents was 51.36 while standard deviation was 23.58, respectively.

Table 2. Pre-training skill scores of respondents

Steps in AI	Range	Mean	SD
Estrus check	0–10	9.54	2.11
Washing of buffalo	0–10	3.86	4.92
Thawing	0–10	7.5	4.38
Loading	0–30	18.64	12.50
Passage of AI gun	0–10	6.60	4.80
Important precautions	0–20	5.23	5.90
Overall pre-training score	0–80	51.36	23.58

Similarly, once again response was elicited from each respondent on steps identified in the process of AI after completion of the training programs. The scores of respondents thus obtained are given in Table 3. The table indicated that scores of 10, 7.95, 9.54, 23.18, 7.04 and 8.86 were assigned to different steps viz. estrus check, washing of buffaloes, thawing, loading, passage of AI gun and important precautions respectively. Post-training scores of respondents on different parameters increased after the training program. It was perhaps due to the reason that they were more skilled after training program in performing AI. It is evident from the table that average post training scores of loading and important precautions were 23.18 and 8.86, respectively. The overall average post training score of all the steps was 67.73 and standard deviation was 18.28. Thus, it indicated that after the training programme, there was less variation in the scores of respondents. In order to find out difference in the scores of respondents before and after the training programme, z-test was applied. Value of 6.56 revealed that there was significant gain in the skill regarding AI after the training. Thus, these training programs can contribute to enhance skill of village youth regarding the practice. However, the studies conducted earlier reported that lack of trained and adequate manpower (Kumar *et al.* 2000, Sah *et al.* 2002, Kumar *et al.* 2009, Kumar *et al.* 2012) was a major bottleneck in AI program. Therefore, there is a need to organize artificial insemination trainings for rural youth for breed improvement in buffaloes. This will cater to the demands of manpower required for rapid

Table 3. Post-training skill scores of respondents

Steps in AI	Range	Mean	SD
Estrus check	0–10	10	0
Washing of buffalo	0–10	7.95	4.08
Thawing	0–10	9.54	2.10
Loading	0–40	23.18	11.15
Passage of AI gun	0–10	7.04	4.61
Important precautions	0–20	8.86	6.18
Overall post-training score	30–90	67.73	18.28

Table 4. Frequency of respondents in different categories

Score	Pre-training		Post-training	
	Frequency	Percentage	Frequency	Percentage
Low (0–30)	11	25	2	4.55
Medium (31–60)	16	36.36	11	25
High (more than 60)	17	38.64	31	70.45

dissemination.

Pre-and post-training scores of the respondents were categorized into low, medium and high and their frequency distribution was done which is mentioned in Table 4. It is apparent from the table that there were 25, 36.36 and 38.64 % respondents in low, medium and high skill categories respectively, before training.

While after the training programme there percentage was 4.55, 25 and 70.45 in low, medium and high categories respectively. Thus, after the training programme, shift in skill was observed as major proportion of respondents (95%) was having either medium or high skill while only 4.55 % still had low skill.

Thus, it can be concluded from the study that skill development about the artificial insemination practice can be improved significantly through systematically organized training program under the guidance and supervision of scientists. There is a normal practice of giving equal weightage to each step. However, this study revealed that these steps vary in their importance and therefore, different weightage needs to be assigned to each step.

ACKNOWLEDGEMENT

The authors are thankful to the Director, CIRB, Hisar for providing facilities to carry out research work. The study was partly funded by Institute Planned Project.

REFERENCES

FAO. 2012. FAO Year Book.

Kokate K D and Tyagi K C.1988. Dairy development in tribal scenario: Diagnosing the needs and problems. *Maharashtra Journal of Extension Edu*cation **7**: 224–26.

Kumar S, Hindustani S, Kateryar K M and Sankhala G. 2009. Constraints perceived by farmers in adopting scientific dairy farming practices in Banka district of Bihar. *Indian Journal of Dairy Science* **62**: 131–34.

Kumar S, Kumar B, Kumar R and Sankhala G. 2012. Farmers' opinion to reduce the constraints in scientific dairy farming practices—a case study. *Indian Journal of Animal Sciences* **82**:762–66.

Kumar S, Sah U and Rao S V N. 2000. Delivery of dairy production inputs and services in Banka district of Bihar: status and bottlenecks. *Indian Journal of Dairy and Biosciences* **11**: 101–05.

Kunzuru O N, Sagar R L, Kumar S and Singh P. 1989. Constraints perceived by the livestock owners in adoption of artificial insemination. *Indian journal of Animal Sciences* **59**: 484–85.

Lynton R P and Udai Pareek. 1967. *Training for Development*, Richard. D. Irwin Inc. and Dorsey Press, Homewood, Illinos, USA

Mayani V V and Seth D M. 1978. Training of small farmers. *Kurukshetra* **26**: 21–22.

Pawar S G. 1979. 'A study of training needs of the farmers in scientific dairy and crop training practices in rainfed area of Hamirpur district (UP).' M.Sc. thesis (unpublished), National Dairy Research Institute, Karnal.

Sah A K, Chand R and Kumar S. 2002. Farmers Opinion: An approach to debottleneck the constraints in improved dairy farming. *Indian Journal of Dairy and Biosciences* **13**:81–85.

Sawarkar S W, Barkar M M, Upadhaya S V and Jadhao J L. 2001. Characteristics of owners, their awareness, adoption and constraints in adoption of Artificial Insemination pracrices in Vidarbha region. *Indian Journal of Dairy Sciences* **54**: 194–202.

Singh B P and Tiwari Rupasi. 2006. Technology adoption behavior of buffalo owners-A participatory study in Bareilly district of U.P. *Indian Journal of Social Research* **47**: 305–13.

Singh Shivtar and Jain I P C. 1988. Constraints to higher milk yield in a hilly area of Himachal Pradesh. *Indian Journal of Animal Sciences* **58**: 388–90.

Vision. 2030. A CIRB publication.