



E-ISSN: 2320-7078

P-ISSN: 2349-6800

[www.entomoljournal.com](http://www.entomoljournal.com)

JEZS 2020; 8(2): 193-197

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Received: 19-01-2020

Accepted: 21-02-2020

**Rajesh Kasrija**

Assistant Professor, Department of Veterinary and Animal Husbandry Extension Education, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India

**Harish Kumar Verma**

Director of Extension Education, GADVASU, Department of Veterinary and Animal Husbandry Extension Education, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India

## Analysing effectiveness of educational instructional materials on anoestrus in buffalo for augmenting fertility in Punjab

**Rajesh Kasrija and Harish Kumar Verma**

### Abstract

A total of 540 farmers {180 dairy farmers each running small (with 1-9 animals), medium (with 10-30 animals) and large (with more than 30 animals) dairy units respectively} were randomly selected from Punjab. The training needs and knowledge level of farmers about various farming practices were analysed and information about anoestrus was also gathered after consulting subject matter experts and after reading related literature for development of instructional materials i.e. charts, pamphlets and DVDs. The mean score of different aspects of multimedia elements as judged by 20 experts ranged from 4.2 to 4.8, with an average of 4.47 out of 5. The overall mean score of 4.47 (89.4%) assigned to all the multimedia elements, proved that developed DVD possessed all the qualities of a standard video based instructional device. There was significant difference (at  $P < 0.01$ ) in knowledge score of pre-exposure group, after exposure to chart, pamphlet and DVD. The maximum knowledge score was for DVD group, followed by pamphlet, chart and then pre-exposure group. All the farmers were satisfied with suitability of the contents as per needs and level of understanding, visual quality, classification of contents into chapters and easiness in using the video-DVD. This suggests that the developed DVD is an excellent resource material for knowledge gain of farmers, is farmer friendly and is up to their level of satisfaction.

**Keywords:** Anoestrus, buffalo, dairy, DVD, farmer

### Introduction

Punjab is one of the leading states in dairying and milk production, producing 12.6 Million Tonnes of milk, of the total milk production of country which is 187.7 Million Tonnes (<https://www.nddb.coop/sites/default/files/statistics/Mp%20States-ENG-2019.pdf>). Although, buffalo contribute significantly to milk production in Punjab and in India. But, in Punjab, the average milk yield/buffalo/day is 8.65 Kg only <sup>[1]</sup>. The enhancement in milk production of dairy animals is directly related with good reproductive efficiency <sup>[2]</sup>, and the success of dairy farming lies in ensuring proper and optimal reproductive rhythm of an individual animal in the herd <sup>[3]</sup>. Anoestrus is major reproductive disorder of buffaloes as it leads to lesser calves and poor milk production, long service period and increase in intercalving interval, thereby causing economic losses. Proper knowledge regarding the effect, causes, preventive measures and good management practices can help the farmers to bring occurrence of anoestrus to negligible level. The intervention by extension functionaries must provide an ideal bridge between research institutions and dairy farmers. Many a times there is poor adoption and diffusion of new technologies or poor knowledge level of farmers etc. So, a suitable extension strategy requires a thorough understanding of present knowledge level of dairy farmers. The existing knowledge level will help in determination of training needs, which is most crucial question for successful extension strategies/programmes. Also, understanding of the farming practices followed by farmers is necessary to identify the strengths and weaknesses of the rearing systems and to formulate suitable intervention policies <sup>[4]</sup>. So, a study was planned to formulate instructional materials on anoestrus in buffaloes (Chart/Pamphlets and DVDs) developed on the basis of training need and knowledge level of farmers and to check its appropriateness, effectiveness.

### Materials and Methods

A total of 540 dairy farmers {180 dairy farmers each running small (with 1-9 animals), medium (with 10-30 animals) and large (with more than 30 animals) dairy units respectively} were randomly selected from all the six agro-climatic zones of Punjab.

**Corresponding Author:**

**Rajesh Kasrija**

Assistant Professor, Department of Veterinary and Animal Husbandry Extension Education, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India

The training needs and knowledge level of farmers about various farming practices were analysed and information about anoestrus was also gathered after consulting subject matter experts and after reading related literature for development of instructional materials i.e. charts, pamphlets and DVDs. The script for instructional material was written in native language i.e. Punjabi. The size of chart was 3 feet x 4 feet. All the important aspects of manuscript were included in charts. Separate colour and font size were provided to heads and subheads and suitable tables were also incorporated. The important points were highlighted for more attention of readers. The pamphlets were prepared on both side of A-4 paper. So, that after folding it may provide information on four page format. Manuscript was typed and suitable Tables and graphics were also included.

While devising educational DVD on anoestrus, the original theoretical contents of the manuscript were paragraph type which would not have captured the suitable interest of users. For the purpose of motivational learning and for providing conducive environment for better understanding and adoption of correct management practices, the whole information was prepared in logical sequence. The main features of instructional modules were as under:

- a) Text was written in an easy and interactive mode in simple Punjabi language to motivate the learners, to keep continuity without the need of the instructor like a self-learning module.
- b) Visuals Tables and bold column messages were added wherever needed to make the learning process more easy and effective.

The script was developed before final setting of text, table, graphic, illustrations, sound and video elements. After finalising the topic, storyboards were prepared in a logical sequence of information. All the multimedia elements i.e. text, graphics, audio, videos etc were developed separately as per requirements of the developed story board contents. The typing of the text was done with the use of micro-soft office word software in Punjabi font AnmolLipi. Graphic illustrations were made by Adobe Photoshop, Microsoft paint, Microsoft Power Point. The graphics were produced by clicked photos, scanning of photographs, slides and textbooks or internet source. For better display of information, the flow charts in Punjabi language were also made in Microsoft power-point. Video recordings were done according to the already prepared manuscript and storyboard. Digital and mobile cameras were used for video clippings which were transferred to the computer in digital file form. Stored videos were edited according to the need of manuscript. To maintain the attention of learner, short video sequences were used. Video shooting was done in GADVASU Dairy farm, Teaching Veterinary Clinical complex, Private Dairy farms, Veterinary hospitals in field and from the reported field cases. The audio element of the video commentary and background narration were recorded in vernacular language i.e. Punjabi. The audio files were synchronized with text and video. Background music was also inserted with text to make light mode learning and to break the monotony. After the development of multimedia elements, the screen designing was done by using background colours and design for brightness, helping in easy understanding and learning by the

learners. Various Computer software were used (Adobe Premier CS-5 Pro for the purpose of video editing and animation; Sony Sound Forge-10 for audio editing and Adobe Photoshop for photos and special effect).

The appropriateness and validity of the multimedia elements were evaluated by the 20 subject matter experts from Department of Veterinary and Animal Husbandry Extension Education and Department of Veterinary Gynaecology, GADVASU, Ludhiana. The attributes were related to text, visuals, videos, graphics and audio used in the DVD. DVD was then modified on the basis of suggestions of experts after validation. The advised corrections were accordingly made and final DVD was prepared for henceforth use.

For determining effectiveness of instructional material and satisfaction level of farmers, One hundred thirty five respondents from Punjab Dairy development training centers at Village Bija (District Ludhiana) and Village AbulKhurana (District Mukatsar) were selected. The trainees were from 15 day and 45 day training groups. The trainees were tested for their knowledge on anoestrus in dairy animals with the help of an interview schedule containing 20 questions, before and after exposure to the charts, pamphlets and DVD at an interval of 5-7 days. The scores obtained by the respondents and mean of the scores before and after exposure to instructional materials were calculated. Percentage analysis of change in scores was done to calculate the impact of learning. The various demographic characteristics of trainees such as age, education, location etc. were fixed as there are minimum criterions for getting entry in to training course of Punjab dairy development department. The satisfaction level of farmers for DVD was noted on four point continuum- most satisfied to not satisfied.

For analysis, simple tabular techniques and appropriate statistical methods were employed by using SPSS version 22.0.

## Results and Discussion

Table 1 represents measures of appropriateness of multimedia elements used for DVD on anoestrus. The mean score of different aspects of multimedia elements as judged by experts ranged from 4.2 to 4.8, with an average of 4.47 out of 5. The maximum individual score was assigned to font size (4.8) followed by rationality of manuscript and audio (4.7). The minimum score of 4.2 was obtained by pause and background music in DVD.

Table 2 indicate mean score of Multimedia Elements for DVD on Anoestrus. The mean scores of all the multimedia elements were more than 85 percent. Contents / text score averaged 4.7 (94%). Attributes of video had average score 4.53 (90.6%), still photographs had average score of 4.33 (86.6 %), graphics scored 4.45 (89%) and audio attributes got 4.4 (88%) score. The overall mean score of 4.47 (89.4%) assigned to all the multimedia elements, proved that developed DVD possessed all the qualities of a standard video based instructional device. Similar results had been observed as mean score of the multimedia elements rated by the subject matter experts was 3.67 (out of 4) in designed CD-ROM on dairy enterprise<sup>[5]</sup>. Also, in designed CD-ROM on abortion in dairy animals, the reported mean score of the multimedia elements as rated by the subject matter experts as 3.74 (out of 4)<sup>[6]</sup>.

**Table 1:** Measures of Appropriateness of Multimedia Elements for DVD on Anoestrus

Sr. No.	Multimedia Elements	Mean Score (out of 5)
<b>Content/Text</b>		
1.	Font Size	4.8
2.	Font Colour	4.6
<b>Visuals/Stills</b>		
3.	Illustrativeness	4.6
4.	Sharpness	4.4
5.	Placement	4.5
6.	Rationality	4.6
<b>Videos</b>		
7.	Clarity	4.6
8.	Rationality	4.5
9.	Duration	4.2
<b>Graphics</b>		
10.	Understandable	4.5
11.	Rationality	4.4
<b>Audio</b>		
12.	Rationality of Manuscript	4.7
13.	Pronunciation	4.5
14.	Speed	4.5
15.	Pause	4.2
16.	Emphasis	4.3
17.	Synchronisation	4.4
18.	Background Music	4.2
Over all mean score		4.47

**Table 2:** Mean Score of Multimedia elements for DVD on Anoestrus

S. No.	Multimedia Elements	Mean Score (out of 5)
1	Content/Text	4.7
2	Videos	4.53
3	Visuals/Stills	4.33
4	Graphics	4.45
5	Audio	4.4
Overall Mean Score		4.47

Table 3 and Figure I represent effectiveness of instructional materials on Anoestrus. There was significant difference (at  $P < 0.01$ ) in knowledge score of pre-exposure group, after exposure to chart, pamphlet and DVD. The maximum knowledge score was for DVD group, followed by pamphlet, chart and then pre-exposure group. There was 138% increase in knowledge level, if comparison was done between pre-exposure group and after exposure to DVD. But, in the present study, the individuals were same (same cognitive level) for all the three groups. They were exposed to particular exposure at an interval of 5-7 days. So, there was 32% increase in knowledge after exposure to chart on anoestrus as compared to knowledge of pre-exposure group.

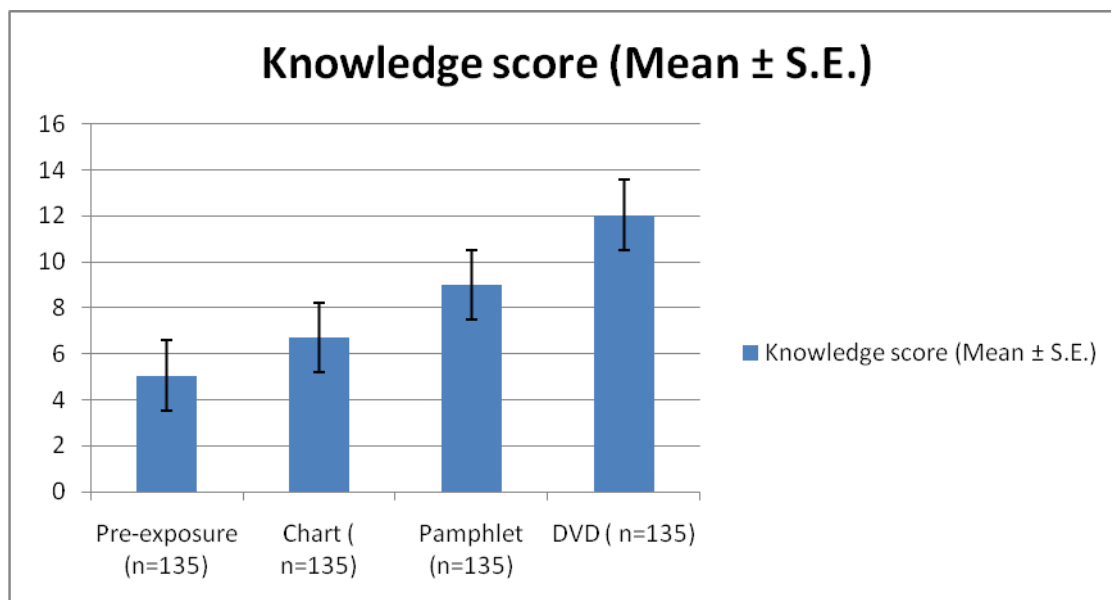
There was 46% increase in knowledge by pamphlets as compared to exposure to chart. There was 60% increase in knowledge after exposure to DVD on anoestrus as compared to pamphlet material. This clearly indicated that Video instructional device is most suited device for education gain, followed by pamphlets and then chart. Although, all the three instructional materials had gained the knowledge level of farmers, but DVD ranked first, followed by Pamphlets and then Chart.

Also, in developed and standardized media package on animal husbandry practices, there was significant gain in knowledge and change in attitude of rural women after exposure to video cassette/CD [7]. Also, the interactive video-DVD was reported to be an appropriate tool to disseminate knowledge on dairy health management practices and all the respondents were convinced about the use of scientific management practices on exposure to the health care management practices through video DVD [8]. Likewise, in determining the effectiveness of CD lesson on the knowledge of milk vendors about clean milk production, the CD lesson was found to be effective in disseminating knowledge about clean milk production practices among milk vendors [9].

**Table 3:** Effectiveness of instructional materials on Anoestrus

S. No.	Parameter	Pre-exposure (n=135)	Exposure		
			Chart (n=135)	Pamphlet (n=135)	DVD (n=135)
1	Knowledge score (Mean $\pm$ S.E.)	5.06 <sup>a</sup> $\pm$ 0.17	6.69 <sup>b</sup> $\pm$ 0.16	9.0 <sup>c</sup> $\pm$ 0.17	12.04 <sup>d</sup> $\pm$ 0.17
2	Range of Knowledge score	2-10	4-12	6-13	10-16
3	Increase in Knowledge	1	1.32	1.78	2.38
4	%age increase in knowledge as compared to previous exposure	-	32 %	46%	60%

Means in rows with different superscript are significant at  $P < 0.01$



**Fig 1:** Effectiveness of instructional materials on Anoestrus

Table 4 indicate level of satisfaction among farmers after exposure to DVD on anoestrus. None of the farmer was unsatisfied with suitability of the contents to needs and level of understanding, overall visual quality, classification of

contents into chapters, easiness in using the video-DVD. This suggests that the developed instructional materials were excellent resource material for knowledge gain of farmers, is farmer friendly and is up to their level of satisfaction.

**Table 4:** Level of satisfaction among farmers after exposure to DVD on Anoestrus

S. No.	Parameters	Response ( n=135)			
		Most satisfied	Satisfied	Least satisfied	Not satisfied
1	Suitability of the contents to your needs	90 (66.67)	42 (31.11)	3 (2.22)	0 (0)
2	Coverage of the contents	80 (59.26)	51 (37.78)	3 (2.22)	1 (0.74)
3	Suitability of the contents to your level of understanding	70 (51.85)	53 (39.26)	12 (8.89)	0 (0)
4	Overall visual quality	85 (62.96)	49 (36.30)	1 (0.74)	0 (0)
5	Visual effects provided	74 (54.81)	48 (35.56)	12 (8.89)	1 (0.74)
6	Overall sound quality	76 (56.30)	56 (41.48)	1 (0.74)	2 (1.48)
7	Classification of contents into chapters	95 (70.37)	40 (29.63)	0 (0)	0 (0)
8	Easiness in using the video-DVD	100 (74.07)	30 (22.22)	5 (3.70)	0 (0)

Figure in parenthesis indicate percentage

Also, the developed educational Digital Video Disk (DVD) on perceived needs of Improved Dairy farming Practices (IDFPs) was found to be effective in terms of knowledge gain about IDFPs among the dairy farmers by applying pre and post exposure knowledge test. Majority of the respondents were 'satisfied' regarding its usefulness in enhancing knowledge, suitability of the information to the field situation, improves self-confidence, arousal of curiosity and interest, relevancy and appropriateness of the content, completeness, credibility, simplicity and logical presentation of information [10].

### Conclusions

It can be concluded that the devised video educational instructional material on anoestrus can help in solving the burning problem of Anoestrus in buffaloes by educating the farmers. The devised video instructional material resulted in increase in knowledge level of farmer, is farmer friendly and is up to level of satisfaction of farmer.

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