

REVAMPING VETERINARY AND ANIMAL HUSBANDRY EXTENSION IN INDIA



Competence in basic subject matter knowledge and skills (acquired in BVSc & AH), and its application in 'relevant extension specialisation' (Veterinary and Animal Husbandry Extension/Dairy Extension) enables the extension professional to perform effectively, argue SVN Rao and PVK Sasidhar.

CONTEXT

- During their involvement as QRT/RAC members with the Indian Council of Agricultural Research (ICAR), the authors of this blog observed poor representation of 'qualified' Veterinary and Animal Husbandry Extension (VAE)/Dairy Extension scientists in ICAR - Animal Science Institutions/KVKs. This has seriously compromised livestock extension activities as well as assessment, refinement, and transfer of the livestock technologies that have been developed.
- While evaluating Masters/Doctoral theses or reviewing extension research articles for publication in dairy/animal science journals, we noticed that most of the investigators – lacking in veterinary background – did not have clarity on the basic concepts of livestock production and management, and problems of livestock farmers.
- As external examiners at some of the State Agricultural Universities (SAUs) and State Veterinary Universities (SVUs), we observed that non-extension faculty from other Veterinary departments are teaching Veterinary and Animal Husbandry Extension UG courses and are even guiding Masters and Doctoral students (e.g., the VAE departments in 38 out of 52 Veterinary Colleges and IVRI do not have the required number of faculty with prescribed qualifications to teach UG courses, leave alone for guiding PG students).



Our introspection led us to wonder whether we, with Veterinary and Animal Science background, can conduct extension studies in, say fisheries or agriculture or horticulture, without having basic conceptual clarity in these subjects. We then realised that we do not have the necessary technical competence in these subjects, and we honestly admit it is not right on our part to get involved in teaching, or in research and extension in these subjects. It is this realisation that made us write this blog. Our opinions expressed here are purely personal, based on our work experience in ICAR's Agricultural Research Service and in veterinary colleges, apart from our association with ICAR/SAUs/SVUs in various committees.

VETERINARY AND ANIMAL HUSBANDRY EXTENSION EDUCATION (VAE)

Veterinary and Animal Husbandry Extension Education (VAE) is a diverse, valuable, and a relatively new operational concept in India. VAE's role in veterinary and animal science research and development is to be clearly understood by policy makers/research managers in ICAR Headquarters & Animal Science Research Institutes, Agricultural Scientists Recruitment Board (ASRB), SAUs and SVUs. The VAE follows the general trends set by agricultural extension with substantial changes in:

- Educational qualifications for teaching faculty and researchers prescribed by the Veterinary Council of India (VCI);
- Basic technical subject matter application in extension research;
- Technologies to be transmitted;
- Primary target group and key stakeholders;
- Staffing as per statutory requirements etc.

VAE probably is the only discipline weighed down with several inconsistencies in its nomenclature, qualifications of the teaching faculty, syllabi and curriculum, and the target groups it addresses. This could be one of the reasons why this discipline is riddled with several misconceptions.

WHY BASIC TECHNICAL SUBJECT MATTER COMPETENCIES ARE ESSENTIAL FOR EFFECTIVE EXTENSION

Box 1. Extension Specialisations and Essential Subject Matter Competencies			
Extension Specialisation	Required Basic Technical Subject Matter Training	Target Group	Area of Work
Agricultural Extension	BSc (Agriculture) BSc (Horticulture)	Agriculture and Horticulture Farmers	Crop Technologies - Cereals, pulses, oil seeds, cash crops, tubers, fruits and vegetables, etc.
Veterinary and Animal Husbandry Extension Education / Dairy Extension	BVSc & AH	Livestock and Poultry Farmers	Livestock and Poultry Technologies - Farm, companion, working and lab animals and poultry
Fisheries Extension	BFSc	Fisheries and Aquaculture Farmers	Fisheries and Aquaculture
Home Science Extension	BSc (Home Science)	Communities	Community development, resource management, food and nutrition, and textiles, etc.

Extension as a whole is not a standalone discipline as it deals with a specific subject matter, which needs to be communicated to a specific target group – farmers. The subject matter to be transferred

depends upon the category of farmers. Accordingly different streams of extension emerged vis-à-vis the subject matter with which it deals (Box 1).

The competencies required by a Veterinary and Animal Husbandry Extension Education/Dairy Extension professional may be classified into two broad categories:

(a) Process skills or functional competencies or soft skills

- *Example 1:* Programme planning, execution and evaluation.
- *Example 2:* Data collection through household surveys on problems of livestock development – purpose, procedure, data consolidation, analysis, interpretations and identification of problems for intervention and policy.
- *Example 3:* Networking with local organizations, facilitating group formation, resolving conflict and engaging stakeholders in livestock development, etc.

(b) Technical subject matter application competencies or core skills

- *Example 1:* Conducting a method demonstration on how to perform artificial insemination or pregnancy diagnosis in dairy animals.
- *Example 2:* Conducting refresher training for field veterinarians on animal reproduction competencies (Box 2).
- *Example 3:* Demonstrating ‘The Five Freedoms’ of animal welfare and their outcomes in a livestock or poultry farm (Box 3).

Box 2. Refresher Training Curriculum for Field Veterinarians on

Animal Reproduction Competencies

(a) Technical Subject Matter Application Competencies/Core Skills: Anatomy of bovine female reproductive organs; Slaughterhouse specimens collection; Physiology of female bovine reproductive system; Ovarian development and follicular dynamics; Rectal examination - purpose, procedure, care & precautions; Heat behaviour, heat aberrations, palpable changes and pregnancy diagnosis; Differential diagnosis; Endometritis and latest protocols in treatment of uterine pathology; Anoestrus and its management; Oestrus synchronization; Repeat breeding; and Cryo-preservation of semen, thawing procedures and handling of AI equipment.

(b) Process Skills or Functional Competencies/Soft Skills: Indian dairy industry – present scenario and SWOT analysis; Concepts of ideal dairy, farming practices/parameters; Data collection through household survey on reproductive problems of bovines - purpose and procedure; Data consolidation and analysis, interpretations and identification of reproductive problems for intervention; Presentations by participants (Group work); Field visit for hands-on training and practice; Veterinarians role in enhancing livestock productivity; Tips for enhancing conception at field level.

(Source: Ravi Kumar et al. 2016)



Box 3. Requirements for Good Welfare under Five Freedoms and their Outcomes	
Freedom	Summary of Requirements and Outcomes
1. <i>Freedom from hunger, thirst and malnutrition</i>	Requirements: Covers the basic needs - food and drinking water. Outcomes: Experiences (hunger, thirst) that animals will have and the physiological consequences that can occur (malnutrition), if this Freedom is not met.
2. <i>Freedom from thermal and physical discomfort</i>	Requirements: Covers the need for animals to be housed or maintained in an environment that is suitable for that species. Outcomes: Ways in which animals may suffer from inadequate housing (discomfort), if this Freedom is not met.
3. <i>Freedom from pain, injury and disease</i>	Requirements: Deals with the health needs of animals. Outcomes: Animals may experience pain as a result of injury and or diseases (ill health), if this Freedom is not met.
4. <i>Freedom to express normal behaviour</i>	Requirements: Recognises the importance of having specific behaviours which are important to animals. Outcomes: Experiences (lack of space, facilities and company of own species) that animals will have and the physiological consequences that can occur (if unable to have specific behaviours), if this Freedom is not met.
5. <i>Freedom from fear and distress</i>	Requirements: Recognises that animals can experience negative emotional states, particularly fear, and that they should be protected from experiencing these states. Outcomes: Experiences (fear and distress) that animals will have and the physiological consequences that can occur (mental suffering), if this Freedom is not met.

The essence of the discussion presented in Box 1 – along with specific examples given in Boxes 2 and 3 – is that Veterinary and Animal Husbandry Extension/Dairy Extension professionals must have competence both in basic subject matter knowledge and skills and its application, to perform effectively in the field (Rao 2019).

HISTORY OF VETERINARY AND ANIMAL HUSBANDRY EXTENSION EDUCATION AND DAIRY EXTENSION AT PG LEVEL

The Division of Dairy Extension at the National Dairy Research Institute (NDRI) came into existence in 1961. Postgraduate teaching and research began in 1972 and the degrees awarded were MSc and PhD in Dairy Extension. Later, NDRI started awarding its MSc degree as MSc Dairying (Dairy Extension), and after a few years it started awarding degrees as MVSc (Veterinary Extension) for all those with basic BVSc & AH degree, and MSc for those with BSc (Ag) and BSc (Dairy Husbandry).

The Division of Extension Education was established at the Indian Veterinary Research Institute (IVRI) in 1970. From 1985 onwards IVRI has been offering a PG programme in Extension Education. IVRI has also changed its nomenclature while issuing degree certificates – first into MVSc (Veterinary Extension), and currently as MVSc (Veterinary Extension Education) and PhD (Veterinary Extension Education).

NDRI and IVRI were the only ICAR institutions offering PG programmes for BVSc & AH graduates in the animal science domain, although they were permitted to pursue PG programme in Agricultural Extension Divisions at IARI and SAUs. Due to shortage of faculty trained in Veterinary Extension in the 1980s and 90s, the PG programmes at NDRI were taught by faculty specialised in agricultural

extension. But at IVRI, there were a few faculty members with BVSc & AH degrees who had specialised in Extension, associated with the PG programme in Veterinary Extension.

The Madras Veterinary College (MVC), as a constituent college of Tamil Nadu Agricultural University (TNAU), established the Department of Extension in 1963. When Tamil Nadu Veterinary and Animal Sciences University (TANUVAS) was established in 1989, MVC launched their PG programme in Veterinary Extension in 1990. Later, the PG programme in Veterinary Extension was introduced in many SAUs and SVUs.

ESTABLISHMENT OF VETERINARY AND ANIMAL HUSBANDRY EXTENSION EDUCATION DEPARTMENTS AT THE UG LEVEL

The VCI has recognised the importance of VAE in the BVSc & AH degree programme and made it mandatory to establish it as one of the 17 departments as part of Minimum Standards of Veterinary Education Regulations 1993 (VCI 1993). After that, the departments of VAE were established in all the veterinary colleges so as to impart knowledge and inculcate the skills required by veterinarians – to educate livestock farmers on the various aspects of livestock management that would enable them to increase their production and income through superior livestock rearing.

CURRENT SCENARIO

The prevailing scenario with respect to UG, PG and Doctoral programmes being followed in different institutions is described below.

(1) Under-Graduate Programme (BVSc & AH): As of 2020, in the public sector, the BVSc & AH programme – as per VCI Minimum Standards of Veterinary Education (MSVE) – is being offered by 53 institutions in India. This includes IVRI and 52 constituent Veterinary Colleges under SAUs/SVUs/Central Agricultural University (CAU)/Central Universities (CUs). As per the MSVE-2016 regulations, the department of VAE must have three faculty members (1 Prof., 1 Assoc. Prof. and 1 Asst. Prof.) who have specialised in VAE in order to offer BVSc & AH degree programme for an annual intake of 80 students in a Veterinary College. As per the VCI regulations all the courses must be taught by competent faculty with specific qualifications in the respective subjects (Box 4).

Box 4. Faculty Eligibility to Teach UG Courses in Veterinary Institutions

14. Teachers, Examiners, Paper Setters. – (1) The persons with only basic veterinary qualification, included in Schedules to the Act, registered with a State Veterinary Council and having a Post-graduate Degree in the concerned subject, shall be recruited as teaching faculty in the Veterinary Colleges and preference shall be given to the candidates who have qualified National Eligibility Test conducted by Agricultural Scientist Recruitment Board and in case National Eligibility Test qualified candidates are not available they shall qualify National Eligibility Test prior to their promotion and the College or University may employ Graduate Assistants with BVSc and AH or MVSc degree against the vacant post for a maximum period of two years and not more than one in each department.

Source: VCI 2016



Unfortunately, the VAE departments in 38 out of 52 Veterinary Colleges and IVRI do not have the required number of faculty with prescribed qualifications (Table 1). The VAE departments in some Veterinary Colleges are filled with Agriculture Extension faculty, whereas in some other Veterinary Colleges posts are filled with veterinarians who have specialised in subjects other than VAE, such as Veterinary Gynaecology & Obstetrics, Veterinary Surgery & Radiology, Veterinary Pathology, Livestock Production & Management, etc. **We are sure that Veterinary Universities/Colleges are not producing Veterinary Gynaecologists, Veterinary Surgeons and Veterinary Pathologists to teach VAE courses in their respective colleges.** There are a few Veterinary Colleges in the country which do not have even a single faculty qualified in VAE. In addition, there are many vacancies in the Department of VAE. The net result is that the quality of teaching takes a beating and the veterinary graduates coming out of the portals of such institutions will not be in a position to develop clarity on VAE concepts or the skills required to effectively deliver the Veterinary and Animal Husbandry Extension services to livestock farmers. There are several dichotomies which often interfere in the process of 'making veterinarians' and delivery of services by them (Rao et al. 2019).

Table 1: Details of VAE Faculty available in Public Sector Veterinary Colleges in India

No.	State	University	Veterinary College Location	No. of faculty with VAE qualifications	Shortage of Faculty in VAE*	State wise vacancies in VAE
1.	Andhra Pradesh	SVVU	Tirupati	1	2	3
2.			Gannavaram	3	0	
3.			Proddatur	2	1	
4.	Assam	AAU	Guwahati	5	0	1
5.			Lakhimpur	2	1	
6.	Bihar,	BASU	Patna	3	0	0
7.	Chhattisgarh	CGKU	Durg	1	2	5
8.			Bhilaspur	0	3	
9.	Gujarat	AAU	Anand	0 (1)	3	6
10.		JAU	Junagadh	2	1	
11.		SDAU	SK Nagar	2	1	
12.		NAU	Navsari	2	1	
13.	Haryana	CCSHAU	Hisar	2	1	1

14.	Himachal Pradesh	CSKHPAU	Palampur	2	1	1
15.	J&K	SKUAST	Jammu	2	1	1
16.			Srinagar	3	0	
17.	Jharkhand	BAU	Ranchi	2	1	1
18.	Karnataka	KVAFSU	Bidar	2	1	7
19.			Bengaluru	1	2	
20.			Shivamogga	2	1	
21.			Hassan	2	1	
22.			Gadag	1	2	
23.	Kerala	KVASU	Thrissur	4	0	0
24.			Pookode	3		
25.	Madhya Pradesh	NDVSU	Jabalpur	2	1	2
26.			Mhow	2	1	
27.			Rewa	3	0	
28.	Maharashtra	MAFSU	Nagpur	3	0	5
29.			Mumbai	2	1	
30.			Parbhani	2	1	
31.			Udgir	2	1	
32.			Shirwal	1	2	
33.	North-East	CAU	Aizwal	2	1	3
34.			Peren	1	2	
35.	Odisha	OUAT	Bhubaneshwar	3	0	0
36.	Pondicherry	PU (Central University)	Pondicherry	1	2	2
37.	Punjab	GADVASU	Ludhiana	0(5)	3	3
38.	Rajasthan	RAJUVAS	Bikaner	2	1	2
39.			Udaipur	2	1	
40.	Tamil Nadu	TANUVAS	Chennai	4	0	0
41.			Namakkal	5	0	
42.			Tirunelveli	4	0	
43.			Orathanadu	4	0	
44.	Uttarakhand	GBPUAT	Pantnagar	0(2)	3	3
45.	Telangana	PVNRTVU	Hyderabad	1	2	3
46.			Korutla	2	1	
47.	Tripura	TU (Central University)	Agartala	1	2	1
48.	Uttar Pradesh	UPDUVASU	Mathura	3	0	5
49.		SVBPUAT	Meerut	2	1	
50.		NDUAT	Faizabad	2	1	
51.		BHU	Barkachha	3	0	
52.		ICAR -IVRI	Izatnagar	0 (6)	3	
53.	West Bengal	WBUAFS	Kolkata	2	1	1

Source: Information from the websites of the respective Universities / Colleges.

Note: As per the VCI (2016) regulations, the number of faculty required in the Dept. of VAE are three (one Prof, one Assoc. Prof. and one Asst. Prof.) to teach UG programme for a batch of 80 students. Figures in parentheses indicate the number of faculty in the Dept. of VAE but without the required qualifications in VAE.

(2) Masters and Doctoral Programmes: Contrary to the appropriate learning situation, the existing situation throws open several lacunae in the teaching of Veterinary Extension Education courses at

Masters and Doctoral levels. There are instances where the faculty specialised in Agricultural Extension have been teaching MVSc and PhD students of Veterinary Extension Education. Similarly, Veterinary graduates who have specialised in subjects other than Veterinary Extension are teaching Veterinary Extension courses at all levels – from UG to Doctoral level (Table 2). There may be a few teachers who are teaching effectively despite the mismatch between their qualifications and the courses offered by virtue of their commitment and experience. These are exceptions and cannot be the rule.

Table 2: The Current Situation at Masters and Doctoral Programmes in Extension

No.	Masters and Doctoral Programmes	Syllabus & Curriculum	Faculty with Same/Different Graduate qualification	Remarks
1.	MSc & PhD (Agri. Extension) offered by Agricultural Colleges	Uniform syllabus prescribed by ICAR	BSc (Ag) with specialisation in Agri. Extension	Ideal
2.	MVSc & PhD (Veterinary Extension Education) offered by Veterinary Colleges	Uniform syllabus prescribed by ICAR	BVSc & AH with specialisation in Veterinary Extension/Dairy Extension	Ideal
			BVSc & AH with specialisation in Agricultural Extension	May be continued till qualified faculty are available
			BVSc & AH with specialisation in Gynaecology & Obstetrics/Pathology/ LPM etc	To be discouraged
			BSc (Ag) with specialisation in Agri. Extension	To be discouraged
3.	MSc & PhD (Agricultural Extension Education)/MVSc & PhD (Vety. Extension) offered by NDRI, Karnal	Uniform syllabus prescribed by ICAR	BSc Ag/ BSc (H.Science)/ BSc (Dairy Husbandry) with different extension qualifications	MSc and MVSc are awarded based on the basic degree which is a contradiction
4.	MVSc & PhD (Veterinary Extension Education) offered by IVRI, Izatnagar	IVRI syllabus	BSc (Ag)/ BSc (H. Science) with Agri Extension qualifications	MVSc and PhD in Veterinary Extension Education are awarded which is a contradiction

(3) Non-Uniformity in the Curriculum and Syllabus: There is no uniformity in the curriculum and syllabus being followed in institutions offering Extension courses. For example, IVRI, which is a National institute of ICAR, follows its own syllabus developed some decades back, whereas the SAUs/SVUs follow the curriculum and syllabi developed and revised periodically by the ICAR. Similarly there is no uniformity in the eligibility qualifications for admission to Masters and Doctoral programmes in Extension (Table 3).

Table 3: Eligibility Criteria for Admission to Masters and Doctoral Courses in Extension

No.	University /College	Course offered	Eligibility
1.	IARI Deemed University	MSc (Agril.Extn)	BSc or BSc in Agriculture/Dairy Science/Veterinary Science/Animal Husbandry/Fisheries
		PhD (Agril. Extn)	Agricultural Extension/Extension Education/Dairy Extension/Fisheries Extension/Livestock Extension/Home Science Extension/Agril. Extension and Communication/Veterinary and Animal Husbandry Extension
2.	IVRI Deemed University	MVSc (Vety.Extn.Edu)	BVSc & AH as specified by the VCI
		PhD (Vety.Extn.Edu)	BVSc & AH with Master's degree in concerned discipline/Vety. Medicine/Vety. Gynaecology & Obstetrics/Vety. Surgery & Radiology/Animal Nutrition
3.	NDRI Deemed University, Karnal	MSc (Agril. Extn Edu.) MVSc (Vety. Extn. Edu.)	BSc Dairying/BSc Dairying (DT/DH)/BTech (DT)/BVSc & AH/BSc (Animal Sciences)/BSc (Ag.)/BSc (Ag. & AH)/ BSc(Ag.)Honors/BSc Home Science (with elective Extension Education)
		PhD (Agril. Extn. Edu.) PhD (Vety. Extn. Edu.)	MSc Dairying/ MVSc Dairying (Dairy Extn./ Dairy Extn. Edu.) MSc Agri. (Agril. Extn./Extn. Edn./Agril. Extn. Edu.) MSc (Agril. Extn. Edu.) MSc Home Science (Home Science Extn. Edu.) MVSc (Vety. Extn./Vety. Extn.Edu./VAH Extn.)
4.	Veterinary Colleges under State Vety. Universities	MVSc (Vety. & AH Extn.) PhD (Vety & AH Extn Edu)	BVSc & AH MVSc (Vety. & AH Extn. Edu.)

The eligibility for PhD (Vety.Extn.Edu) at IVRI includes Master's degree in Vety. Medicine/Vety. Gynaecology & Obstetrics /Vety. Surgery & Radiology/ Animal Nutrition. Veterinary Extension as a subject of specialisation is not even mentioned under the PhD disciplines in the information bulletin available on the National Testing Agency website.

For improving the effectiveness of Veterinary Extension, and to put at rest various controversies revolving around this discipline, these anomalies need to be addressed. It also helps in improving confidence among the faculty in fulfilling their roles as extension professionals.

ISSUES THAT NEED TO BE ADDRESSED

(1) Qualifications of Faculty

Probably Veterinary & AH Extension Education is the only department in veterinary universities/ colleges manned by faculty with any of the following four combinations of qualifications, although, as per the VCI the last mentioned one only is the prescribed combination.

1. BSc (Ag) with Agricultural Extension specialisation;
2. BVSc & AH with Agricultural Extension specialisation;
3. BVSc & AH with subjects other than Vety. Extension specialisation;
4. BVSc & AH with Veterinary extension specialisation.

Which of the four combinations is ideal to teach Veterinary and AH Extension courses in the veterinary colleges and animal science institutions offering BVSc & AH, MVSc and PhD in VAE? The obvious answer is 'fourth'. Then why is it not being followed in some of the colleges/institutions?



Assumption No. 1: Agriculture graduates trained in agricultural extension are competent to teach veterinary extension courses. The rationale behind this assumption is that the concepts of extension are the same and hence they can teach veterinary extension courses as well. These extension professionals have clarity on the concepts of extension but lack in the concepts of subject matter i.e., Veterinary Science and Animal Husbandry (examples discussed in Boxes 2 & 3), and hence, cannot teach veterinary extension courses effectively. *This means they are strong in extension but weak in Veterinary Science and Animal Husbandry.* As VAE is an applied science and attaches a lot of importance to conducting practicals, especially *in situ* (the village), the teachers therefore, must definitely possess the necessary knowledge and skill in both Veterinary Science & Animal Husbandry as well as Extension.

Assumption No. 2: Veterinarians specialised in other subjects also can teach veterinary extension courses because it is very easy to teach extension. They consider that understanding the concepts of veterinary extension is not necessary as they are well-versed with Veterinary Science and Animal Husbandry. *This means they are strong in Veterinary Science and Animal Husbandry but weak in Extension.* To add to this confusion, IVRI allows MVSc degree holders in Veterinary Medicine, Veterinary Gynaecology & Obstetrics, Veterinary Surgery and Animal Nutrition to register for the PhD programme in Veterinary Extension Education. If the Veterinary Universities/colleges permit their faculty to teach the courses in which they have no competence, the sanctity of specialisation is lost. Such faculty can neither effectively teach the subject in which they have no competency nor do they have the opportunity to teach the subject in which they have competency. It amounts to double loss for such faculty members. It results in wasting of their skills in the specialised field, and creates disinterest among the students who are the ultimate victims of such ineffective teaching. The net result is that the students without clarity on Veterinary Extension concepts will pass out of such colleges and then fail to deliver extension services in the field – branded as ‘weak’ extension officers responsible for poor transfer of livestock production technologies and low production.

Assumption No. 3: Inadequate Veterinary Extension-Qualified People. This assumption was valid a few decades ago when there were not many colleges/institutions offering PG programmes in the Veterinary Extension discipline. Now this argument that qualified veterinary extension people are not available does not hold water as to our knowledge there are more than 150 to 200 PGs/PhDs available with Veterinary Extension qualifications. When Universities like TANUVAS were able to fill more than 30 posts with Veterinary Extension-qualified people to teach veterinary extension courses and also to provide veterinary and AH extension services to the livestock owners in the state, why cannot other universities, such as IVRI and NDRI also do so?

Table 4: Appropriate Situation for PG and PhD Programmes in Extension

<i>Subject matter discipline</i>	<i>Eligibility</i>	<i>Appropriate qualifications for the Faculty</i>	<i>Preferred experience/Target group</i>
Agril. Extn. MSc PhD	BSc (Ag) MSc (Agri. Extn)	BSc (Ag), MSc (Agri. Extn) and PhD (Agri. Extn)	Experience of working with farmers
Vety & AH Extn.Edu (VAE) MVSc PhD	BVSc &AH MVSc (VAE)/MSc (Dairy Extn.)	BVSc &AH, MVSc (VAE), MSc (Dairy Extn,) PhD (VAE) MSc (Dairy Extn.)	Experience of working with livestock farmers
Dairy Extension MSc PhD	BVSc & AH, BSc (Dairy Husbandry) MSc (Dairy Extn), MVSc (VAE)	BVSc & AH, MVSc (VAE), MSc (Dairy Extn,) PhD (Dairy Extn.), MVSc (VAE)	Experience of working with livestock farmers, esp. dairy farmers
Extn. Edu and Communication management MSc PhD	BSc (HSc.), MSc (HSc/ HND)	BSc (HSc.), MSc (Extn) and PhD (Extn)	Experience of working with people in the process of improving quality of life
Fisheries Extension MFSc (FEX) PhD (FEX)	BFSc MFSc	BFSc, MFSc (FEX) and PhD (FEX)	Experience of working with fish farmers

Hence, we consider that the faculty responsible for teaching Veterinary Extension courses must have competence in both the subject of veterinary and animal husbandry as well as in extension.

In a strict sense it is appropriate for a person qualified in Fisheries to teach Fisheries Extension students. Similarly, the Home Science faculty is better equipped to teach Home Science Extension students. It is also equally important to set the eligibility criteria to match with the subject matter discipline (Table 4). This will help the concerned extension professionals to utilise their knowledge and skills in producing competent manpower, and also in working with their respective target groups.

(2) Frequent Revision of Syllabus and Course Curriculum

VCI is the regulatory body for the BVSc & AH degree programme whereas ICAR is the regulatory body for MVSc & PhD programmes. The Minimum Standards of Veterinary Education (MSVE) 2016 Regulations as prescribed by VCI are mandatory for all the veterinary colleges in India. These MSVE regulations include: faculty strength, space and other infrastructure requirements, in addition to syllabus and course curriculum. These regulations, formulated for the first time in 1993, were revised in 2008 and 2016. As per the new regulations of 2016, the duration of BVSc & AH programme was increased to five and a half years from five years, and the course content of all the courses including VAE, were revised. The examination pattern also was changed. Due to frequent changes, it becomes difficult for the faculty to prepare the teaching material, and the faculty has to deal with two batches of students, one with old regulations and the other with new regulations. Most of the course content was similar to that of the ARS syllabus to enable the students to compete well with other students. Now the issue is whether the course content should be in line with the (i) ARS syllabus which is agriculture oriented; or (ii) in tune with the competency required by veterinary extension professionals.

The syllabus and curriculum for the PG programme is under the purview of the ICAR. The veterinary colleges also must adhere to these regulations. This means that veterinary colleges are under two regulatory bodies – one for the UG programme and the other for the PG programme. **Although the ICAR prescribes the common syllabus for PG programme, institutions like IVRI are following their own syllabus. This means there are different syllabi for PG programme in VAE depending upon the institution/college.**

(3) Nomenclature of the Discipline

There are different nomenclatures for the VAE discipline. The name of the department as per the VCI is Veterinary and Animal Husbandry Extension Education (previously it was 'Veterinary and AH Extension'). The nomenclature of the PG degree in Extension awarded by NDRI and IVRI has been changed several times leading to confusion. Currently, the veterinary universities award PG degrees under the name of 'Veterinary and AH Extension Education'. At IVRI, the name of the Division is 'Extension Education' and the PG degree awarded is 'Veterinary Extension Education'. The name of the Division at NDRI is 'Dairy Extension' and the degree awarded is MSc (Agri. Extn. Edu) and MVSc (Vety. Extn. Edu.) depending upon the basic degree of the student concerned. **The fundamental questions are: Why is a National Dairy Research Institute offering a PG programme in Agricultural Extension? Or awarding MVSc in Veterinary Extension Education without Veterinary faculty?**

(4) Recruitment of ARS Scientists

The ASRB conducts ARS/NET examinations to recruit Scientists based on the demand it receives from different institutions under the ICAR. Very rarely, it used to receive demand for scientists who have specialised in Veterinary Extension. Now, a stage has come wherein the ICAR has deleted this

subject, 'Veterinary and AH Extension Education', from the list of core courses identified for conducting JRF/SRF/ARS. This is detrimental to the growth of this subject as the students with MVSc Veterinary Extension qualifications have to compete with either Agricultural Extension or Home Science Extension students and it is like fighting a losing battle. What is the fate of MVSc Veterinary Extension qualified students when ASRB does not advertise for Scientists' posts in Veterinary Extension, and ICAR does not include it as a subject in JRF/SRF examinations?



(5) Ineffective Veterinary and Animal Husbandry Extension/Dairy Extension in ICAR's Animal Science Institutes and KVKs

Under the Division of Animal Science at ICAR, there are 2 Deemed Universities (IVRI and NDRI), 8 National/Central Research Institutes, 1 Bureau (National Bureau of Animal Genetic Resources), 1 Directorate (Directorate of Poultry Research), 1 Project Directorate (Project Directorate on Foot and Mouth Disease), and 6 National Research Centres (on Camel, Pig, Mithun, Yak, Equine and Meat). In addition, the Division coordinates 6 Network Research Programmes and 7 All India Coordinated Research Projects. In all these animal science institutions, programmes and projects, there are hardly any scientists with Veterinary Extension qualifications. Similarly, most of the 716 KVKs do not have subject matter specialists (SMSs) specialised in animal science, let alone Veterinary Extension.

The broad extension role of ICAR - Animal Science Institutes or KVKs, is Technology Assessment and Refinement (TAAR) in the field of Veterinary and Animal Sciences and transfer of those validated technologies to State Departments of Animal Husbandry and other key stakeholders. The specific extension roles of ICAR - Animal Science Institutes or KVKs under TAAR are:

- On-farm trials;
- Frontline demonstrations;
- Capacity building and technology transfer to stakeholders.

During their association as QRT/RAC members, the authors observed that ICAR - Animal Science Institutes had developed a number of technologies which can be categorised broadly under:

- Improved germplasm;
- Reproduction technologies;
- Vaccines, diagnostics and drugs;
- Nutrition & feed technologies;

- Instruments & devices;
- Meat, milk and egg products.

However, there exists a huge gap between technologies developed and adopted due to inadequate adaptive research to take them to end users. The main reason for this is poor representation of Veterinary and Animal Husbandry Extension Education/Dairy Extension scientists in the ICAR - Animal Science Institutions/KVKs as discussed above (Rao and Natchimuthu 2019).

(6) Recruitment of Assistant Professors in Veterinary Colleges

As seen from Table 1, there are a lot of vacancies in veterinary colleges but the administration prefers either to run the department of VAE with existing staff or with contract teachers or with surplus faculty of other departments.

THE WAY FORWARD

1. All the Veterinary colleges and IVRI, which are offering BVSc & AH degree programme and MVSc and PhD programmes in Veterinary Extension must have the same syllabus (VCI for UG and ICAR for PG & PhD), as well as same nomenclature for the department as well as the degrees awarded. The name of the department and degrees awarded must be 'Veterinary and Animal Husbandry Extension Education'.
2. NDRI must retain its original name as 'Dairy Extension Education' both in the department and while awarding degrees. It is wrong to award a degree in MVSc without having veterinary faculty in the Deemed University.
3. The VCI must insist on filling up of the vacancies in the Department of VAE with appropriate qualifications in all the institutions offering BVSc & AH programme, including IVRI. The VCI may not permit colleges to manage with contract Assistant Professors/Teaching Assistants and must insist on regular recruitment for vacant faculty positions through open advertisement.
4. The ICAR must include Veterinary and Animal Husbandry Extension in its list of core subjects for which the ASRB conducts examinations for JRF/SRF/ARS.
5. All Directors of ICAR - Animal Science Research Institutes must insist on filling Scientist positions in Veterinary and Animal Husbandry Extension, and SMS positions in KVKs with prescribed qualifications only.

ENDNOTE

Realising the importance of the Animal Husbandry sector in farmers' lives as well as for the national economy, the Govt. of India has constituted a separate Ministry for Fisheries, Animal Husbandry and Dairying with a huge budgetary provision. A number of schemes with central sector assistance are being implemented, which definitely need the active involvement of Veterinary and Animal Husbandry Extension professionals. But unfortunately, the subject of VAE is neglected in Veterinary Colleges and ICAR - Animal Science Research institutions – right from staffing to budgets – which needs to be addressed by the two regulatory bodies, ICAR and VCI.

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