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Some Aspects of the Veterinary Medical Education in India

by N. G. Ghoshal,* G.V.Sc., D.T.V.M., Dr. vet. med., Ph.D.

The basic educational system of India has been inherited from the British colonial time and accordingly the curricula on veterinary medicine and agricultural sciences have been developed similar to that of the United Kingdom. Unlike the U.S.A., Canada and a few other countries, the subjects of animal husbandry (animal science), viz. animal nutrition, animal breeding, animal genetics, animal management, dairy science, livestock production and marketing, etc. have been taught as a part of the program in veterinary medicine, though some of the above disciplines of animal husbandry fall well under the do-

main of either veterinary medicine or agriculture or both.

At present there are 20 veterinary colleges in India offering undergraduate and graduate courses, in addition to a separate college of animal sciences which is a constituent college of the Haryana Agricultural University. The information in regard to admissions and output for the Bachelor of Veterinary Science and Animal Husbandry (B.V.Sc. & A.H.) course has been mentioned for 19 colleges as is readily available. The name and place of different veterinary colleges, and their foundation dates, the name of the universities to which they are affiliated for administrative reasons have been shown below.^{1,2,4,5}

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Name of Institution	Foundation Dates	Affiliated To
U.P. College of Veterinary Science & Animal Husbandry, Mathura	1947	Agra University Agra, U.P.
Veterinary College, Hebbal	1958	University of Agricultural Sciences Hebbal, Bangalore
College of Veterinary Science, Tirupati	1955	Andhra Pradesh Agricultural University Rajendranagar, Hyderabad, A.P.
College of Veterinary Science, Hyderabad	1946	Andhra Pradesh Agricultural University Rajendranagar, Hyderabad, A.P.
Bombay Veterinary College, Parel	1886	Mahatma Phule Krishi Vidya Peeth, Rahuri, Maharashtra
Assam Veterinary College, Khanapara	1948	Assam Agricultural University Gauhati, Assam
Jabalpur Veterinary College, Jabalpur	1948	Jawaharlal Nehru Agricultural University Krishinagar, Jabalpur, M.P.
Mhow Veterinary College, Mhow	1955	Jawaharlal Nehru Agricultural University Krishinagar, Jabalpur, M.P.
Kerala Veterinary College & Research Institute, Mannuthy, Trichur	1955	Calicut University Calicut, Kerala
Madras Veterinary College, Vepery	1903	University of Madras Madras

Bihar Veterinary College, Patna—14	1930	Rajendra Prasad Krishi Vidya Peeth, Bihar
College of Veterinary & Animal Science, Hissar	1948	Haryana Agricultural University Punjab
Gujarat College of Veterinary Science and Animal Husbandry, Anand	1964	Sadar Patel University Vallabh Vidya Nagar, Gujarat
College of Veterinary Science, Ranchi		Rajendra Prasad Krishi Vidya Peeth Ranchi, Bihar
College of Veterinary & Animal Science, Bikaner	1954	Rajasthan Agricultural University Udaipur, Rajasthan
College of Veterinary Science, Pantnagar, U.P.	1960	U.P. Agricultural University Pantnagar, Nainital, U.P.
College of Veterinary Medicine Ludhiana	1970	Punjab Agricultural University Ludhiana, Punjab
College of Veterinary Science & Animal Husbandry, Bhubaneswar—3	1955	Orissa University of Agriculture & Technology, Orissa
Nagpur Veterinary College Nagpur	1958	Punjabrao Krishi Vidya Peeth Akola, Maharashtra
Bengal Veterinary College Calcutta	1892	Kalyani Agricultural University Kalyani, West Bengal

Basically, the rural economy of India is dependent on agriculture (including animal resources) and approximately 78% of the people live off the land. But due to the traditional method of cultivation, attitude and socio-economic condition of the country the overall food production was far from being adequate and satisfactory in many respects when compared with various advanced countries.

Since the independence of India in 1947, it was quite obvious that the developmental endeavors should primarily be directed to agriculture and agriculture related industries to alleviate the chronic food shortage of the country which will, in turn, promise a better quality of life to the people by satisfying the basic social and economic needs. With this objective in mind, India was keenly looking to the outside world for technical assistance and cooperation for rapid modernization of her agrarian economy in general. Besides, the Food and Agricultural Organization (FAO) of the United Nations, the U.S. Government has signed several contracts over the years (since mid-1950's) with different Indian Universities for modernizing and updating the entire veterinary and agricultural educational set-up in the country as the U.S. Advisors/Experts recognized that the new orientation of research toward development objectives will require much

closer relationships with extension and educational efforts. Consequently, at first the Technical Cooperation Mission (TCM) and later the Agency for International Development (AID) of the United States Government have been involved in an Agricultural Universities Development Project with the Government of India for several years. The reports of the recognized educators, scientists and administrators were reviewed and the information was adapted into a workable format providing the basis for significant changes.³ In this manner, the veterinary medicine and agriculture curricula have been modified and restructured under the agricultural universities in the pattern of the U.S. Land Grant universities. This, no doubt, has marked a definite departure from the traditional educational pattern to orientation of education and research on practical problems of the nation important to agriculture. This has provided changes in institutional attitudes on educational matters characterized by more practical laboratory work and better library use, teaching devices of daily quizzes, monthly examinations, judicious use of visual materials for instruction, updating the course outlines and curricula, increasing research capabilities focused on practical problems of agriculture, and the like.

Entrance Qualification for Admission to the Professional Veterinary Medicine Curriculum

The eligibility of candidates seeking admission to the professional veterinary curriculum is usually the successful completion of the pre-university or higher school secondary examination from a recognized institution with prescribed subjects or its equivalent. The above examination favorably corresponds to the high school examination of the U.S. educational system.

Other Conditions of Admission:

A candidate seeking admission to the professional veterinary medical curriculum must be at least 17 years old. In addition to pre-professional educational background necessary for admission to the veterinary college, extra-curricular activities, viz. athletic achievements, personality, general knowledge, etc. are also considered in the selection of future veterinary students.

Foreign students with requisite qualifications are admitted in all colleges provided they are sponsored by the federal government. In some colleges the tuition fee is waived away by the respective State Government and the same benefit is also extended to the non-resident students if they agree to serve the state for five years after graduation. In other colleges, where a tuition fee is charged, the amount is the same for all concerned, i.e. the resident, non-resident and foreign students.

Financial assistance in different forms and proportions are also provided to the undergraduate veterinary students by various government and non-government agencies/organizations covering exemption from payment of tuition and examination fees, partial payment for textbooks and professional equipment, or even payment of dormitory charges. Sometimes these are being awarded on the basis of merit. To provide incentive for higher education to the members of the under-privileged classes financial support is also extended to cover their expenses for pre-professional and Bachelor of Veterinary Sci-

ence and Animal Husbandry courses.

The medium of instruction is predominantly English all over the country, though increasing use of Hindi (national language) has been emphasized at some places.

Duration of the Professional Veterinary Medicine Curriculum

The length of the professional veterinary curriculum consists of 4 academic years in all veterinary colleges for the students who have successfully completed the first science (medical), pre-medical or pre-veterinary courses for a period of at least 2 academic years or their equivalent from a recognized institution.

The veterinary colleges which admit successful candidates with pre-university or higher school secondary examination, the curriculum is offered as a 5 year integrated course.

Examinations:

The academic year stretches over a period of about 9 months from June or July through March and consists of either two semesters or three terms.

All veterinary colleges are affiliated to the universities and the latter is charged with the responsibility of regulations, syllabi and examinations over the respective institution. The examinations include written, oral and practical tests and are usually administered at the end of each semester or term as the case may be. A successful completion of 4 or more professional years of veterinary medical curriculum leads to the award of Bachelor of Veterinary Science and Animal Husbandry degree.

The graduate degree leading to Master of Veterinary Science comprises two years of formal course work consummated by written, oral and practical examinations. In addition, a candidate is required to submit and defend a thesis based on his original investigation. The admission to a graduate program is often dependent upon about 3 years participation either in teaching, research, or extension work following graduation.

Statement Showing the Entrance Qualifications & Duration
of B.V.Sc. Degree Course at the Various Veterinary Colleges (2)

Name of College	Duration of B.V.Sc. and A.H. Degree Course	Entrance Qualifications
<i>Andhra Pradesh State</i>		
1. Col. of Vet. Sc., Andhra Pradesh Agr. Univ., Hyderabad—7	5 year inte- grated course	Pre-University Examination or H.S.M.P. with any two of the following subjects viz. (a) Physical (b) Biological or natural sciences & (c) Mathematics
2. Col. of Vet. Sc., Tirupati (A.P.A.U.)	5 year inte- grated course	Pre-University Examination or H.S.M.P. with any two of the following subjects viz. (a) Physical (b) Biological or natural sciences & (c) Mathematics
<i>Assam State</i>		
3. Assam Vet. Col., Khanapara, Gauhati	5 years (for P.U. & H.S. pass students)	Pre-University or Higher School Secondary Science group (B) with Physics, Chemistry and Biology or any other equivalent Uni- versity or Board Examination.
<i>Bihar State</i>		
4. Bihar Vet. Col., Patna	5 years	Pre-University or Higher School Secondary with Physics, Chemistry & Biology or Physics, Chemistry & Mathematics.
<i>Haryana State</i>		
5. Col. of Vet. Med. Hissar (H.A.U.)	4 years	F.Sc. (Medical), Pre-Medical or Pre-Veterin- ary Examination with at least 50% marks.
<i>Kerala State</i>		
6. Kerala Vet. Col. & Res. Inst., Mannuthy, Trichur	4 year	A pass in pre-degree examination of the Kerala Calicut University or equivalent examination.
NOTE: The application is to be submitted in the prescribed form available at the College Office on payment of its cost.		
<i>Madhya Pradesh State</i>		
7. Col. of Vet. Sc. & An. Husb., Jabalpur (J.N.K. Vishwa Vidyalaya)	5 years	Higher School Secondary from the M.P. Board of Secondary Education or an equiv- alent qualification with the following com- bination of subjects: (i) Physics, Minimum 40% ex- Chemistry, ternal marks at the Biology, Higher Sec. Exam. or or at subsequent Exam. (ii) Physics, on the basis of which Chemistry, the admission is be- Mathematics, ing sought. (preference will be given to candidate with Biology group).
NOTE: In case external and internal marks are not separate the minimum per- centage of marks will be 45% for B.V.Sc. and A.H. courses programme in- stead of minimum percentage prescribed above.		
8. Col. of Vet. Sc. & An. Husb. cum-livestock Res. Inst., Mhow	5 years	Higher Secondary School Examination with Physics, Chemistry & Biology or Physics, Chemistry & Mathematics. Prefer- ence to students with Physics, Chemistry & Biology. Admission restricted to those who secured a minimum of 40% marks after eliminating the sessional marks in aggre- gate in qualifying examination.

Name of College	Duration of B.V.Sc. and A.H. Degree Course	Entrance Qualifications
	<i>Madras State</i>	
9. Madras Vet. Col. Vepery, Madras—7	5 years & one term & 6 months Farm internment in effect 6 yrs.	Pass in P.U.C. with Physics, Chemistry & Natural Science (Biology). or Physics, Chemistry & Mathematics with average of B plus in the above subjects.
NOTE: The candidates may be directed to apply in the prescribed form sufficiently early with their original certificates for obtaining permission from the University of Madras to their eligibility for admission to the above course.		
	<i>Maharashtra State</i>	
10. Nagpur Vet. Col., Nagpur	4 years	Inter-Science (Biology) or Pre-Professional Medical Group or B.Sc. part I with additional Physics of Nagpur University or equivalent.
	<i>Mysore State</i>	
11. Mysore Vet. Col., Hebbal, Bangalore (Univ. of Ag. Sc.) Hebbal, Bangalore—24	5 years	Pre-University Examination in Science (not fewer than any two of the subjects of Physics, Chemistry, Biology, Botany & Zoology, of 45% marks in the aggregate.
NOTE: Candidates who have passed G.C.E. at 'Advanced Level' are considered as being equivalent to P.U.C. or XI Standard.		
	<i>Orissa State</i>	
12. Orissa Col. of Vet. Sc. & A.H., Bhubandswar (O.U.A.T.)	4 years	Passed Pre-professional Science with Physics, Chemistry & Biology and/or Mathematics.
	<i>Rajasthan State</i>	
13. Col. of Vet. & An. Sc., Bikaner (Rajasthan Ag. Univ.)	4 years	<i>B.V.Sc. & A.H.</i> Intermediate Examination in Science or first year Examination of the three year degree course in Science with Biology or Pre-Professional provided that students have completed as regular students both their Pre-Professional Part I and Pre-Professional Part II after Higher Secondary Examination and its equivalent or Higher Secondary Examination as the case may be or any examination declared as equivalent thereto provided the student has obtained at least 45% marks in the aggregate at the aforesaid examination. <i>B.V.Sc. & A.H. Integrated Condensed Course</i> A candidate having passed "two year emergency course" in Vet., who does not possess the requisite qualification for admission i.e. Intermediate Science (Biology) shall be admitted to a 3-year Integrated Condensed Degree Course and shall be required to take the following course at present being offered at the S.K.N. Col. of Ag., Jobner: (1) Physics; (2) Chemistry [Organic and Inorganic]; (3) Botany; (4) Zoology; (5) English; (*6) Pharmacology; (*7) Livestock Mark. & Economics; (*8) Phy. I (Biochem.) (*9) Elements of Statistics.
NOTE: Candidates with Intermediate Science with two year emergency course will take only the course marked *(i.e. 16 credits). In addition to the above both shall be required to complete the following credit courses being offered at Bikaner in Summer Semesters.		
1. Histology and Embryology	5. Syst. Bacteriology	
2. Physiology and Biochemistry	6. Gen. Pathology	
3. Gross Anatomy	7. Special Pathology	
4. General Bacteriology		

Name of College	Duration of B.V.Sc. and A.H. Degree Course	Entrance Qualifications
		<p><i>B.V.Sc. & A.H. Condensed Course (1st Year)</i></p> <p>Intermediate Science Examination with Biology or First Year of the Three Year Degree Course in Science with Biology or Pre-Agriculture/Pre-Professional of the University of Udaipur or an examination declared as equivalent thereto and Three Year Diploma Course in Veterinary Science from a recognized institution.</p>
	<i>Uttar Pradesh State</i>	
14. Col. of Vet. Sc., Uttar Pradesh Ag. Univ., Pantnagar.	4 years	<p><i>B.V.Sc. & A.H.</i></p> <p>Any one of the following groups.</p> <p><i>GROUP I</i></p> <p>45% marks in aggregate in Intermediate Ag./Intermediate Sc. with Biology.</p> <p>with</p> <p>At least 45% marks in aggregate in High School or equivalent.</p> <p><i>OR</i></p> <p>58% marks in aggregate in Intermediate Ag./Intermediate Science with Biology or equivalent.</p> <p>(If the percentage of marks obtained in High School or equivalent examination is below 45%)</p> <p><i>GROUP II</i></p> <p>45% marks in aggregate in B.Sc. with Biology/Agriculture</p> <p>with</p> <p>at least 45% marks in aggregate in <i>Inter Agriculture/Intermediates sc. with Biology</i> or equivalent.</p> <p><i>OR</i></p> <p>58% marks in aggregate in B.Sc. with Biology/Agriculture.</p> <p>(If the aggregate percentage or marks secured in High School and/or Intermediate is less than 45%).</p> <p><i>GROUP III</i></p> <p>45% marks in aggregate in Pre-Professional or equivalent with Biology.</p> <p>with</p> <p>at least 45% marks in aggregate in Higher Secondary or equivalent.</p> <p><i>GROUP IV</i></p> <ol style="list-style-type: none"> 1. A pass in High School and Intermediate (Science/Ag) Examination. 2. A pass in two year' Livestock Supervisors' Diploma course. 3. Five Years' field experience as Livestock Supervisor or equivalent or in higher capacity.
15. Col. of Vet. Med., Ludhiana, (P.A.U.)	4 years	<p>F.Sc. Medical, Pre-Medical or Pre-Veterinary or equivalent examination at least 50% marks</p>

License to Practice:

Theoretically, a candidate with Bachelor of Veterinary Science and Animal Husbandry degree or its equivalent is eligible to practice in any part of the country.

However, all indigenous and foreign veterinary graduates willing to practice veterinary medicine must register with the respective State Veterinary Council for obtaining license.

Disciplines in the professional veterinary medicine curriculum leading to Baccalaureate (Bachelors) Degree in Veterinary Science & Animal Husbandry (considered equivalent to D.V.M. Degree of the U.S. and Canadian universities) as recommended by the Dean's Committee.²

<i>Foundation Science Courses</i>	<i>Course</i>	<i>Trimester Cr. Hrs.</i>
General Chemistry	1	3
Organic Chemistry	1	3
Biochemistry	1	5
General Biology	1	5
General Physiology	1	3
Microbiology	1	4
Genetics	1	5
Mathematics	1	5
Introductory Statistics	1	5
Physics	1	3
	—	—
	10	41
<hr/>		
<i>Humanities</i>		20
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<i>Core Veterinary Science Courses</i>		
<hr/>		
Anatomy including Histology & Embryology	5	21
Animal Physiology	3	15
Pharmacology & Materia Medica	3	12
Animal Pathology	3	13
Bacteriology	3	13
Parasitology	3	13
Surgery	4	15
Gynecology & Obstetrics	3	9
Veterinary Medicine	5	16
Veterinary Hygiene, Public Health & Jurisprudence	2	8
Meat Inspection	1	3
Clinical Practice	4	11
	—	—
	39	149
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Animal Nutrition	1	5
Animal Breeding	1	3
Management	1	3
Feeds & Fodder Production	1	3
Dairy Science	1	5
Livestock Production	1	3
Livestock Marketing	1	2
	—	—
	7	24
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Poultry Production	} Maximum of 15 credits may be taken out of the courses	15
Swine Production		
Sheep & Wool		
Fisheries		
Extension Methods		3
		—
	Total Core Courses	191

ABSTRACT OF CREDITS

Foundation Science Courses	41
Humanities	20
Core Courses	191
	—
Total	252

Statement Showing Admission and Output Figures for B.Sc. (Agri.)/B.V.Sc.
In Various Agricultural/Veterinary Colleges Between 1953-1954 and 1968-1969²

Academic Year	Number of Colleges (for admission)		Total Admission		Number of Colleges (for output)		Total Out-Put	
	B.Sc. (Ag.)	B.V.Sc.	B.Sc. (Ag.)	B.V.Sc.	B.Sc. (Ag.)	B.V.Sc.	B.Sc. (Ag.)	B.V.Sc.
1953-54	22	9	1,254	615
1954-55	24	10	1,454	910	20	7	792	256
1955-56	31	14	1,989	1,269	21	8	886	268
1956-57	32	14	2,344	1,204	21	8	808	322
1957-58	31	14	2,789	1,170	24	9	994	509
1958-59	32	16	3,077	1,293	29	10	1,387	591
1959-60	40	16	4,633	1,362	31	14	1,700	801
1960-61	51	71	5,634	1,301	34	14	2,090	831
1961-62	55	18	6,392	1,381	39	14	2,612	858
1962-63	62	18	7,483	1,219	46	16	2,912	988
1963-64	65	18	8,301	1,151	53	16	4,099	964
1964-65	66	19	8,935	1,319	56	17	4,731	1,149
1965-66	70	20	10,049	1,513	59	18	5,259	990
1966-67	70	19	8,883	1,365	60	18	4,734	1,061
1967-68	73	19	8,155	1,325	63	18	6,239	981
1968-69	73	19	8,542	1,167	68	19	5,810	1,076

Statement Showing Admission and Output Figures for B.Sc. (Agr.)/B.V.Sc.
in Various Agricultural/Veterinary Colleges Between 1953-1954 and 1968-1969²

Academic Year	Number of Colleges (for admission)		Total Admission		Number of Colleges (for output)		Total Output	
	M.Sc. (Ag.)	M.V.Sc.	M.Sc. (Ag.)	M.V.Sc.	M.Sc. (Ag.)	M.V.Sc.	M.Sc. (Ag.)	M.V.Sc.
1952-53			167				156	
1953-54			152				168	
1954-55			163				151	
1955-56			223				141	
1956-57		1	232	10			152	
1957-58		1	286	44			217	
1958-59		3	465	59		1	221	3
1959-60		3	432	65		1	264	11
1960-61		5	607	102		1	422	47
1961-62		7	654	123		3	496	65
1962-63	26	7	714	109		3	576	70
1963-64	28		1,244	118	26		751	105
1964-65	30	9	1,407	162	27	8	832	99
1965-66	36	12	1,634	250	28	8	1,191	128
1966-67	35	14	1,580	302	31	11	1,303	211
1967-68	37	14	1,707	225	32	13	1,372	206
1968-69	40	16	1,704	257	36	14	1,632	200

Opportunities:

The qualified graduates usually look for employment either at the state or federal governmental level as well as the Remount Veterinary Corps of the Indian Army. Few of them also work for private enterprises like pharmaceutical houses, feed companies, comparative medical facilities, etc.

Due to socioeconomic condition, religious belief and traditional dietary habits the organized livestock farming as exists in the west, based on scientific know-how, is gradually developing and, as such, private practice, except in metropole areas,

is not flourishing satisfactorily all over the country.

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