Project Based Research in Progress

1976-1977

Faculty of Veterinary & Animal Sciences

MAJOR DIVISIONS	LOCATIONS	DISCIPLINES
1. Cattle	1. College of Veterinary and Animal Sciences, Mannuthy.	1. Anatomy
2. Goats	2. University Livestock Farm, Thumbermuzhi	2. Animal Management
3. Pigs	3. University Livestock Farm, Thiruvazhankunnu	3. Bacteriology
4. poultry	4. College of Agriculture, Vellayani.	4. Breeding and Genetics
5. Fisheries	5. Banana and Fineapple Research Station, Kannara.	5. Dairy Science
6. Miscellaneous items		6. Extension
		7. Fisheries
		8. Medicine
		9. Nutrition
		10. Obstetrics and Gynaecology
		11. Parasitology
		12. Pathology
		13. Pharmacology
		14. Physiology
		15. Poultry Science
		16. Statistics
		17. Surgery
		18. Therapeutics
		19. Veterinary Public Health

LEGEND TO INSTITUTE CODE NUMBERS

Faculty (VA) ★ **Major Divisions** ★ **Locations** ★ **Discipline** ★ **Problem Number**

Project Based Research in Progress

1976-77

Index to Major Divisions

Project Based Research in Progress

1976-77

Index to Locations

Project Based Research in Progress

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Index to Disciplines

RESEARCH PROJECTS

ON

CATTLE

1. Institute code No. ... VA-1-1-3-1

2. ICAR Code No ... —

3. Name and address of the Research Institute / Centre ... College of Veterinary and Animal Sciences, Mannuthy.

4. Title of the Project ... Research on Cattle

Title of the Problem ... Investigations on Microbial Aetiology of Infectious Abortions in Livestock in Kerala.

5. Name and designation of Principal Investigator ... Dr. P. C. Abdulla, Professor of Bacteriology.

6. Name(s) and designation of Associate (s) ... 1. P. C. James, Jr. Instructor
2. M. C. George, Jr Instructor

7. Location ... Division of Bacteriology, College of Veterinary & Animal Sciences, Mannuthy.

8. a) Objectives

1. To detect the occurrance and distribution of various microbial agents associated with the causation of abortions and stillbirths in divergent classes of livestock particularly in hybrid cattle in organized herds and selected rural areas in Kerala and to formulate suitable measures in order to limit their spread and ultimate eradication.
2. To conduct a survey to estimate the incidence of specific zoonotic infections like Brucellosis and others in personnel involved in livestock industry in chosen endemic areas, to understand and correlate the magnitude of inter species transmission, which could contribute significant information on public health aspects.

b) Practical utility ...

Study will help to evolve disease free herds and prevent the manifold economic losses of cattle due to abortions, uterine infections etc.

9. Technical programme:-

1. Typing of cultures isolated during the period of previous work
2. Expansion of serological survey in the herds where in strains of Buncella have been recovered.
3. Proper assessment of the relative merits of the STT and RPT
4. The value of MRT in field surveys and milk originating from Co-operative Unions
5. Checking for prevalence of incomplete antibodies
6. Assessment of the control measures recommended for adoption
7. A study on the phenomenon of cross reaction consequent to pasteurella vaccination
8. Coverage of State herds, ICDP units and Indo Swiss Project, Madupetty.

10. Date of start ... 1975

11. Likely date of completion ... 1978

12. Estimated man months ... 36

13. Facilities required ... Existing facilities will be utilised

14. Financing organisation ... Kerala Agricultural Uuiversity

15. Approximate cost ... Rs. 9500/-

1. Institute Code No. ... VA. -1-1-5-1.

2. ICAR Code No. ... —

3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy.

4. Title of the project ... Research on Cattle.

Title of the problem ... Studies on cerossbred animals in relation to plasma protein bound iodine (PBI) and feeding of iodized salt.

5. Name and designation of principal investigator ... M.Subrahmanyam, Professor of Dairy Science.

6. Name(s) and designation of Associate(s) ...

7. Location ... Department of Dairy Science.
College of Veterinary and Animal Sciences, Mannuthy.

8. a) Objectives

i. To determine the level of protein bound iodine (PBI) in the plasma of cross bred animals of various age groups and stages of lactation.

ii. To determine and evaluate the level of PBI as a means of predicting the production potential of dairy cattle.

iii. To find out the effect of feeding iodized salt on the level of PBI/performances of dairy animals.

b) Practical utility

The results can be used as an index to increase the milk production of cows when it goes down due to certain difference in climatic conditions In that case the PBI in turn can be raised by the feeding of iodized salt to the animals. Moreover if plasma PBI could be used as a means of predicting the production potential of dairy, heifers the low production animals can easily be detected and disposed off sufficiently early.

9. Technical Programme:

For the determination of the level of protein bound iodine in the blood plasma of cross-bred animals of various age groups and stages of lactation not less than 60 animals in the livestock farm from their birth to the completion of first lactation will be taken for the study. The data thus collected during this period will be used to evaluate the use of PBI as a means of predcting the production potential of dairy cattle. For finding out the effect of feeding iodized salt to dairy cows on the lactation performances a total of six cows will be taken up for the study. Out of these six cows three will be in the early stage of lactation and the other three in the declining stage of lactation. Fat % and SNF % of milk from these cows during the period of the feeding experiment will be collected for finding out correlation, if any, with the PBI levels during this period.

10. Date of start ... 1976-77

11. Likely date of completion ... 1981-82

12. Estimated man months ... 60

13. Facilities required ... Existing facilities will be sufficient.

14. Financing organisation ... Kerala Agrl. University.

15. Approximate cost ... Rs. 7500/-

1. Institute Code No: ... AV. 1. 1. 5. 2.
2. ICAR Code No: ...
3. Name and address of the Research Institute/Centre ... College of Veterinary & Animal Sciences, Mannuthy
4. Title of the Project ... Research on Cattle.

Title of the Problem ... Feeding of Sour Colostrum to calves.

5. Name and designation of Principal Investigator ... M. V. Sukumaran, Junior Instructor
6. Name (s) and designation of Associate (s) ...
7. Location ... University Livestock Farm, Mannuthy
8. (a) Objectives ... 1. To study the changes in the properties and composition of colostrum with fermentation and storage.
2. To compare the physiological status and performance of the calves fed sour colostrum with those reared without the sour colostrum in their diet.

(b) Practical utility:

If the feeding of sour colostrum is going to be beneficial in terms of calf's health and preformance the practice can very well be adopted and there will be an ecnomical benefit in making use of clostrum which otherwise will be discarded.

9. Technical Programme

Sixteen calves, 24 hours after birth, will be transfered to one of the feeding regime for the experiment. They will be on the experiment for a period of 4 weeks. One group of 4 males and 4 females will receive the sour Colostrum mixed with warm water for feeding. The other group (with similar number of male and female calvts to serve as the control group) will receive milk or milk replacer. The physiological status and preformance of the two groups of calves will be compared.

10. Date of start ... 1975
11. Likely date of completion ... 1976
12. Estimated man months ... 12
13. Facilities required ... Facilities are already available
14. Financing organisation ... Kerala Agrl. University
15. Approximate cost ... Rs. 2000/-

1. Isntitute Code No. ... VA. 1. 1. 8. 1.

2. ICAR Code No. ...

3. Name and address of the Research Institute/Centre ... College of Veterinary & Animal Sciences, Mannuthy.

4. Title of the Project ... Research on Cattle.

Title of the problem. ... Preparation of Foot and Mouth disease vaccine suitabie under field condition.

5. Name and designation of Principal Investigator ... Dr. E. P. Paily, Assoc. Professor

6. Name and designation of Associate ... Dr. P. T. Georgekutty, Assoc. Professor

7. Location ... Department of Medicine, College of Vet. & Animal Science, Mannuthy

8. a) Objectives:

The vaccine available does not give full protection in all cases of out-break in the field. Mutation of virus is a frequent occurrence in Foot and Mouth disease. The objective of the scheme is to find out the feasibility of evolving a suitable vaccine from the local strains, which cause the out-break, and to protect the animals on the spot under field conditions.

b) Practical utility:

Over and above the death in animals the ailing animals show retarded milk yield reduced working capacity and motive force and loss of flesh, which considerably increase the economic loss. Hence the preparation of the vaccine if proved effective (i) Will be cheaper to prepare (ii) can be prepared by veterinarians under field conditlons (iii) no delay in the vaccination programme and (iv) protect the animals efficatiously, since it is prepared rrom the local strain and the economic loss could be reduced to a minimum.

9. Technical Programme:

The vaccine will be prepared from the saliva of infected animal by known method. Each animal will be given a dose of 5 to 10 ml S/c. The vaccinated animals will be watched to observe the "takes" of the vaccine. Hundred animals will be vaccinated initially with this vaccine. To find out the comparative efficacy 100 animals each will be given IVRI Vaccine and Hoescht vaccine and other 50 animals will be kept unvaccinated as control. The animals will be further observed for contracting the disease subsequently.

The meterials from the out-breaks will be sent to IVRI, Izatnager/Animal Virus Research Institute, Pirbright, England or virus Research Institute, Lindholm, Denmark.

10. Date of start ... 1976-77

11. Likely date of completion ... 1978-79

12. Estimated man months ... 24

13. Facilities required ... Facilities available in the department will be utilised.

14. Financing organisation ... Kerala Agrl. University

15. Approximate cost ... Rs. 13,000/-

1. Institute Code No. ... VA. 1. 1. 9. 1.
2. I. C. A. R. Code No. ... —
3. Name and address of Research Institute/Centre ... College of Veterinary & Animal Sciences, Mannuthy.
4. Title of the Project ... Research on Cattle.

Title of the problem ... Utilisation of paddy straw treated with urea and molasses as cattle feed.

5 Name and designation of Principal Investigator ... E. Sivaraman, Professor of Nutrition

6. Name (s) and designation of Associate (s)... C. R. Ananthasubramaniam, Associate Professor.

7. Location ... Department of Nutrition Veterinary and Animal Sciences, Mannuthy.

8. a) Objectives ... To assess the nutritive quality of paddy straw treated with urea and molasses.

b) Practical utility

Paddy straw is the major course fodder for cattle in Kerala and is perhaps the only fodder in summer. But the nutritive quality of paddy straw as judged from the nutrient contents and their digestibility is the lowest. If the defects of the paddy straw could be corrected either by supplementation or by certain other treatments it can form an economic cattle feed to meet the nutritional requirements of animals, at least in part. The beneficial results of this investigation may assist the cattle owners to cut down the feeding charges.

9. Technical Programme

(1) *Digestion and metabolism studies.* six animals on the experimental rations and six animals on the control ration will be maintained for a period of one month. The digestion and metabolism studies will be done at the end of the experiment.

(2) *Lactation Studies:* Four groups six lactating animals each (3 experimental and one control) will be naintained on the different diet any require for aperiod of six months. Main observations in milk yield, blood values, dry matter-consumption, body weight etc. will be recorded.

(3) *Growth studies:* Three groups of six calves each 6–12 months old will be maintained on experimental diets and one group of six calves on control diet, for a period of six months to study Body weight gain Dry matter consumption and Blood values (Haemogram)

10. Date of start ... 1976–77
11. Likely date of completion ... 1978–79
12. Estimated man months. ... 24
13. Facilities required ... Existing facilities will be utilised.
14. Financing organisation ... Kerala Agrl. University
15. Approximate cost ... Rs. 5000/–

1 Institute Code No. ... VA. 1. 1. 9. 2.

2 ICAR Code No —

3 Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy.

4 Title of the Project ... Research on Cattle

Title of the problem ... Poultry litter as cattle feed.

5 Name and designation of Principal Investigator ... E. Sivaraman, Professor of Nutrition.

6 Name(s) and designation of Associate (s) ... Dr. C. R. Ananatha Surbramoniam, Associate Professor.

7 Location ... Department of Nutrition, College of Veterinary and Animal Sciences, Mannuthy.

8 (a) Objectives

To assess the nutritive property of the poultry litter and to evolve a suitable ration for the cattle based on the poultry litter.

(b) Practical utility

Poultry litter is reported to contain all the major nutrients in varying proportions. These nutrients can possibly be utilised by the ruminants for various body function in which case the cost of feeding could be considerably reduced by incorporating the same in cattle rations.

9 Technical programme:

(i) *Growth studies:* 4 groups of 6 calves each will be selected for growth studies, the poultry litter being incorporated in the experimental diets. at 3 different levels in the ratione One group will be the control.

Main item of observation to be recorded.

1. Growth rate
2. Food intake
3. Dry matter intake
4. Blood values (Haemogram)
5. Feed efficiency.

(ii) *Lactation studies:* 4 groups of six lactating animals each will be maintained for 3 months on the experimental rations, the poultry litter being incorporated at 3 levels. One group will be the control.

They will be studied for

(i) Milk yield
(ii) Milk constitutents
(iii) Dry matter consumption.
(iv) Voluntary intake.
(v) Body weight and
(vi) Blood values (Haemogram)

(iii) *Digestion and Metabolism trial:* Six adult animals will be employed for studying the digestibility co-efficients of nutrients in the ration and the Nitrogen and Mineral brlances. The animals will be maintained in the experimental rations for 1 month, at the end of which the digestion and metabolism trials will be carried out.

to study.

(i) Digestibility co-efficients of nutrients.
(ii) Nitrogen balance.
(iii) Mineral balance.
(iv) Voluntary intake of food.

10 Date of start ... 1976–77

11 Likely date of completion ... 1977–78

12 Estimated man months ... 24

13 Facilities required ... Already available.

14 Financing Organization ... Kerala Agrl. University

15 Approximate cost ... Rs. 4500/-

1. Project No.	...	VA-1. 1. 9. 3.
2. I. C. A. R. Code No.	...	
3. Name and address of Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy
4. Title of the Project	...	Research on Cattle.
Title of the problem	...	Evaluation of the nutritive value of African Payal for use as a cattle feed.
5. Name and designation Principal Investigator	...	C. T. Thomas, Asst. Professor, (Nutrition)
6. Name and designation of Associate	...	2. P. A. Devassia, Asst. Professor. 2. N. Kunjukutty, Asst. Professor. 3. M. Nandakumaran, Chemist.
7. Location	...	Department of Nutrition, College of Vety. and Animal sciences. Mannuthy.
8. (a) Objectives	...	To evaluate the nutritive value of African Payal as an ingredient in cattle rations.
b) Practical utility	...	Possiblity of using african payal as a cattle feed would serve the dual purpose of eradication of this materials as well as mitigating the shortage of animal feeds to an extent

9. Technical programme;

1. Chemical analysis of the material for its proximate principles.
2. Digestion trial and balance experiments on adult bullocks.
3. Determination of DCP, TDN and nutritive ratio.

a) Main items of observations to be recorded.

i) Palatability.
ii) Feed intake
iii) Data on digestibility of various nutrients.
iv) Blood values.

10. Date of start	...	1976–77
11. Likely date of completion	...	1978–79
12. Estimated man months	...	24
13. Facilities required	...	Already available
14. Financing organisation	...	Kerala Agrl. University
15. Approximate cost	...	Rs. 1750/–

1.	Institue Code No.	...	VA. 1. 1. 9. 4.
2.	ICAR Code No.	...	CHO 46 (305 CJ3) Agrl. BR. 002
3.	Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4.	Title of the Project	...	All India Co-ordinated Research Project for investigation on agriculture by-products and industrial waste materials for evolving economic rations for livestock
	Title of the problem	...	Growth studies in calves with tea waste (*Gamellia Sinensis*)
5.	Name and designation of Principal Investigator	...	Dr. C. R. Anantha Subramoniam, Assoc. Professor (Nutrition)
6.	Names(s) and designation of Associate (s)	...	Dr. Maggie D. Menachery, Assistant Professor
7.	Location	...	Nutrition Laboratory, Mannuthy.
8.	(a) Objectives	...	To determine the nutritive value of tea waste as feed for calves.
	(b) Practical utility	...	To evolve economic ration for livestock.
9.	Technical programme:	...	Two equal groups of 6 calves (6–10 months old) will be fed with (i) control mixture with conventional feed items and (ii) experimental mixture with 20% tea waste and gain is body weight will be recorded at frequent intervals.
10.	Date of start	...	1975
11.	Likely date of completion	...	1976
12.	Estimated man months	...	24
13.	Facilities ruquired	...	Existing facilities will be utilised
14.	Financing orgainsation	...	Indian Council of Agricultural Research
15.	Approximate cost	...	Rs.

1. nstitute Code No.	...	VA. 1-1-9-5.
2. ICAR Code No.	...	CHO 46 (305 CJ 3) Agl. BR. 002
3. Name and address of Research Institute / Centre	...	College nf Veterinary & Animal Science, Mannuthy
4. Title of the project	...	All India Co-ordinated Research Project for investigation on agricultural by-products and industrial waste materials for evolving economic ration for livestock.
Title of the problem	...	Tea waste (*Camellia sinensis*) palatability and balance studies to determine the nutritive value of tea waste.
5. Name and designation of Principal Investigator	...	Dr. C. R. Ananthasubramaniam, Assoc. Professor (Nutrition)
6. Name (s) and designation of Associate (s)	...	Dr. Maggie D. Manachery, Asst. Professor
7. Location	...	Nutrition Laboratory, Mannuthy.
8. a) Objectives:	...	To find out the acceptsbility of the material to animals and to determine nutritive value in terms of DCP and TDN for cattle.
b) Practical utility	...	To evolve economic ration for livestock
9. Technical Programme	...	Aclimatization period of 10 days, a further period of feeding for 2 weeks with a metabolism trial at the end.
10. Date of start	...	1975
11. Likely date of completion	...	1976
12. Estimated man months	...	12
13. Facilities required	...	Existing facilities will be utiliscd
14. Financing organisation	...	Indian Council of Agrl. Research
15. Approximate cost	...	

1.	Institute Code No.	...	AV. 1. 1. 9. 6.
2.	ICAR Code No.	...	CHO 46 (305 CJ3) Agrl. C. B. 0.002
3.	Name and address of the Research Institute/Centre	...	College of Veterinary & Animal Sciences, Mannuthy
4.	Title of the Project	...	All India Co-ordinated Research Project for investigation on agricultural by-products and industrial waste materials for evolving economic rations for livestock.
	Title of the problem	...	Plantain rhizome (Banana) palatability, digestibility and balance studies in cattle.
5.	Name and designation of Principal Investigator	...	Dr. C. R. Anantha Subramoniam, Assoc. Professor (Nutrition)
6.	Name(s) and designation of Associate(s)	...	Dr. Maggie D Menachery, Asst. Professor
7.	Location	...	Nutrition Laboratory, Mannuthy
8.	a) Objectives	...	To find out the acceptability of plantain rhizome and to determine its nutritive value for cattle.
	(b) Practical utility	...	To evolve economic ration for livestock.
9.	Technical programme:	...	An acclaimatisation period, a piriod of steady consumption and a metabolism trial at the end.
10.	Date of start	...	1975
11.	Likely date of completion	...	1976
12.	Estimated man months	...	12
13.	Facilities required	...	Existing facilities will be utilised
14.	Financing organisation	...	Indian Council of Agrl. Research.
15.	Approximate cost	...	Nil

1. Institute Code No.	...	VA-1. 1. 9. 8.
2. ICAR Code No.	...	CHO 46 (305CJ3) Agrl. BR. 002
3. Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the project	...	All India Co-ordinated Research Project for investigation on agricultural by-products and industrial waste materials for evolving economic ration for livestock.
Title of the problem	...	Evaluation of nutritive value of rubber seed cake for milk production in cows-short duration study.
5. Name and designation of Principal Investigator	...	Dr. Maggie D. Menachery, Asst. Professor
6. Name (s) and designation of Associate (s)	...	Dr. C. R. Ananthasubramaniam, Assoc. Professor
7. Location	...	Nutrition Laboratory, Mannuthy.
8. a) Objectives:	...	To find out the suitability and nutritive value of rubber seed cake in dairy ration.
b) Practical utility	...	To evolve economic ration for livestock.
9. Technical programme:	...	A short duration switch over trial involving two treatments viz. 20% gingelly oil cake in the control mixture and 20% rubber seed cake in the experiments mixture. Milk yield and composition viz. Fat and SNF and butter characteristics will be studied.
10. Date of start	...	1975
11. Likely date of completion	...	1976
12. Estimated man months	...	12
13 Facilities required	...	Existing facilities will be utilised.
14. Financing organisation	...	Indian Council of Agrl. Research
15. Approximate cost	...	Nil

1. ProjectNo.		VA. 1-2-9-1
2. ICAR Code No.	...	
3. Name and address of the Research Institute/Centre	...	Cattle Breeding Farm, Thumburmuzhi.
4. Title of the Project	...	Research onCattle
Title of the Problem	...	Studies on the economics of rearing cattle on all roughage ration.
5. Name and designation of the Principal Investigator	...	Dr. E. T. Jacob, Asst. Professor
6. Name (s) and designation of Associate (s)		Dr. P. A. Devassia, Asst. Professor
7. Location	...	Cattle Breeding Farm, Thumburmuzhi.
8. a) Objectives	...	To find out economic advantage if any, in the rearing of cattle on all roughage rations compared to the conventional system of rearing.
b) Practical utility:	...	If foud economic, this system can profitably be adopted in places where in plenty of fodder is available.
9. Technical programme	...	24 calves of 1 to 2 years age will be selected and divided into a two equal grops. One grop will be maintained on a control diet containing concentrate and roughage and the othet on all roughage ration.
10. Date of start	...	1975
11. Likely date of completion	...	1976
12. Estimated man months	...	12
13. Facilities required	...	Existing facilities are sufficient
14. Financing organisation	...	Kerala Agrl. University
15. Approximate cost	...	Nil

1. Institute Code No.	...	VA-1. 1. 10. 1.
2. ICAR Code No.	...	
3. Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the Project	...	Research on Cattle
Title of the problem	...	Study on sodium, potassium and calcium contents in the semen of domestic animals.
5. Name and designation of the Principal Investigator	...	K. Prabhakara Nair, Assoc. Professor
6. Name (s) and designation of Associate (s)	...	E. Mathai, Asst. Professor
7. Location	...	Department of Obstetries and Gynaecology, College of Vety. and Animal Sciences, Mannuthy
8. a) Objecives	...	To evaluate seasonal variation in the concentration of Na, K and Ca in the semen of domestic animals.
b) Practical utility	...	To evolve suitable diluents for preservation of semen in different seasons.
9. Technical programme	...	Collection of semen from animals at regular intervals and evaluation of semen for Na, K and Ca concentration by Flame Photometry.

10. Date of start	...	1975
11. Likely date of completion	...	1976
12. Estimated man months	...	12
13. Facilities required	...	Existing facilities will be utilised
14. Financing organisation	...	Kerala Agricultural University
15. Approximate Cost	...	Rs. 1000/-

1. Institute Code No. ... VA. 1. 1. 10. 2.

2. ICAR Code No. ... —

3. Name and address of the Research Institute ... College of Veterinary and Animal Sciences, Mannuthy.

4. Title of the Project ... Research on Cattle.
   Title of the problem ... Delayed puberty in crossbred heifers.

5. Name and designation of Principal Investigator ... K. Prabhakaran Nair, Associate Professor

6. Name (s) and designation of Associate (s) ... Dr. C. T. Thomas, Asst. Professor (Nutrition)
   M. G. Ramakrishna Pillai, Asst. Professor.

7. Location ... Department of Obstetrics & Gynacology-College of Vety. Animal Sciences, Mannuthy.

8. (a) Objectives:

To bring to light the obscure etiology of delayed puberty in crossebred heifers and to suggest remedial measures.

(b) Practical utility

There are field reports on a high incidence of delayed puberty in cross bred heifers, one of the prime objection of cross breeding is to advance the onset of puberty and sexual maturity so that the cross bred heifers conceive and cavle at a fairly young age It needs no special emphasis, that delayed puberty makes cattle rearing uneconomical and discourages the farmer from taking up cattle rearing to supplement his meagre income. It is therefore very imperative that a through probe into the causes if this malady should be carried out with a view to suggest proper remedy

. Technical programme:

(i) Registration of crossbred heifers between 2 and 5 years, which have not come into heat.

(ii) Collection of information regarding the sire, dam, grand sire and grand dam from the breeding records maintained at the I. C. D. P. and cross breeding areas.

(iii) Collection of data regarding the feeding and managemental practices followed by the concerned farmers in rearing these animals from calfhood to heiferhood.

(iv) Physical examination of the affected animals for body size, weight growth, body condition, appearance of hair coat etc.

(v) Detailed examination of the reproductive system of the heifers to assess the reporductive status and the prevalence of any hereditary or congenital disorders.

(vi) Analysis of the soil in the breeding track where the condition prevails in large numbers.

(vii) Analysis of feeds and fodder samples collected from the farmers with special reference to total proteins, vitamins and minerals including trace elements.

(viii) Haematological studies such as R. B. C. count, Haemoglobin, packed cell volume, Erythrocyte sedimentation rate, Total count, differential count etc. Estimation of vitamin A, Calcium, Phosphorus and trace elements.

10 Date of start ... 1976-77

11 Likely Date of completion ... 1979-80

12 Estimated man months ... 36

13 Facilities required ... Existing facilities will be utilised

14 Financing organisation ... Kerala Agrl. University

15 Approximate cost ... 5000/-

1. Instiute Code No. ... VA- 1. 1. 10. 3.

2. ICAR Code No. ... —

3. Name and address of the Research Institute/Centre ... College of Vety. & Ani.nal Sciences, Mannuthy.

4. Title of the Project ... Research on Cattle

Title of the Problem ... The efficacy of Intra-uterine administration of antibiotic to improve breeding efficiencey in cows.

5. Name and designation of principal Investigator ... Dr. C. K. S. V. Raja, Professor ot Obstetrics & Gynaecology

6. Name (s) and designation of Associate (s) ... Dr. P. K. Abdulla, Professor of Bacteriology

7. Location ... Department of Obstetrics & Gynaecology, College of Veterinary & Animal Sciences, Mannuthy.

8. (a) Objectives ...

To study the effect of routine intra-uterine administration of antibiotics to improve conception rate of cows.

(b) Practical utility ...

Repeat breeding is one of the most important infertility conditions noticed in cattle. The economic loss sustained by the farmers due to the failure of conception is very substantial. Intra-uterine antibiotic therapy has been successfully tried to improve conception rate in such animals. Generally administration of antibiotic is only done in cows which fail to settle even after 3 inseminations. It will be of interest to know if increase in conception rate would be achieved by antibiotic administration during the first heat itself without waiting for the animals to be declared as repeaters.

9. Technical Programme: ...

1) The Farm animals and outside animals brought for inseminations will be given antibiotics at different intervals of heat.
2) Insemination will be done with semen of good quality.
3) Every 3rd animal will be left untreated & they serve as control.
4) The entire farm animals and 50% of the outside animals (both treated and control) will be followed up for conception.
5) If any of the treated animal fails to conceive and is brought again for insemination it will be treated again with antibiotics used earlier.
6) If any of the control animals returns to service, it will be given antibiotic before insemination.
7) Oestral mucus from animals at random will be collected for cultural work.
8) All the data will be properly recorded and analysed.

10. Date of Start ... 1976–77
11. Likely date of completion ... 1978–76
12. Estimated man months ... 24
13. Facilities required ... Existing facilities are sufficent
14. Financing organisation ... Kerala Agrl. University
15. Approximate cost ... Rs. 4500/–

1. Institute Code No· ... VA· 1· 3· 10· 1.

2. ICAR Code No. ...

3. Name and address of the Research Institute ... University Livestock Farm, Thiruvazhamkunnu·

4. Title of the project ... Research on Cattte

   Title of the problem ... Onset of puberty of crossbred animals in relation to age and body weight·

5. Name and designation of Principal Investigator ... V. Sudarsanan, Asstant Professor (Obstetrics & Gynaecology)

6. Name (s) and designation of Associate (s) ...

7. Location ... University Livestock Farm, Thiruvazhamkunnu.

8. (a) Objectives ...
   1. To study the interrelationship of birth weight, growth rate and weight at puberty of Cross Bred Brown Swiss/Jersey at 50%, 62·5% and 75% of exotic inheritance.
   2. To study the seasonal variations in birth weight and growth rate.
   3. To correlate the body weight/age of the animals at first breeding with future performance and to suggest the most suitable time for breeding for maximum economic production·

   (b) Practical utility

   There is no standard with regard to Cross bred Brown Swiss/Jersey Cattle. Evolving such standards under the climatic conditions of Kerala is necessary for breeding the stock at the appropriate time for maximum economic production.

9. Technical programme
   1. Criss-crossing the Graded Brown Swiss/Jersey Cattle for stabilising the level of exotic inheritance has been accepted as breeding policy of the Kerala Agricultural University. The animals available/brought into the farm for the purpose will be utilised for the proposed studies.
   2. Maintenance of history sheet for all Cows and Bulls with weight reeords at each mating.
   3. Maintenance of records of birth weight of all calves born in the farm for a period of two year·
   4. Maintenance of records of weight gain of the calves at monthly intervel.
   5. Observation for the signs of first heat and clinical examination for confirmation of the same and ovulation and maintenance of the record.
   6. Recording the weight at puberty.

10. Date of start ... 1976-77
11. Likely date of completion ... 1981-82
12. Estimated man months ... 60
13. Facilities required ... The existing facilities will besufficient
14. Financing organisation ... Kerala Agrl. University
15. Expenditure:
    a) Recurring ... Rs· 50000/-
    b) Nonrecurring ... Rs. 250000/- (Purchase of Animals)

1. Institute Code No. ... VA. 1-1-11-1

2. I. C. A. R. Code No. ... —

3. Name aud address of the Research Institute/Centre. ... College of Veterinary & Animal Sciences, Mannuthy.

4. Title of the Project ... Research on Cattle

   Titel of the Problem ... Studies on Schistosoma spindale infection–with particular reference to buffaloes.

5. Name and designation of the Principal Investigator. ... K. Rajamohanan, Asst. Professor (Parasitology)

6. Name (s) & designation of Associate (s) ... Dr. K. Kalyanasundaram, Professor of Parasitology

7. Location. ... Department of Farasitology College of Vety. and Animal Sciences, Mannuthy

8. a) Objectives:

   1. To find out the incidence of *Schistosoma spindale* infection among buffaloes in Kerela.
   2. To determine the incidence of infection in snail intermediate hosts in Kerala.
   3. To study the pathology of this infection in buffaloes.
   4. To evolve suitable methods for treatment and control of this infection.

   b) Practical utility:

   Preliminary studies conducted at the department of Parasitology revealed that the infection is prevalent among buffaloes in Kerala and that it can prove to be fatal in these animals. A detailed study on the aspects mentioned above will definitely be useful in providing better health coverage to buffaloes whlch are the Principal milk producers of the country.

9. Technical Programme:

   1. The incidence of *schistosoma spindale* infection among buffaloes in Kerala.
   2. The incidence of this infection in snails at various places in the State of Kerala.
   3. Observations on the pathology of the infection in buffaloes.
   4. Observations on the immune response in buffaloes having the infection.
   5. Observations on possible serological methods for the diagnosis and pophylaxis of this infection.

10. Date of startiug ... 1976–77

11. Date of completion(anticipaaed) ... 1981–82

12. Estimated man months ... 60

13. Facilities required ... Equipments apparatus and livestock are required.

14. Financing ... Kerala Agrl. University.

15. Approximate cost. ... Rs. 90,000/-

1. Institute Code No	...	VA. 1-1-12-1
2. ICAR Code No.	...	
3. Name and address of the Research Institute/ Centre	...	College of Veterinary & Animal Scitnce, Mannuthy.
4. Title of the Project	...	Research on Cattle
Title of the problem	...	Studies on pathological conditions of mammary glands of cattle and goats.
5. Name and designation of Principal Investigator	...	Dr. M. Krishnan Nair, Professor of Pathology.
6. Name (s) and designation of Associate (s)	...	
7. Location	..	College of Veterinary & Animal Science, Mannuthy.
8. (a) Objectives:	...	To investigate the incidence, nature and distribution of lesions affecting mammary glands of cattle and goats by examination of specimens collected from slaughter houses and procured at autopsy of dead farm animals.
(b) Practical utility	...	Study will help to evolve suitable therapeutic and preventive measures.
9. Technical programme	...	i) Mammary glands from cattle and goats having mastitis will be collected from autopsy cases and from Trichur slaughter houses. ii) Cultural examination will be attempted to isolate the etiological agents. iii) Study of gross and histo pathology
10. Date of start	...	1975
11. Likely Date of completion	...	1976
12. Estimated man months	...	12
13. Facilities required	...	Facilities are already available
14. Financing organisation	...	Kerala Agrl. Uuiversity
15. Approximate cost	...	Rs. 1700/-

1.	Institute Code No.	...	VA. 1. 1. 12. 2.
2.	ICAR Code No.	...	—
3.	Name and address of the Research Institute/Centre	...	College of Veterinary and Animal. Sciences, Mannuthy.
4.	Title of the project	...	Research on Cattle.
	Title of the problem	...	Incidence and Pathology of tumours in the paranasal sinuses in domestic animals.
5.	Name and designation of Principal Investigator	...	A. Rajan, Assoc. Professor
6.	Name (s) and designation of Associate (s)	...	Dr. M. Krishnan Nair, Professor, Pathology Dr. K. I. Maryamma, Asst. Professor.
7.	Location	...	College of Vety. & Animal Sciences, Mannuthy.
8.	(a) Objectives:	...	To study the incidence, etiology and pathology of tumours in the paranasal sinuses and to evolve suitable preventive measures.
	(b) **Practical utility:**	...	a) Etiopathogenesis of the tumor will be identified and suitable preventive measures will be formulated which will prevent further ineidence in animals.

9. Technical Programme:

1. Materials for study will be collected from ailing animals. Detailed gross and histopathological studies will be made.
2. For identifying the aetiological agent cultural, biological and experimental tranmission studies will be carried out.
3. Methods will be developed to detect early cases of tumors,
4. Suitable anti carcinogen will be tried in ailing animals to evaluate their efficacy.

10.	Date of start:	...	1972
11.	Likely date of completion:	...	1978
12.	Estimated man months:	...	60
13.	Facilities required	...	Facilities already available will be utilized
14.	Financing organisation	...	Kerala Agrl. University.
15.	Approximate cost	...	Nil

1. Institute Code No: ... VA. 1. 1. 12. 3.
2. ICAR Code No: ...
3. Name and address of the Research Institute/Centre ... College of Veterinary & Animal Sciences, Mannuthy
4. Title of the Project ... Research on Cattle.

Title of the Problem ... Pathology of Endocrine glands in cattle, goats and pigs.

5. Name and designation of Principal Investigator ... Dr. A. Rajan, Associate Professor
6. Name (s) and designation of Associate (s) ... Dr. M. Krishnan Nair, Professor of Pathology.
Dr. K. I. Mariyamma, Assistant Professor
7. Location ... College of Veterinary and Animal Sciences, Mannuthy.

8. (a) Objectives

1. To elucidate the etiopathology of endocrinological reproductive disorders in animals.
2. To study the endocrinological changes in John's disease in goats and to evaluate its influence on the pathogenesis of the disease.
3. To study the pathogenesis and pathology of auto-immune thyroiditis in pigs.

(b) Practical utility: ... The study will help to elucidate the magnitude of pathological disorders of the endocrines and their influence on the growth rate and production in livestock.

9. Technical Programme

1. Detailed pathological study of endocrine glands (Pitutary, Thyroid & Adrenal) collected from goats that have died of Johne's disease in the University Livestock Farm.
2. Reproductive organs of animals that die in the University Livestock Farm, Mannuthy will be collected and gross and histopathology will be studied. Correlation between endocrine changes and changes in reproductive organs will be worked out.
3. Auto-immune thyroidits will be experimentally induced in pigs and pathological features assessed.

10. Date of start ... 1973
11. Likely date of completion ... 1978
12. Estimated man months ... 60
13. Facilities required ... Existing facilities will be utilised.
14. Financing organisation ... Kerala Agrl. University
15. Approximate cost ... Rs. Nil.

1. Institute Code No. ... VA. -1-1-14-1.

2. ICAR Code No. ... —

3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy.

4. Title of the project ... Research on Cattle.

   Title of the problem ... Studies on the meat potentialities and meat qualities of buffaloes.

5. Name and designation of principal investigator ... G. Nirmalan, Professor of Physiology

6. Name(s) and designation of Associate(s) ... T. G. Rojagopalan, Assoc. Professor (Management)

7. Location ... Department of Physiology, College of Veterinary & Animal Sciences, Mannuthy.

8. a) Objectives ... To study the meat potentialities and qualities of buffaloes, and to compare the same with those of cross-bred cattle.

   b) Practical utility ... Comparison of the data collected for buffaloes with those of cattle, it is expected, will help in recommending the species of choice as a source of animal protein for human consumption under Kerala conditions.

9. Technical Programme:

Fifty two male buffalo calves and 52 cross-bred calves will be procured at the age of 3 months and reared in the experimental station, on a calf-starter containing 25% DCP and 75% TDN till they attain the age of 5 months. These 5 month old animals will be divided into two groups, species wise, one maintained on a normal growing ration of 100% Morrison standard (serves as the control) and the other on a fattering ration of 140% Marrison standard (treatment group)

The animals will be maintained under ideal managemental conditions. Buffalo calves will be sprinkled with water for about 5 minutes twice daily (at about 11 AM and 3 PM) during the months from February to June.

10. Date of start ... 1976-77

11. Likely date of completion ... 1978-79

12. Estimated man months ... 24

13. Facilities required ... Existing facilities will be availed of

14. Financing organisation ... Kerala Agrl. University.

15. Approximate cost

1st year	...	Rs. 188630
2nd year	...	Rs. 97380
Total	...	Rs. 286010.00
Receipts anticipated	...	Rs. 65800

1. Institute Code No. ... VA. 1. 2. 14. 1.

2. ICAR Code No. ...

3. Name and address of the Research Institute/Centre ... Cattle Breeding Farm, Thumburmuzhi

4. Title of the Project ... Research on Cattle.

Title of the problem. ... Studies on the environmental physiological responses of cross-bred animals at the Cattle Breeding Farm, Thumburmuzhi.

5. Name and designation of Principal Investigator ... Dr. E. T. Jacob Assistant Professor

6. Name and designation of Associate ... Dr. G. Nirmalan, Professor of Physiology

7. Location ... Cattle Breeding Farm, Thumburmuzhi

8. a) Objectives: ... To obtain basic information regarding the physiological responses of cross bred animals.

b) Practical utility: ... The information will furnish valuable data on the period of maximum growth, inffection etc. of the cros-bred animals

9. Technical Programme:

Twenty cross-bred female calves will be selected immediately after birth. They will be devided into two grops of ten each. One group will be maintained under housing and the other group in the open. Both the animals will be maintained on identical ration.

Facilities

The existing facilities are sufficient. Weaned calves available at University Livestock Farm, Mannuthy and Cattle Breeding Farm, Thumburmuzhi will also be utlised.

10. Date of start ... 1976-77
11. Likely date of completion ... 1979-80
12. Estimated man months ... 36
13. Facilities required ... Facilities are already available
14. Financing organisation ... Kerala Agrl. University
15. Approximate cost ... Rs. 2000/-

1. Institute code No. ... VA-1-1-17-1

2. ICAR Code No ... —

3. Name and address of the Research Institute / Centre ... College of Veterinary and Animal Sciences, Mannuthy.

4. Title of the Project ... Research on Cattle

Title of the Problem ... To study the practieal utility of Rumenorectal Fistula as a relief measure for Chronic Tympany of the Rumen in Cattle.

5. Name and designation of Principal Investigator ... A. Venugopalan, Professor of Surgery.

6. Name(s) and designation of Associate (s) ...

7. Location ... Department of Surgery, College of Veterinary & Animal Sciences, Mannuthy.

8. a) Objectives

In many cases of chronic tympany of the rumen (Bloat) in cattle, there is no specific cure. The surgical treatment presently following is the providing of an external fistula for the rumen, as a palliative measure. Such an external fistula has obvious disadvantages.

The objects of the present experiment are to find out (i) the feasibility of establishing an internal fistula communicating the rumen with the rectum, and (ii) to study its practical utility as a palliative measure.

b) Practical utility

The results of the experiment will be of value in treating cases of chronic tympany of the rumen.

9. Technical programme:-

The main items of observations to be recorded.

i) The details of the technique of the operation.
ii) The post-operative reactions in clinical cases.

10. Date of start ... 1976–77

11. Likely date of completion ... 1977–78

12. Estimated man months ... 12

13. Facilities required ... Facilities are already available.

14. Financing organisation ... Kerala Agricultural Uuiversity

15. Approximate cost ...

1	Institute Code No.	...	VA. 1. 1. 17. 2.
2	ICAR Code No		—
3	Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4	Title of the Project	...	Research on Cattle
	Title of the problem	...	Studies on Intra-Ocular Pressure variations in indigenous and crossbred cattle affected with common ocular diseases
5	Name and designation of Principal Investigator	...	P. O. George, Assoc. Professor (Surgery)
6	Name(s) and designation of Associate (s)	...	
7	Location	...	Department of Surgery, College of Veterinary and Animal Sciences, Mannuthy.

8 (a) Objectives

1. To study the nitra-ocular pressure in indigenous cattle and cross-bred cattle of different age groups.
b) To study the variations, if any in the intra-ocular pressure in common ocular diseases

	(b) Practical utility	...	The utility of this study will be to aid in the early clinical diagnosis of some of the ocular lesions.
9	Technical programme:	...	a) Main items of observations to be recorded: Intra-ocular pressure indigenous and cross-bred animals of various age groups. (Total 90 animals)
10	Date of start	...	1976–77
11	Likely date of completion	...	1978–79
12	Estimated man months	...	24
13	Facilities required	...	Facilities are already available.
14	Financing Organization	...	Kerala Agrl. University
15	Approximate cost	...	Rs. 2500/-

1. Institue Code No. ... VA. 1. 1. 17. 3.
2. ICAR Code No. ... —
3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the Project ... Research on Cattle.

   Title of the problem ... Surgery for impaction of Bovine stomach with rubber latex.
5. Name and designation of Principal Investigator ... Dr. P. J. Philip, Associate Professor (Surgery).
6. Names(s) and designation of Associate (s)... Dr. G. Venugopal, Associate Professor, (Physiology)
7. Location ... Department of Surgery, College of Veterinary & Animal Sciences, Mannuthy.

8. (a) Objectives

The object of the scheme is to find out a suitable surgical technique by which the animals affected with impaction of the stomach with rubber latex can be treated successfully.

(b) Practical utility

Impaction of the stomach (usually the 4 compartment) in cattle with rubber latex is a commou condition. So far no effective surgical technique has been described in any published works. The animals affected with this condition is usually send for slaughter or the condition usually ends fatally, therby causing great loss to the farmer. Evolving of a suitable surgical technique will help to save the life of many animals and thereby the economic loss to the farmer can be minimised. The scientific utility will be evolving of a surgical treatment for impaction of the stomach in cattle due to rubber latex which has not been so far described elsewhere.

9. Technical programme:

a) Study of the haemogram in experimental animal before and after the operation.
b) Feeding of rubber latex at 5% body weight to three groups of animals, each group consisting of 8 animals (including controls).
c) Observations of the clinical symptoms.
d) The following 3 surgical techniques will be tried.

Group-1. Rumenotomy and evacuation of rumen and reticulum alone.
Group-2. Rumentotomy and evacuation of rumen and reticulum and abomasotomy and evacuation of abomasum, and
Group-3. Rumenotomy and evacuation of rumen and reticulum and abomasotomy and evacuation of abomasum and omasum.

10. Date of start ... 1976–77
11. Likely date of completion ... 1979–80
12. Estimated man months ... 36
13. Facilities ruquired ... Existing facilities will be utilised
14. Financing orgainsation ... Indian Council of Agricultural Research
15. Approximate cost ... Rs. 15,000/–

1. Institute Code No.	...	VA. 1. 1. 17. 4.
2. I. C. A. R. Code No.	...	—
3. Name and address of Research Institute/Centre	...	College of Veterinary & Animal Sciences,
4. Title of the Project	...	Research on Cattle.
Title of the problem	...	Studies on the experimentally induced intestinal intussusception in cattle.
5. Name and designation of Principal Investigator	...	Dr. A. M. Jalaluddin, Assistant Professor (Surgery)
6. Name (s) and designation of Associate (s)	...	N. N. Muraleedharan Nair, Assistant Professor (Surgery)
7. Location	...	Department of Surgery, College of Veterinary, & Animal Sciences, Mannuthy.
8. a) Objectives	...	The present study is undertaken with a view to record the clinical spmptoms and laboratory findings in experimentally induced intestinal intussusception in cattle.
b) Practical utility	...	The results of the study can be adopted as an aid in the clinical diagnosis of intestinal intussusception in cattle.
9. Technical Programme	...	After performing laparotomy, intestinal intussusception is made and the following observations recorded in 12 animals. 1. Clinical symptoms 2. Clinico-and Pathological studies
10. Date of start	...	1976-77
11. Likely date of completion	...	1979-80
12. Estimated man months.	...	36
13. Facilities required	...	Already available
14. Financing organisation	...	Kerala Agrl. University
15. Approximate cost	...	Rs. 6,100/-

1. Institute Code No.	...	VA-1.1.18.1.
2. I.C.A.R. Code No.	...	
3. Name and address of Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy
4. Title of the Project	...	Research on Cattle.
Title of the problem	...	Studies on necrosis of extremities in cattle and buffaloes.
5. Name and designation of the Principal Investigator	...	Dr. K. M. Alikutty, Assoc. Professor.
6. Name (s) and designation of Associate(s)	...	Departments of Bactriology, Pathology, Physiology / Biochemistry, College of Veterinary and Animal Sciences.
7. Location	...	Department of Therapeutics College of Veterinary and Animal Sciences, Mannuthy.
8. (a) Objectives	...	Investigations on the wide spread incidence of a necrotic/ gangrenous disease involving the extremities like tail, ears, limbs, muzzle etc. noticed among local cattle and buffaloes
b) Practical utility	...	The proposed investigation will help in evolving suitable Therapeutic preventive measures thereby preventing economic loss to farmers.
9. Technical programme;		i) Collection of data on incidence and factors like environment management, soil, fodder, fungi, fungi-toxins responsible for the disease if any ii) Clinical studies to assess deficiencies iii) Microbial studies iv) Biochemical, biological, histopathological and histochemical studies.
10. Date of start	...	1975
11. Likely date of completion	...	1978
12. Estimated man months	...	36
13. Facilities required	...	Facilities are already available
14. Financing organisation	...	Kerala Agrl. University
15. Approximate cost	...	Rs. 21000/-

1. Institute Code No. VA. 1-1-19-1

2. ICAR Code No. ...

3. Name and address of the Research Institute/Centre .. College of Veterinary & Animal Sciences Mannuthy.

4. Title of the Project ... Research on Cattle

Title of the Problem ... Carcase yield and certain meat characteristics of dairy cattle.

5. Name and designation of the Principal Investigator ... P. Prabhakaran, Assistant Professor.

6. Name (s) and designation of Associate (s)
1. R. Padmanabha Iyer, Associate Professor
2. M. Soman, Associate Professor

7. Location ... College of Veterinary & Animal Sciences, Mannuthy.

8. a) Objectives ... Gathering data on liveweight, breed, age and distribution and relation to cocarcase yield, meat yield, proportion of edible and inedible offals; pH. changes in meat at room temperature,

b) Practical utility: ... Beef is important source of animal protein and demand for it is in the increase. The data on the carcase yield of cattle in India finds little reference in the literature surveyed. Hence the present study is expected to form a base line for further studies.

9. Technical programme

Unproductive animals from the livestock farms will be utilised for the purpose. Since only a small quantity of representative samples of meat from specified regions will be utilised (eg. Longissimus dorsy at 12th and 13th rib area) for detailed study, the rest of the meat, edible offals and hide will sold.
When the proposed meat laboratory comes into existence and gets fully equipped, more sophisticate studies to determine palatability factors like tenderness, juiciness will be undertaken.

10. Date of start ... 1976-77

11. Likely date of completion ... 1979-80

12. Estimated man months ... 36

13. Facilities required ... Existing facilities will be utilised

14. Financing organisation ... Kerala Agrl. University

15. Approximate cost ... Rs. 9760/-

RESEARCH PROJECTS

ON

GOATS

1. Institute Code No. ... VA - 2. 1. 1. 1.

2. ICAR Code No. ... —

3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy.

4. Title of the project ... Research on Goats.

   Title of the problem ... Studies on the post-natal development of ruminant stomach in goat.

5. Name and designation of Principal Investigator ... K. Radhakrishan
   Professor of Anatomy.

6. Name (s) and designation of Associate (s) ... P. A. Ommer
   Associate Professor (Anatomy)

7. Location ... College of Veterinary and Animal Sciences, Mannuthy.

8. a) Objectives: ... To trace the normal post-natal devolopment of different compartments of the stomach of goat

   b) Practical utility

   The ruminant can be made to carry out its normal function from a comparatively velyyounger age as convertor of bulky roughages into milk and meat if their rumen can be made to develop at an earlier stage.

9. Technical programme:

   Material will be collected from day old to 2 months at weekly intervals. In each group there will be 3 kids. The exact nature of the fore-Stomach compartments and the pattern of their development during post-natal growth will be recorded. The detailed linear, weight and capacity measurements will be recorded in relation to body size, body weight, total digestive tract. The disposition of the inner mucosa of the various compartments will be attended to.

10. Date of start ... 1976-77

    Likely date of completion ... 1978-79

    Estimated man months ... 24

13 Facilities required ... Facilities are already available.

14. Financing organisation ... Kerala Agrl. University.

15. Approximate cost ... Rs. 2000/-

1. Institute Code No.	...	VA–2. 1. 4. 2.
2. ICAR Code No.	...	
3. Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the Project	...	All India Co-ordinated Project on Goats for milk production
Title of the problem	...	Production performance of Malabari goats, standardisation of phenotype and studies on factors influencing the same.
5. Name and designation of the Principal Investigator	...	K. C. Abraham, Asst. Professor
6. Name (s) and designation of Associate (s)	...	1. G. Mukundan, Assoc. Professor 2. K. L. Sunny, Jr. Instructor
7. Location	...	College of Veterinary and Animal Sciences, Mannuthy.
8. a) Objecives	...	To standardise the production traits of Malabari goats and to study the factors influencing the same.
b) Practical utility	...	This problem will aid in the selective breeding of Malabari Goats
9. Technical programme	...	The following traits will be studied. 1. Lactation yield 2. Lactation length 3. Peak yield 4. Dry-period 5. Production efficiency for different lactation. Influence of season, sire, weight of dam at kidding and the preceding dry period on the above traits will also be studied.
10. Date of start	...	1974
11. Likely date of completion	...	1979
12. Estimated man months	...	60
13. Facilities required	...	Existing facilities will be utilised
14. Financing organisation	...	Indian Council of Agricultural Research
15. Approximate Cost	...	

1.	Instiute Code No.	...	VA- 2. 1. 4. 4.
2.	ICAR Code No.	...	—
3.	Name and address of the Research Institute/Centre	...	College of Vety. & Animal Sciences, Mannuthy.
4.	Title of the Project	...	All India Co-ordinated Project on goats for milk production.
	Title of the Problem	...	Studies on birth weight and growth rate of Malabari and cross bred kids.
5.	Name and designation of principal Investigator	...	G. Mukundan, Assoc. Professor
6.	Name (s) and designation of Associate (s)	...	1. K. C. Abraham, Asst. Professor 2. C. S. James, Asst. Professor 3. K. L. Sunny, Jr. Instructor
7.	Location	...	College of Veterinary & Animal Sciences, Mannuthy.
8.	(a) Objectives	...	To study the different factors affecting birth weight and growth rate of Malabari and cross bred kids.
	(b) Practical utility	...	The problem will aid the evolution of a new breed suitable for the agroclimatic condition of Kerala.

9. Technical Programme:

Weight at birth, fortnightly intervals up to 4 months, and at monthly intervals up to puberty and at each kidding for females and each year for males. Body measurements at birth, at 6 months, and at each kidding for females and each year for males will be recorded for Malabari as well as cross bred goats. The data will be analysed as per Season, breed, Sire, type of birth, gestation length weight of dam at kidding etc.

10.	Date of Start	...	1974
11.	Likely date of completion	...	1979
12.	Estimated man months	...	60
13.	Facilities required	...	Existing facilities will be utilised.
14.	Financing organisation	...	Indian Council of Agrl. Research.
15.	Approximate cost	...	—

1. Institute Code No.	...	VA. 2. 1. 4. 3.
2. ICAR Code No.	...	—
3. Name and address of the Research Institute	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the Project	...	All India Co-ordinated Research Project on goats Mannuthy.
Title of the problem	...	Adaptability of Malabari. and cross bred goats to the agro climatic condition of Kerala - a comparative study.
5. Name and designation of Principal Investigator	...	G. Mukundan Associate Professor.
6. Name (s) and designation of Associate (s)	...	1. K. C. Abraham Asst. Professor. 2. K. M. Ramachandran ,,
7. Location	...	College of Veterinary and Animal Sciences, Mannuthy.
8. (a) Objectives:	...	To evaluate different breeds based on their adaptability and to study various factors in volved.
(b) Practical utility	...	The problem will help in the evolution of a new breed, adapted to the agro ceimatic condition of Kerala.
9. Technical programme:	...	I. ricidence of mortality mastitis, abortion. and Specific diseases through out the life span of goats of different breeds will be studied.
10. Date of start	...	1974
11. Likely Date of completion	...	1979
12. Estimated man months	...	60
13. Facilities required	...	Existing facilities will be utilised
14. Financing organisation	...	Indian Council of Agrl-Research.
15. Approximate cost	...	

1.	Institute Code No:	...	VA. 2. 1. 9. 1.
2.	ICAR Code No:	...	
3.	Name and address of the Research Institute/Centre	...	College of Veterinary & Animal Sciences, Mannuthy
4.	Title of the Project	...	All India Co-ordinated Projcet on Goats for Milk Production.
	Title of the Problem	...	Comparative evaluation of the conventional and unconventional feeds for evolving cheap economic ration for goat.
5.	Name and designation of Principal Investigator	...	C. S. James, Assistant Professor.
6.	Name (s) and designation of Associate (s)	...	
7.	Location	...	Department of Nutrition College of Vety. and Animal Sciences, Mannuthy.
8.	(a) Objectives	...	To utilise agricultural by-products and industrial waste materials in the ration of goats.
	(b) Practical utility:	...	To evolve cheap and economic ration for goats. Feeding trials with conventional ration and unconventional ration in cross kids as well as in Malabari kids.

9. Technical Programme

Criteria for evaluation.
1) Feed consumption; 2) Growth rate 3. R. B. C. Haemoglobin, plasma protein, calcium phosphorus and magnesium in blood, 4) Food efficiency and protein efficiency ratio, Feed conversion.

10.	Date of start	...	1976–77
11.	Likely date of completion	...	1977–78
12.	Estimated man months	...	12
13.	Facilities required	...	Existing facilities will be utilised.
14.	Financing organisation	...	Kerala Agrl. University
15.	Approximate cost	...	Rs. Nil.

1. Institute Code No.	...	VA. -2-1-9-2.
2. ICAR Code No.	...	—
3. Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the project	...	All India Co-ordinated Project on Goats for Milk Production.
Title of the problem	...	Lactation studies on goats by replacing jack tree leaves with guinea grass.
5. Name and designation of principal investigator	...	C. S. James, Asst. Professor.
6. Name(s) and designation of Associate(s)	...	Dr. K. C. Abraham, Asst. Professor.
7. Location	...	Department of Nutrition College of Vety. and Animal Sciences Mannuthy.
8. a) Objectives	...	To effect complete replacement of jack tree leaves with cultivated fodder and thereby to reduce feed cost.
b) Practical utility	...	The concentrate roughage ratio can be extended even upto 1.3 from 1.1

9. Technical Programme:

Criteria for evaluation.
1) Jack leaves replaced at the rate of 25, 50, 100% with guinea grass. 2) Daily feed intake, 3) Daily milk yield

10. Date of start	...	1976
11. Likely date of completion	...	1977
12. Estimated man months	...	12
13. Facilities required	...	Existing facilities will be utilised.
14. Financing organisation	...	Indion Council of Agrl. Research
15. Approximate cost		

1.	Institute Code No·	...	VA· 2· 5· 9· 1.
2.	ICAR Code No.	...	
3.	Name and address of the Research Institute	...	College of Veterinary and Animal Sciences, Mannuthy.
4.	Title of the project	...	All India Co-ordianated Research Project on goats for milk production.
	Title of the problem	...	Crop Livestock Integration (Goats and Banana)
5.	Name and designation of Principal Investigator	...	C. S. James, Asst. Professor
6.	Name (s) and designation of Associate (s)	...	1. S. Balakrishnan, Assoc. Professor (Horticulture) 2. Mrs. Mary George, Jr. Instructor 3. K. C. Abraham, Asst. Professor 4. G. Mukundan, Assoc. Professor
7.	Location	...	Banana and Pineapple Research Station, Kannara.
8.	(a) Objectives	...	1) To evolve a cheap and economical goat ration utilising Banana parts available in kerala. 2) To study production performance of goats under small herd management. 3) To assist the possibilities of utilising the goat manure for banana growing - by utilising banana plant parts for feeding, supplementing with concentrates to active re-cycling purposes.
	(b) Practical utility		The scheme is intended to find out the feasibility of incorporating banana parts in the ration of goats. If the experiment show favourable results it will lead to financial benefit.
9.	Technical programme		Six Saanam X Malabari cross bred Kids in the age group group of 4-5 months will be fed on 4% dry matter basis with concentrate roughage ratio of 1:1 with banana leaves as roughage part. The animals will be maintained for 3 months. The following data will be collected. 1) Feed in take 2) weight gain 3) Blood picture 4) Feed efficiency Goat manure will be used as organic mannure for banana plants after powdering and with out powdering at appropriate quantity and its effects on productivty and quality of fruits will be assessed besides comparing with other organic manures.
10.	Date of start	...	1976
11.	Likely date of completion	...	1978
12.	Estimated man months	...	24
13.	Facilities required	...	Existing facilities of the Banana Research Station as well as the goat Research Project will be sufficient
14.	Financing organisation	...	Indian Council of Agrl. Research
15.	Approximate cost	...	Rs. 1500/-

1. Institute Code No ... VA. 2-1-9-3

2. ICAR Code No. ...

3. Name and address of the Research Institute/ Centre ... College of Veterinary & Animal Science, Mannuthy.

4. Title of the Project ... Research on Goats

   Title of the problem ... Establishment of feeding standards for goats.

5. Name and designation of Principal Investigator ... N. Kunjikutty, Asst. Professor

6. Name (s) and designation of Associate (s) ... C. T. Thomas, P. A. Devesia, C. S. James | Asst. Professor

7. Location .. College of Veterinary & Animal Science, Mannuthy.

8. (a) Objectives: ... Establishment of nutrient requirements of goats for various physiological function such as maintenance, growth, reproduction and lactation.

   (b) Practical utility

   To determine the nutrient requirements of Indian goats, with the ultimate object of establishing suitable feeding standards for general adoplion. Once the suitable feeding standard is established, the feeding regime of the gots can be improved thereby enabling the farmer to fully exploit the productive capacity of goats.

9. Technical programme

   First year:– Feeding trials and balance experiments on four groups of adult animals maintained on four dietary regimens viz. 77%, 100%, 125% and 150% respectively of Mackenzis feeding standards.

   2nd year:– Feeding trials and balance experiments to establish nutriet requirements for growth of kids.

   3rp year:– Feeding trials and balance experiments to establish nutrient requirements for reproduction and lactation.

10. Date of start ... 1976–77
11. Likely Date of completion ... 1978–79
12. Estimated man months ... 24
13. Facilities required ... The facilities are already available
14. Financing organisation ... Kerala Agrl. Uuiversity
15. Approximate cost ... Rs. 6000/–

1. Institute Code No.	...	VA. 2-1-10-1
2. I. C. A. R. Code No.	...	—
3. Name aud address of the Research Institute/Centre.	...	College of Veterinary & Animal Sciences, Mannuthy.
4. Title of the Project	...	Co-ordinated Research Project on Goat for Milk Production
Titel of the Problem	...	Age of semen and conception rate in Goats.
5. Name and designation of the Principal Investigator.	...	Dr. E. Mathai, Asst. Professor
6. Name (s) & designation of Associate (s)	...	Dr. K. C. Abraham, Asst. Professor
7. Location.	...	College of Veterinary and Animal Sciences, Mannuthy.
8. a) Objectives:	...	To study the rate of conception using diluted buck semen stored for different periods.
b) Practical utility:	...	Stored buck semen can be used to get maximum conception rate.
9. Technical Programme:	...	Buck semen diluted and stored for different periods is to be used for artifical in seme nation in different doses and the percentage conception is to be studied and evaluated.

1. Semen samples will be collected from 3 Saanen, 3 Malabari and 3 cross bred bucks of the goat project.
2. Collected semen samples will be evaluated
3. Semen samples will be diluted in conventional diluents using split sample technique;
4. Diluted semen will be stored for different periods of time viz. 0-12 hrs; 13-24 hrs, 25-36 hrs and 37-48 hours.
5. Insemination will be carried out using diluted semen for different periods.
6. Fertility with respect to semen samples kept for different periods will be studied.

10. Date of startiug	...	1976
11. Date of completion(anticipaaed)	...	1978
12. Estimated man months	...	24
13. Facilities required	...	Facilities are already available
14. Financing	...	Indian Council of Agrl. Research
15. Approximate cost.	...	

1	Institute Code No.	...	VA. 2. 1. 12. .1
2	ICAR Code No		—
3	Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4	Title of the Project	...	All India Co-ordinated Research Project on Goats for Milk production.
	Title of the problem	...	Studies on the incidence, pathology and prevention of Globdeosis in goats.
5	Name and designation of Principal Investigator	...	Dr. K. M. Ramachandran, Assistant Professor
6	Name(s) and designation of Associate (s)	...	—
7	Location	...	Department of Pathology College of Veterinary and Animal Sciences, Mannuthy.
8	(a) Objectives	...	To study the incidence and pathology of the disease.
	(b) Practical utility	...	To prevent losses due to death by Globdeosis.
9	Technical programme:	...	1. Survey of Globdeosis in goats; 2. Patholagical studies on intestine, mesenteric lymph nodes, liver and other tissues of goats. 3. Trials with different drugs.
10	Date of start	...	1975
11	Likely date of completion	...	1978
12	Estimated man months	...	24
13	Facilities required	...	Existing facilities will be sufficient
14	Financing Organization	...	Indian Council ofA grl. Research
15	Approximate cost	...	

1.	Institue Code No.	...	VA. 2. 1. 12. .2
2.	ICAR Code No.	...	—
3.	Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4.	Title of the Project	...	All India Co-ordinated Research Projeet on goats for Milk Production.
	Title of the problem	...	Investigation on caseous lymphadenitis in goats.
5.	Name and designation of Principal Investigator	...	K. M. Ramachandran Asst. Professor
6.	Names(s) and designation of Associate (s)	...	
7.	Location	...	Dept. of Pathology, College of Veterinary and Animal Scieces, Mannuthy.
8.	(a) Objectives	...	To investigate the incidence and nature of caseous lymphadenitis in goats
	(b) Practical utility	...	Identification of the etiologioal agents and elucidation of its pathogen will help to formulate suitable preventive measures.
9.	Technical programme:	...	1. Clinical examination of animals; 2. Cultural examination from the lesions 3. Detailed pathological studies; 4. Study the drug sensitivity of bacterial isolates from the lesion.
10.	Date of start	...	1976
11.	Likely date of completion	...	1978
12.	Estimated man months	...	24
13.	Facilities ruquired	...	Existing facilities are sufficient
14.	Financing orgainsation	...	Indian Council of Agricultural Research
15.	Approximate cost	...	

1. Institute Code No. ... VA. 2. 1. 12. 3.

2. ICAR Code No. ... —

3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal. Sciences, Mannuthy.

4. Title of the project ... All India Co-ordinated Research Project on Goats for Milk Production.

   Title of the problem ... Investigations on posterior paralysis in Goats.

5. Name and designation of Principal Investigator ... K. M. Ramachandran, Asst. Professor

6. Name (s) and designation of Associate (s) ...

7. Location ... Dept. of Pathology, College of Veterinary and Animal Sciences, Mannuthy.

8. (a) Objectives: ... To find out the causes, prevention and treatment of the condition.

   (b) Practical utility: ... To increase the breeding efficiency in Bucks.

9. Technical Programme:

   1. Detailed clinical examination of the affected cases;
   2. Analysis of clinical materials of ailing animals
   3. Detailed gross and histopathological studies on all tissues with special reference to nervous system.

10. Date of start: ... 1976
11. Likely date of completion: ... 1978
12. Estimated man months: ... 24
13. Facilities required ... Existing facilities will be utilized
14. Financing organisation ... Indian Council of Agrl. Research
15. Approximate cost ... Nil

1. Institute Code No.	...	VA. 2. 1. 12. 4.
2. ICAR Code No.	...	
3. Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the Project	...	All India Co-ordinated Research Praject on Goats for Milk Production.
Title of the problem.	...	Studies on the incidence, pathology and preventive measures on common diseases of goats.
5. Name and designation of Principal Investigator	...	K. M. Ramachandran, Asst. Professor.
6. Name and designation of Associate	...	K. C. Abraham, Asst. Professor
7. Location	...	College of Veterinary and Animal Sciences, Mannuthy.
8. a) Objectives:	...	To study the diseases affecting goats.
b) Practical utility:	...	Loss of production (milk, meat, skin, etc.) due to the diseases can be prevented.

9. Technical Programme:

1) Studies on the health status of goats;
2) Isolation of ailing goats and detailed clinical observations and diagnosis of diseases;
3) Detailed pathological studies on each disease;
4) Classification of diseases.

10. Date of start	...	1976
11. Likely date of completion	...	1979
12. Estimated man months	...	36
13. Facilities required	...	Facilities are already available
14. Financing organisation	...	Indian Councial of Agrl. Research
15. Approximate cost	...	Nil

1. Institute code No.	...	VA-2-1-12-5
2. ICAR Code No	...	—
3. Name and address of the Research Institute / Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the Project	...	All India Co-ordinated Research Project on goats for milk production.
Title of the Problem	...	Studies on the co-relation of postnatal developmenut of stomach compartments and the incidence of gastro intestinal disorders in goats.
5. Name and designation of Principal Investigator	...	K. M. Ramachandran, Asst. Professor
6. Name(s) and designation of Associate (s)	...	
7. Location	...	Department of Pathology College of Veterinary & Animal Sciences, Mannuthy.
8. a) Objectives	...	1. To know the exact period required for the complete development of Rumen, Reticulum, Omasum and Abomasum in goats. 2. To suggest suitable measures to prevent the gastro-intestinal disorders.
b) Practical utility	...	
9. Technical programme	...	1. Assessment of weight of kids at death. 2. Detailed observations on gastro-intestinal disorders during the developmental phases. 3. Physiopathological investigations.
10. Date of start	...	1976
11. Likely date of completion	...	1979
12. Estimated man months	...	36
13. Facilities required	...	Existing facilities will be utilised.
14. Financing organisation	...	Indian Council of Agrl. Research
15. Approximate cost	...	

1. Institute Code No. ... VA-2.1.12.6.

2. I.C.A.R. Code No. ...

3. Name and address of Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy

4. Title of the Project ... All India Co-ordinated Research Project on Goats for Milk Production.

Title of the problem ... Hematological studies on Malabari, Exotic and cross bred goats under different physiological and pathological conditions.

5. Name and designation of the Principal Investigator ... K. M. Ramachandran, Asst. Professor

6. Name (s) and designation of Associate(s)...

7. Location ... Department of Pathology College of Veterinary and Animal Sciences, Mannuthy.

8. (a) Objectives ... To assess the health and disease status of goats by reading the haemogram.

b) Practical utility ... Health standards of goats can be improved.

9. Technical programme;

1. Collection of blood samples of healthy goats under different managements
2. Assesment of the following haematological values.
   1) ESR; 2) PCV; 3) Erythroyte number
   4) Erythroyte size.; 5) Hb.; 6) Total WBC.;
   7) Differential counts.
3. Analysis of the data.

10. Date of start ... 1976
11. Likely date of completion ... 1979
12. Estimated man months ... 36
13. Facilities required ... Existing facilities will be utilised.
14. Financing organisation ... Indian Council of Agrl. Research.
15. Approximate cost ... Rs. 21000/-

1.	Institute Code No.		VA. 3-1-12-7
2.	ICAR Code No.	...	
3.	Name and address of the Research Institute/Centre	..	College of Veterinary & Animal Sciences Mannuthy.
4.	Title of the Project	...	All India Co-ordiuated Reseasch Project on Goats for milk production.
	Title of the Problem	...	Investigations on kid mortality.
5.	Name and designation of the Principal Investigator	...	K. M. Ramachandran, Assistant Professor.
6.	Name (s) and designation of Associate (s)		
7.	Location	...	Dept: of Pathology College of Vety. & Animal Sciences, Mannuthy.
8.	a) Objectives	...	To study the causes, pathology, and Preventive measures of common diseases of kids (0-6 months old)
	b) Practical utility:	...	Prevention of loss of kids due to diseases.
9.	Technical programme		1. Studies on the health status of kids. 2. Routine observation on the behaviour of growing kids (haemotological norms, body weight, temperature, pulse, respiration, etc. 3. Isolation of ailing kids. 4. Detailed clinical examination of the isolated kids and diagnosis of disease. 5. Adoption of autiable curative measures. 6. Detailed postmortem investigation of dead kids 7. Classification of diseases.
10.	Date of start	...	1976
11.	Likely date of completion	...	1979
12.	Estimated man months	...	36
13.	Facilities required	...	Existing facilities will be utilised
14.	Financing organisation	...	Indian Council of Agrl. Research.
15.	Approximate cost	...	—

1. Institute Code No. ... VA - 2. 1. 12. 8.

2. ICAR Code No. ... —

3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy.

4. Title of the project ... All India Co-ordinated Research Project on Goats for Milk Production.

Title of the problem ... Clinco-pathological studies on Goat pox.

5. Name and designation of Principal Investigator ... Dr. K. M. Ramachandran, Assistant Professor.

6. Name (s) and designation of Associate (s) ...

7. Location ... Dept: of Pathology
College of Vety. and Animal Sciences, Mannuthy.

8. a) Objectives: ...
1. To make an easy diagnosis of the disease.
2. To find out suitable preventive and curative measures

b) Practical utility ... To prevent loss of production (milk, meat and skin) due to Pox.

9. Technical programme:

1) Observations on the incidence of pox on goats reared by rural farmers.
2. Observations on the incidence in goats reared under intensive management conditions.
3. Detailed clinical examination of the pox lesions.
4. Gross and histopathological studies on the lesions.
5. Trial with various medicines in the affected cases.

10. Date of start ... 1976

11. Likely date of completion ... 1977

12. Estimated man months ... 12

13 Facilities required ... Existing facilities are sufficient.

14. Financing organisation ... Indian Council of Agrl. Research.

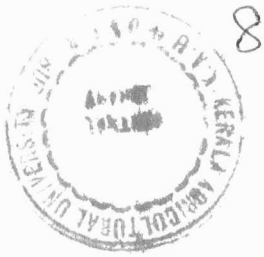
15. Approximate cost ...

1. Institute Code No.	...	VA–2. 1. 12. 9.
2. ICAR Code No.	...	
3. Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the Project	...	Research on Goats
Title of the problem	...	Studies on pathology of testes and epididymis in bucks
5. Name and designation of the Principal Investigator	...	Joseph Mathew, M. V. Sc. student
6. Name (s) and designation of Associate (s)	...	Dr. C. K. S. V. Raja, Professor of Obstetrics and Gynaecology
7. Location	...	Department of Obstetrics and Gynaecology, College of Veterinary & Animal Sciences, Mannuthy.
8. a) Objecives	...	To know the incidence of various pathological conditions of the testes and Epididymis in bucks as evidenced by gross and histopathological findings on abattoir specimens obtained from the municipal slaughter house, Trichur.
b) Practical utility	...	Little work has been done on this aspect of study. The Project will help in locating the most common pathological conditions of testes and epididymis in bucks in Kerala State.
9. Technical programme	...	Thousand testicles with epididymis of the bucks, collected from the Municipal slaughter house, Trichur will be examined for histopathological studies by standard procedures.
10. Date of start	...	1974
11. Likely date of completion	...	1976
12. Estimated man months	...	24
13. Facilities required	...	Existing facilities will be sufficient
14. Financing organisation	...	Keralal Agricultural University
15. Approximate Cost	...	Rs. 1750.00

1. Institute Code No.	...	VA. 2 1. 12. 10.
2. I. C. A. R. Code No.	...	—
3. Name and address of Research Institute/Centre	...	College of Vety. & Animal Sciences, Mannuthy.
4. Title of the Project	...	Research on Goats
Title of the problem	...	Experimental study of pathology of Hypothyroidism in Goats.
5. Name and designation of Principal Investigator	...	Dr. A. Rajan, Assoc. Professor
6. Name (s) and designation of Associate (s)	...	T. Sreekumaran, Post Graduate-Student
7. Location	...	College of Veterinary & Animal Sciences, Mannuthy.
8. a) Objectives	...	To study the pathology of hypothyroidism in goats.
b) Practical utility	...	Study will help to assess the influence of hypothyroid state in livestock growth and production.
9. Technical Programme	...	Hypothyroid state will be induced in goats by feeding thiourea and detailed clinco-pathological aspects will be studied.

10. Date of start	...	1975
11. Likely date of completion	...	1976
12. Estimated man months.	...	12
13. Facilities required	...	The existing facilities are sufficent
14. Financing organisation	...	Kerala Agrl. University
15. Approximate cost	...	Rs. 4,170/-

1. Institute Code No.	...	VA. 2-1-12-11.
2. ICAR Code No.	...	
3. Name and address of Research Institute / Centre	...	College of Veterinary & Animal Sciences, Mannuthy
4. Title of the project	...	Research on Goats
Title of the problem	...	Aflatoxicosis in goats
5. Name and designation of Principal Investigator	...	Maraimma, K. I., Asst. Professor
6. Name (s) and designation of Associate (s)	...	
7. Location	...	Department of Pathology, College of Veterinary and Animal Sciences, Mannuthy.
8. a) Objectives:	...	To study the effect of ingestion of aflatoxin for a period of four years or more on the productivity, breeding performance, weight gain and alterations in the tissue histology of goats including the progeny of the experimental animals.
b) Practical utility	...	1. To study the no effect of level of aflatoxin in feed for goats. 2. The results of study on aflatoxin carrying milk in suckling kid will yield information of possible effect of such milk on human babies.
9. Technical Programme	...	Twenty animals, 3-6 months of age will be selected and necessary tests conducted to affirm their health status. Low levels of aflatoxin will be administered daily and the animals blood coagulation time, icterus index, serum protein, age at first conception, maintenance of pregnancy, condition of offspring when born, lactation performance, toxin content of milk and growth rate of kids will be studied. Breeding age, semen, quality etc. will be studied in the male. The progeny also will be observed similarly.
10. Date of start	...	1976
11. Likely date of completion	...	1981
12. Estimated man months	...	60
13. Facilities required	...	Existing facilities will be utilised
14. Financing organisation	...	Kerala Agrl. University.
15. Approximate cost	...	Rs. 3000/-



1. Institute Code No.	...	VA. -2-1-18-1.
2. ICAR Code No.	...	—
3. Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the project	...	Research on Goats.
Title of the problem	...	Studies on experimental Theapeutics of hydrocyanic acid poisoning in goats.
5. Name and designation of principal investigator	...	Dr. N. M. Aleyas, Assistant Professor.
6. Name(s) and designation of Associate(s)	...	
7. Location	...	Department of Therapeutics College of Vety. and Animal Sciences, Mannuthy.
8. a) Objectives	...	A large number of poisoning cases due to indigestion of tapioca and similar plants are common in Ruminants particularly in goats. It is believed that this emergency is due to hydrocyanic acid poisoning. The objective of the Scheme is to study their possible role in the etiology and development of toxicity experimentally as well on the formulation of suitable therapeutic measures.
b) Practical utility	...	Evolution of suitable therapeutic agents readily available to field Veterinarians will help in reducing economic loss to farmers. It shall also make available additional informations for educating the farmers in prevention of this condition.
9. Technical Programme:		(1) Screening of common forage plants for hydrocyanic acid content by spot tests. (2) Feeding trials of selected plants in experimental animals (goats 8 experimental and 4 control.)to induce toxicity. (3) Determination of characteristic clinical manifestations. (4) Determination of minimum quantity of plant material required to induce toxic manifestations. (5) Treatment trials with selected drugs and to suggest the drng of choice in the treatment for this condition.
10. Date of start	...	1976
11. Likely date of completion	...	1978
12. Estimated man months	...	24
13. Facilities required	...	Facilities are already available.
14. Financing organisation	...	Kerala Agrl. University.
15. Approximate cost		Rs. 3000/-

RESEARCH PROJECTS

ON

PIGS

1.	Institute Code No.	...	VA. 3. 1. 2. 1.
2.	ICAR Code No.	...	
3	Name and address of the Research Institute/Centre	...	College of Veterinary & Animal Sciences, Mannuthy
4.	Title of the Project	...	Research on Pigs
	T itle of the problem	...	Studies on the mortality of pigs.
5.	Name and designation of Principal Investigator	...	Dr. Kurian Thomas, Asst. Professor
6.	Name(s) and designation of Associate(s)	...	
7.	Location	...	University Pig Farm, Mannuthy.
8.	a) Objectives	...	To find out whether there is any correlation between season and mortality in pigs.
	(b) Practical utility	...	The study will help to know the causes and effect of season, if any, on pig mortality under Kerala climatic conditions.
9.	Technical programme	...	The available records on the results of postmortem examinations of pigs died in different ages will be studied and classified. Each group will be further divided depending on the period of death viz. pre and postweaning periods. The data will be studied for three seasons (Summer, Rainy and Winter) and satistically analysed.
10.	Date of start	...	1975
11.	Likely date of completion	...	1976
12.	Estimated man months	...	12
13.	Facilities required	...	Facilities are already available.
14.	Financing organisation	...	Kerala Agrl. University
15.	Approximate cost	...	Rs. Nil.

1. Institute Code No. ... VA. 3. 1. 2. 2.

2. ICAR Code No. ... —

3. Name and address of the Research Institute ... College of Veterinary and Animal Sciences, Mannuthy.

4. Title of the Project ... Research on Pigs

Title of the problem ... Preliminary study on the possibilities of utilizing land snails as feed for pigs.

5. Name and designation of Principal Investigator ... Dr. Kurian Thomas, Assistant Professor

6. Name (s) and designation of Associate (s) ... —

7. Location ... Department of Nutrition, College of Veterinary and Animal Sciences, Mannuthy.

8. (a) Objectives: ... To study the possibilities of utilizing land snails which have become a menace in Palghat District, as feed for pigs.

(b) Practical utility

Land snails are a menace in Palghat District during monsoon period. They multiply in large numbers reaching a size of 6–8cm in diameter. They feed on green vegetation. It has been observed that many varieties of gastropods are nutritious feed for animals although a few are toxic. Land snails do not produce any adverse effect in pigs and hence the results of this study will help in finding out the possibility and profitability of including the land snails in the ration of pigs.

9. Technical programme:

A feeding trial in pigs will be undertaken for 6 weeks by dividing white Yorkshire pigs into 3 groups. First group will be on existing farm diet, second group will be on ration containing deshelled and cooked snails replacing 50% of the fish meal and the third group will be on ration containing deshelled and cooked snails replacing fish meal cent per cent. Data on weekly weight gain, feed efficiency and haematology will be recorded.

10. Date of start ... 1976

11. Likely Date of completion ... 1977

12. Estimated man months ... 12

13. Facilities required ... Existing facilities will be utilised

14. Financing organisation ... Kerala Agrl. University

15. Approximate cost ... Rs. 250/–

1.	Institute Code No:	...	VA. 3. 1. 3. 1.
2.	ICAR Code No:	...	
3.	Name and address of the Research Institute/Centre	...	College of Veterinary & Animal Sciences, Mannuthy
4.	Title of the Project	...	Studies on Enterobacterial infections in pigs in Kerala.
5.	Name and designation of Principal Investigator	...	Dr. P. K. Abdulla, Professor of Bacteriology.
6.	Name (s) and designation of Associate (s)	...	
7.	Location	...	College of Vety. and Animal Sciences, Mannuthy.

8. (a) Objectives ... It is proposed to make a detailed study of the enterobacterial infections in pigs in Kerala to

i) detect the frequency of occurrence of various species of pathogenic enteric bacteria in gigs.
ii) assess the pathogenic role of these species separately and in different combinations.
iii) detect carrier state of various species in pigs.
iv) assess their zoonotic importance and
v) to evolve measures to arrest spread of the disease.

(b) Practical utility: ... This investigation will help to assess the pathogenic role of various species of bacteria associated with enteric disorders in pigs.
to evolve suitaole measures for appropriate control of infections.
to gather additional informations on the public health importance of these pathogens.

9. Technical Programme

a. Systematic survey of the incidence of enterobacterial infections in pigs.
b. Screening of pigs for enterobacterial infections in non-clinical conditions.
c. Isolation and identification of various species and types including antigenic studies and piuge typing if and when necessary.
d. Sensitivity studies of organisms isolated from pigs against the common therapeutic agents available.
e. Studies on enterotoxins produced by these organisms.
f. Experimental infection studies on experimental as well as primary hosts.
g. Remedial measures in the light of above findings.

10.	Date of start	...	1976–77
11.	Likely date of completion	...	1979-80
12.	Estimated man months	...	36
13.	Facilities required	...	Facilities are already available.
14.	Financing organisation	...	Kerala Agrl. University
15.	Approximate cost	...	Rs. 39,000/–

1.	Instiute Code No.	...	VA-3.1.9.1.
2.	ICAR Code No.	...	—
3.	Name and address of the Research Institute/Centre	...	College of Vety. & Animal Sciences, Mannuthy.
4.	Title of the Project	...	Research on Pigs
	Title of the Problem	...	Studies on the optimum age for slaughter of pigs.
5.	Name and designation of principal Investigator	...	Dr. P. Ramachandran, Farm Superintendent.
6.	Name (s) and designation of Associate (s)	...	
7.	Location	...	Pig Breeding Farm, Mannuthy
8.	(a) Objectives	...	To determine the most economical age for slaughter of pigs
	(b) Practical utility	...	Study will help to economise the cost of production of fatteners.
9.	Technical Programme:	...	Pigs will be slaughtered at 55, 65 and 75 kg. body weight and the economics of production will be worked out.
10.	Date of Start	...	1976
11.	Likely date of completion	...	1977
12.	Estimated man months	...	12
13.	Facilities required	...	Existing facilities will be utilised.
14.	Financing organisation	...	Kerala Agricultural Uuiversity
15.	Approximate cost	...	Rs. 2000/-

1. Institute Code No.	...	VA. 3. 1. 9. 2.
2. ICAR Code No.	...	
3. Name and address of the Research Institute	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the project	...	Research on Pigs.
Title of the problem	...	Evaluation of the nutrition value of tea watse in swine rations.
5. Name and designation of Principal Investigator	...	N. Kunjukutty, Asst. Professor
6. Name (s) and designation of Associate (s)	...	(i) P. Ramachandran, Farm Superintendent (ii) C. T. Thomas, Asst. Professor. (iii) P A. Davasia, Asst. Professor
7. Location	...	Department of Nutrition College of Veterinary & Animal Sciences, Mannuthy.
8. (a) Objectives	...	To evolve economic ration for. swine.
(b) Practical utility	...	If possible tea waste can be profitably utilised.
9. Technical programme	...	1. Studies on the Chemical composition of tea waste 2. Palatability trials 3. Studies on growth and carcass characteristics
10. Date of start	...	1975
11. Likely date of completion	...	1976
12. Estimated man months	...	12
13. Facilities required	...	Existing facilities will be utilised
14. Financing organisation	...	Kerala Agrl. University.
15. Approximate cost	...	Nil.

1.	Institute Code No.	...	VA. 3. 1. 10. 1.
2.	ICAR Code No.	...	—
3.	Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4.	Title of the project	...	Research on Pigs.
	Title of the problem	...	Effect of early weaning on the reproductive performance of sows.
5.	Name and designation of Principal Investigator	...	Dr. E. Madhavan, Junior Instructor.
6.	Name (s) and designation of Associate (s)	...	
7.	Location	...	Dept. of Obstetrics, College of Veterinary and Animal Sciences, Mannuthy.
8.	(a) Objectives:	...	To study how early a sow can be bred after farrowing.
	(b) Practical utility:	...	Results will help in increasing the annual production of pigs.
9.	Technical Programme:	...	Pigs after farrowing will be weaned at 15th, 30th, 45th and 60th day and their reproductive performance studied.
10.	Date of start:	...	1975
11.	Likely date of completion:	...	1976
12.	Estimated man months:	...	12
13.	Facilities required	...	Existing facilities will be utilized
14.	Financing organisation	...	Kerala Agrl. University:
15.	Approximate cost	...	Rs. 2000/-

1.	Institute Code No	...	VA. 3-1-10-2
2.	ICAR Code No.	...	
3.	Name and address of the Research Institute/ Centre	...	College of Veterinary & Animal Sciences, Mannuthy.
4.	Title of the Project	...	Research on Pigs
	Title of the problem	...	Biometrics of spermatozoa of boars
5.	Name and designation of Principal Investigator	...	Dr. K. Ramadas, Sunerintendent Veterinary Hospital, Trichur.
6.	Name (s) and designation of Associate (s)	...	Dr. C. K. S. V. Raja, Professor of Obstetrics and Gynaecology
7.	Location	...	Department of Obstetrics and Gynaecology, College of Veterinary and Animal Sciences, Mannuthy.
8.	(a) Objectives:	...	To study the biometrics of spermatozoa of boars during different seasons.
	(b) Practical utility	...	The study may help in assessing fertility status of sperms.
9.	Technical programme	...	1. Collection of semen from boars during different season of the year. 2. Evaluation of the physical characteristics of semen. 3. Biometrics of spermatozoa during different seasons of the year. 4. Correlating the biometrics of sperm with physical characteristics of semen.
10.	Date of start	...	1975
11.	Likely Date of completion	...	1976
12.	Estimated man months	...	12
13.	Facilities required	...	Existing facilities will be utilised
14.	Financing organisation	...	Kerala Agrl. Uuiversity
15.	Approximate cost	...	Nil

1. Institute Code No. — VA. 3-1-10-3
2. CIAR Code No. ...
3. Name and address of the Research Institute/Centre ... College of Veterinary & Animal Sciences Mannuthy.
4. Title of the Project ... Research on Pigs

   Title of the Problem ... Synchronisation of oestrus and artifical insemination in breeding swine.

5. Name and designation of the Principal Investigator ... C. P. Neelakanta Iyer, Associate Professor, (Obstetrics & Gynaecology)
6. Name (s) and designation of Associate (s)
7. Location ... Department of Obstetrics & Gynaecology, College of Vety. & Animal Sciences, Mannuthy.
8. a) Objectives ... To study the synchronisation oestrus and artificial insemination in breeding swine.

   b) Practical/Scientific utility:

Synchronisation of oestrus has practical advantage for the swine breeder. It would be possible to breed many female in a farm on the same day which will help the breeder for concentrating his attention better on breeding programme. Another advantage would be that breeding programmes could be so adjusted as to get the crop according to the demand.

A. I. in swine will insure hygienic breeding and also provide a means of using outstanding sires to a greater number of females. Further, investment on boar management could be substantially reduced. From a commercial point of view the supply of market hogs will tend to become more uniform in type.

9. Technical programme

1. 60 sows/gilts and 8 boars will be required for the study.
2. The sows/gilts will be divided into 3 equal groups of 20 each. viz. control, experimental I and II.
3. All the animals will be kept under identical farm conditions.
4. The experimental group I sows will be fed with progesterone preparations. The onset of heat and intensity of heat will be watched after discontinuing treatment. 15 animals in this group will be bred with known fertile boar at the first synchronised heat. 30 days after mating few sows will be slaughtered to study the ovulation and conception rate by counting the actual number of corpora lutea and the growing embryos. The remaining animals will be maintained till farrowing to determine the litter size, birth, weight etc. The five sows which were not bred at the synchronized heat will be watched for 3 or 4 Cycles to study the effect of the treatment on subsequent heat cycles. At the 4th or 5th cycle they will also be bred and further studies as above will be carried out.

The animals in group II will be given prostaglandin (PGF_2) for synchronization and its effect studies as in group I.

Artificial intemination:

1. Investigation will carried out to evolve a suitable diluent.
2. Fertility trials by A.I.
3. A. I. of sows which are induced to heat and comparison of A. I. and natural mating

10. Date of start ... 1976-77
11. Likely date of completion ... 1979-80
12. Estimated man months ... 36
13. Facilities required ... Existing facilities will be utilised
14. Financing organisation ... Kerala Agrl. University
15. Approximate cost ... Nil.

RESEARCH PROJECTS

ON

POULTRY

1. Institute Code No.	...	VA. 4-1-1-1
2. I. C. A. R. Code No.	...	—
3. Name aud address of the Research Institute/Centre.	...	College of Veterinary & Animal Sciences, Mannuthy.
4. Title of the Project	...	Research on Poultry
Titel of the Problem	...	Histochemical studies on the skeletal muscle of the duck.
5. Name and designation of the Principal Investigator.	...	Dr. K. Radhakrishnan, Professor of Anatomy
6. Name (s) & designation of Associate (s)	...	1. Dr. P. A. Ommer, Assoc. Professor 2. Dr. Lucy Pailey, Assoc. Professor
7. Location.	...	Department of Anatomy, College of Vety. and Animal Sciences, Mannuthy.
8. a) Objectives:	...	i. To differentiate skeletal muscle fibres in the developing embryos. ii. To differentiate the muscle fibres of ducklings from day old to 180 days of age iii. To determine the exact age at which the differentiation is completed and iv. To classify different muscle groups either as red or white on the basis of histochemical staining reaction.
b) Practical utility:	...	The konwledge of the fibre type composition of muscle is a pre-requisite for the interpretation of biochemical and physiological research on muscle which has high siginficance in meat science. The study will also throw light on the influence of sex, breed, nutrition, environment and stress on muscle fibre type and research on characterstics of muscle post mortom and musle palatability characteristics.
9. Technical Programme:	...	i) Muscle samples of embryos from the third day of incubation will be studied for various enzymes as S. D H., atpase alkaline phosphatase, phosphorylase and glycolytic enzymes. Test for myoglobine will also be tried for fibre demonstration ii) Muscle samples from day old ducklings upto 180 days of age will be collected and studied for fibre types and classification besides histological studies
10. Date of startiug	...	1976-77
11. Date of completion(anticipaaed)	...	1978-79
12. Estimated man months	...	24
13. Facilities required	...	Equipments and apporatus are required
14. Financing	...	Kerala Agrl. University
15. Approximate cost.	...	Rs. 10,350/-

1	Institute Code No.	...	VA. 4. 4. 2. .1
2	ICAR Code No		—
3	Name and address of the Research Institute/Centre	...	College of Agriculture, Vellayani.
4	Title of the Project	...	Research on poultry
	Title of the problem	...	Tapioca utilisation in Poultry Feeds.
5	Name and designation of Principal Investigator	...	J. B. Rose, Associate Professor.
6	Name(s) and designation of Associate (s)...		
7	Location	...	Animal Husbandry Division, Agricultural College, Vellayani.

8 (a) Objectives

To formulate rations for Poultry both Chick and adult rations, using locally available dry tapioca as the principal ingredient in place of grains.

(b) Practical utility ... To reduce the cost of Poultry rations.

9 Technical programme: ...

a) The main items of observations–
   1. Weekly growth rates as determined by body weight till onset of lay.
   2. Total egg production.
   3. Average egg weight.
   4. Mortality.
5. Final body weight (after 1 year production)

10	Date of start	...	1976–77
11	Likely date of completion	...	1979–80
12	Estimated man months	...	36
13	Facilities required	...	Facilities are already available, Equipments are additionally required
14	Financing Organization	...	Kerala Agrl. University.
15	Approximate cost	...	Rs. 2,50,000/-

1. Institute code No.	...	VA-4-1-9-1
2. ICAR Code No	...	—
3. Name and address of the Research Institute / Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the Project	...	All India Co-ordinated Research Project for investigation on Agricultural by-products and industrial waste materials for evolving economic rations for livestock.
Title of the Problem	...	Growth studies in chicks with shrimp shell powder
5. Name and designation of Principal Investigator	...	Dr. Maggie D. Menachery, Assistant Professor
6. Name(s) and designation of Associate (s)	...	Dr. C. R. Anantha Subramanium, Assoc. Professor
7. Location	...	Nutritional Laboratory, Mannuthy.
8. a) Objectives	...	To determine the nutritive value of shrimp shell powder for growth in chicks,
b) Practical utility	...	To evolve economic ration for poulty.
9. Technical programme	...	Effect of replacing half and the entire quantities of dried fish with shrimp shell powder in the ration broiler chicks will be studied.
10. Date of start	...	1976
11. Likely date of completion	...	1977
12. Estimated man months	...	12
13. Facilities required	...	Existing facilities will be utilised.
14. Financing organisation	...	Indian Council of Agrl. Research
15. Approximate cost	...	

1. Institute Code No. ... VA-4.1.11.1.

2. I. C. A. R. Code No. ...

3. Name and address of Research Institute/Centre ... College of Veterinary and Animal Sciences, Kerala Agricultural University

4. Title of the Project ... Research on Poultry

   Title of the problem ... Pathogenicity and treatment of helminth parasites of ducks.

5. Name and designation of the Principal Investigator ... K. Chandrasekharan, Asst. Professor

6. Name (s) and designation of Associate(s)...

7. Location ... College of Veterinary and Animal Sciences, Mannuthy.

8. (a) Objectives ...
   1. To study the pathological changes produced by the helminths in natural and artificial infection of ducks.
   2. To evaluate the anthelmintic efficacy of selected drugs against different stages of common helminths of ducks.

   b) Practical utility

   A veriety of helminths are found to be responsible for heavy mortality and lowered egg production in ducks thereby affecting the economy of duck industry adversely. Helminthic infections and diseases of domestic ducks have not been studied on large scale in India. Parasitic infections are a major cause of lowered production in all species of ducks. It is therefore necessary to assess the pathogenic role of various species of helminths in ducks and to evolve suitable measures for appropriate control of the infections at different stages.

9. Technical programme;

   a) The main items of observations to be recorded:–
      i) Collection of helminths from naturally infected ducks, procured from different parts of Kerala.
      ii) Experimental infection of parasite free ducklings with infective stage of parasites either collected from intermediate hosts or from cultures.
      iii) Histopathological and haemathological studies in natural and experimental infections in the ducks.
      vi) Evaluation of anthelmintic action of different drugs against different developmental stages of helminths in ducks.

10. Date of start ... 1976–77
11. Likely date of completion ... 1979–80
12. Estimated man months ... 36
13. Facilities required ... Facilities are already available
14. Financing organisation ... Kerala Agrl. University
15. Approximate cost ... Rs. 44,800/–

1. Institue Code No. ... VA. 4. 1. 12. 1.
2. ICAR Code No. ... —
3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the Project ... Research on Poultry.

   Title of the problem ... Embroyo mortality in hatcheries.
5. Name and designation of Principal Investigator ... K. I. Maryamma, Asst. Professor.
6. Names(s) and designation of Associate (s)... Dr. M. Krishnan Nair., Professor of Pathology.
7. Location ... Dept. of Pathology, College of Vety. and Animal Sciences, Mannuthy.

8. (a) Objectives
   1. To assess the level of embryo mortality in organised poultry farms in different breeds and different strains.
   2. To identify the causes (managemental, environmental, infectious, genetic) of embryo-mortality.
   3. To study the various aspects of embryopathies with the ultimate object of correlating them with etiological factors.
   4. To suggest suitable remedial measures and practices to reduce embryo mortality in chicken

   (b) Practical utility

   The results on this study will help to identify the etiological agents which cause embryo-mortality. This will aid to suggest suitable practices to run hatchery operations profitably

9. Technical programme:
   1. Collection of data and observation on the pattern of embryo mortality in different hatcheries in different breeds and strains of chicken.
   2. Effect of different managemental and environmental factors on the incidence of embryo-mortality.
   3. Detailed examination of all dead embryo for abnormalities-gross and microscopical.
   4. Identification of the semilethal and lethal genes, if any, in the stock causing deficiencies in hens.
   5. Determination of the nature of embryopathics associated with nutritional deficiencies in hens.
   6. Microbiological examination of dead embryos to isolate pathogens, if any, involved
   7. Experimental production of embryopathics to study the pathogenesis.

10. Date of start ... 1976–77
11. Likely date of completion ... 1978–79
12. Estimated man months ... 24
13. Facilities ruquired ... Existing facilities will be utilised.
14. Financing orgainsation ... Kerala Agrl. University.
15. Approximate cost ... Rs. 2000/–

1. Institute Code No.	...	VA. 4. 1. 12. 2.
2. ICAR Code No.	...	
3. Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the Project	...	Research on Poultry
Title of the problem.	...	Studies on Bangkok haemorragic disease of chicken.
5. Name and designation of Principal Investigator	...	Dr. M. Krishnan Nair, Professor of Pathology
6. Name and designation of Associate	...	i) Dr. A. Rajan, Assoc. Professor (Pathology) ii) K. I. Maryamma, Asst. Professor
7. Location	...	Department of Pathology, College of Veterinary and Animal Sciences, Mannuthy.
8. a) Objectives:	...	To study the etiology, pathogenesis and pathology of the disease syndrome and evolve suitable therapeutic and preventive measures to control the disease.
b) Practical utility:	...	Study will help in finding out suitable preventive and therapeutic measures against the disease.
9. Technical Programme:		Materials for study will be collected from ailing birds and different routes of passages will be attempted to establish experimental infection. Role of vector, pathogenesis and pathology will be studied. Different drugs will also be tried to cure the infection.
10. Date of start	...	1973
11. Likely date of completion	...	1977
12. Estimated man months	...	48
13. Facilities required	...	Existing facilities will be utilised
14. Financing organisation	...	Kerala Agrl. University
15. Approximate cost	...	Nil

1. Institute Code No. ... VA. -4-1-14-1.

2. ICAR Code No. ... —

3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy

4. Title of the project ... Research on Poultry

   Title of the problem ... Studies on the metabolic activity of reproductive system of chicken

5. Name and designation of principal investigator ... M. G. Ramakrishna Pillai, Ph.D. student

6. Name(s) and designation of Associate(s) ...

7. Location ... College of Vety. and Animal Sciences, Mannuthy.

8. a) Objectives

1. To assess the activity of some of the more important enzymes in reproductive system of chicken during their development and laying periods so as to get an insight and better understanding of the physiology of reproduction in them.
2. To evaluate the influence of enzyme activity of the reproductive system and its influence on the plasma enzyme levels in the birds.

b) Practical utility

The investigation, besides, giving an insight into the physiology of reproduction, will throw light on biochemical differences between low and high producing birds. The information gained from this study may eventually pave the way for developing practical measures, such as simple bio-chemical tests, for predicting the reproductive capacity of a bird.

9. Technical Programme:

Quantitative estimation of some of the common enzymes associated with protein, carbohydrate and fat metabolism will be carried out in the plasma and various regions of the female reproductive system of chicken of various age groups, belonging to both White Leghorn and White Rock breeds. The effect of extraneous oestrogen administration in immature birds of both the breeds will also be investigated.

10. Date of start ... 1973-74
11. Likely date of completion ... 1977-78
12. Estimated man months ... 60
13. Facilities required ... Existing facilities will be utilised
14. Financing organisation ... Indian Council of Agrl.Research
15. Approximate cost Rs. 5000/-

1. Institute Code No. ... VA-4. 1. 14. 2.

2. ICAR Code No. ...

3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy.

4. Title of the Project ... Research on Poultry.

Title of the problem ... Effect of choline Deficiency on the chemical composition of the skeletal muscles of chicks.

5. Name and designation of the Principal Investigator ... P. T. Philomina, M. V. Sc. student.

6. Name (s) and designation of Associate (s) ...

7. Location ... College of Veterinary and Animal Sciences, Mannuthy.

8. a) Objecives

To study alterations in the chemical composition of the gastrocnemius muscle of chicks subjected to perosis by dietary deficiency of choline, so as to evaluate metabolic derangements in the skeletal muscle in choline deficiency.

b) Practical utility

The results of the study it is expected, besides contributing valuable information of fundamental importance on the role of choline in the metabolism of the skeletal muscles of animals in general and of poultry in particular will also have practical application in the field of poultry nutrition.

9. Technical programme

A feeding experiment incorporating three levels of choline, namely, 1500 mg. (Control group) and 100 mg., 75 mg.(experimental group) per kg. of feed, in an other-wise normal ration but from which choline has been removed by extraction will be conducted on day-old White Leghorn chicks, until the birds in the experimental group exibit symptoms of perosis. The birds will be then slaughtered and the gastrochemius muscle excised from them for detailed analysis.

10. Date of start ... 1974
11. Likely date of completion ... 1976
12. Estimated man months ... 24
13. Facilities required ... Facilities are already available.
14. Financing organisation ... Indian council of Agrl. Research.
15. Approximate Cost ... Rs. 2005/-

1. Institute Code No. ... VA. 4. 1. 15. 1.

2. I. C. A. R. Code No. ... —

3. Name and address of Research Institute/Centre ... College of Vety. & Animal Sciences, Mannuthy.

4. Title of the Project ... Research on Poultry

   Title of the problem ... Package of practices for Poultry

5. Name and designation of Principal Investigator ... Dr. A. K. Kochugovindan Unni, Professor of Poultry Science

6. Name (s) and designation of Associate (s)... Dr. C. K. Venugopalan, Asst. Professor

7. Location ... Department of Poultry Science, College of Veterinary & Animal Sciences, Mannuthy.

8. a) Objectives ... To study the different aspects and evolve package of practices that can be used by the poultry farmers of the State.

   b) Practical utility ... To make poultry farming more economical.

9. Technical Programme

A) Evaluation of litter materials.

Laying birds in the deep litter house in the poultry farm will be placed on different litter materials like saw dust, wood shavings, chopped straw and rice hull. Their performance will be studied. In addition, the quality of the litter in respect of moisture absorbing capacity, capacity to dry off will also be studied.

B) Evaluation of flock density:

Laying birds will be provided with different floor space and the data in respect of egg production, mortality and growth will be collected.

C) Comparison of deep litter and cage.

Laying pullets will be divided into two groups, one group will be placed on deep litter and the other in laying cages. The data regarding egg production, egg size, percentage mortality and egg qualities will be studied.

10. Date of start ... 1976-77

11. Likely date of completion ... 1977-78

12. Estimated man months. ... 12

13. Facilities required ... A shed of 50 ft. by 30 Ft. for locating the laying cages is reqired.

14. Financing organisation ... Kerala Agrl. University

15. Approximate cost ... Rs. 62,000/-

1.	Instiute Code No.	...	VA-4.1.15.2.
2.	ICAR Code No.	...	—
3.	Name and address of the Research Institute/Centre	...	College of Vety. & Animal Sciences, Mannuthy.
4.	Title of the Project	...	Research on Poultry
	Title of the Problem	...	Supplementation of Arsenicals, Nitrofurans and Antibiotics in broiler feed.
5.	Name and designation of principal Investigator	...	Dr. A. Ramakrishnan, Professor Poultry Science
6.	Name (s) and designation of Associate (s)	...	R. Sabarinathan Nair, Post-graduate Student
7.	Location	...	Department of Poultry Science, College of Veterinary and Animal Sciences, Mannuthy.
8.	(a) Objectives	...	To evaluate usefulness of adding feed additives in broiler ration.
	(b) Practical utility	...	The study will help to economise broiler production.
9.	Technical Programme:	...	Two hundred, one-day-old commercial broiler chicks will be divided into 4 groups and subjected to the following treatments.
	Group I	...	Basal diet + antibiotic
	Group II	...	,, + Arsenical
	Group III	...	,, + Nitrofuran
	Group IV	...	,, with no additives.
			The performance of birds under each treatment will be evaluated in respect of carcass yield, feed efficiency and residues of additives in the meat.
10.	Date of Start	...	1976
11.	Likely date of completion	...	1977
12.	Estimated man months	...	12
13.	Facilities required	...	Existing facilities will be utilised.
14.	Financing organisation	...	Kerala Agricultural Uuiversity
15.	Approximate cost	...	Rs. 2250/-

1. Institute Code No.	...	VA. 4. 1. 15. 3.
2. ICAR Code No.	...	—
3. Name and address of the Research Institute	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the Project	...	Research on Poultry
Title of the problem	...	Effect of water restriction on the manurial moisture content of caged layers.
5. Name and designation of Principal Investigator	...	Dr. A. Ramakrishnan, Professor of Poultry Science
6. Name (s) and designation of Associate (s)	...	A. Jalaluddin, Postgraduate student
7. Location	...	Department of Poultry Sciences, College of Veterinary and Animal Sciences, Mannuthy.
8. (a) Objectives:	...	To study whether by restricting the water intake the problem of watery droppings encountered in caged layers could be mitigated.
(b) Practical utility	...	Quality of poultry manure can be improved.
9. Technical programme:	...	Thirty six white Leghorn pullets of about 18 weeks old will be housed in individual cages and will be subjected to the following three treatments.
Group I	...	Water restriction for total period of 4 hours.
Group II	...	Water restriction for intermittent period of 4 hours
Group III	...	Water given *Adlib*
		The effect of these treatments on moisture in the manure egg production, feed efficiency and egg quality will be studied.
10. Date of start	...	1976
11. Likely Date of completion	...	1977
12. Estimated man months	...	12
13. Facilities required	...	Facilities are already available
14. Financing organisation	...	Kerala Agrl. University
15. Approximate cost	...	Rs. 3500/-

1.	Institute Code No:	...	VA. 4. 1. 15. 4.
2.	ICAR Code No:	...	
3.	Name and address of the Research Institute/Centre	...	College of Veterinary & Animal Sciences, Mannuthy
4.	Title of the Project	...	Research on Poultry
	Title of the problem	...	Evolution of cross-bred broiler for market.
5.	Name and designation of Principal Investigator	...	Dr. A. K. Kochugovindan Unni, Prof of Poultry Science.
6.	Name (s) and designation of Associate (s)	...	Dr. Renchi P. George, Junior Instructor.
7.	Location	...	Department of Poultry Science, College of Vety. and Animal Sciences, Mannuthy.
8.	(a) Objectives	...	To evolve a good cross-bred broiler for market.
	(b) Practical utility:	...	Results will help in economising broiler production.
9.	Technical Programme	...	Comparison of the performance of White Plymouth Rock, White Cornish and their reciprocal crosses and then to conduct selection studies.
10.	Date of start	...	1975
11.	Likely date of completion	...	1977
12.	Estimated man months	...	24
13.	Facilities required	...	Existing facilities will be utilised.
14.	Financing organisation	...	Kerala Agrl. University
15.	Approximate cost	...	Rs. 6,000/-

1. Institute Code No	...	VA. 4-1-15-5
2. ICAR Code No.	...	
3. Name and address of the Research Institute/ Centre	...	College of Veterinary & Animal Sciences, Mannuthy.
4. Title of the Project	...	Research on Poultry
Title of the problem	...	Effect of restricted Feeding on replacement pullets
5. Name and designation of Principal Investigator	...	Dr. A. Ramakrishnan, Professor of Pathology
6. Name (s) and designation of Associate (s)	...	K. R., Sukumaran Nair, Post-graduate student
7. Location	...	Department of Poultry Science, College of Veterinary and Animal Sciences, Mannuthy.
8. (a) Objectives:	...	To evaluate the effect of restricted feeding during growing period on subsequent egg production.
(b) Practical utility	...	Results obtained in this study will help to reduce the feeding cost during growing periods which will ultimately help to reduce the cost of egg production.
9. Technical programme	...	Thirty six White Leghorn pullets aged about 8 weeks will be housed in individual cages in H groups and will be subjected to the following treatments: Group I Adlib feeding Group II 80% of full feed. Group III 70% of full feed. Group IV skip-a-day in a week. The performance of the birds in the different groups in respect of body weight gain, feed efficiency, age at sexual maturity, egg production and egg quality will be studied. Based on these results, the economics of restricting the feed during growing period will be worked out.
10. Date of start	...	1976
11. Likely Date of completion	...	1976
12. Estimated man months	...	10
13. Facilities required	...	The study will be conducted utilising the existing facilities.
14. Financing organisation	...	Kerala Agrl. Uuiversity
15. Approximate cost	...	Rs. 4,100/-

1. Institute Code No.	...	VA. 4-1-15-6
2. I. C. A. R. Code No.	...	—
3. Name aud address of the Research Institute/Centre.	...	College of Veterinary & Animal Sciences, Mannuthy.
4. Title of the Project	...	Research on Poultry
Titel of the Problem	...	Intrapopulation selection studies using an index.
5. Name and designation of the Principal Investigator.	...	Dr. A. K. Kochugovindan Unni, Professor of Poultry Science.
6. Name (s) & designation of Associate (s)	...	Dr. P. A. Peethambaran, Junior Instructor.
7. Location.	...	University Poultry Farm, Mannuthy.
8. a) Objectives:	...	To improve the genetic potential of the breeding stock of the University Poultry Farm.
b) Practical utility:	...	The study will improve the genetic potential of breeding stock and thereby its production.
9. Technical Programme:	...	The selection index is based on egg number, livability and egg size.
10. Date of startiug	...	1975
11. Date of completion(anticipaaed)	...	Continuing study
12. Estimated man months	...	—
13. Facilities required	...	The existing breeding house has to be equipped with trap-nests.
14. Financing	...	Kerala Agrl. University
15. Approximate cost.	...	Rs. 10,000/-

RESEARCH PROJECTS

ON

FISHERIES

1. Institute Code No.	...	VA. 5. 1. 7. 1.
2. ICAR Code No.	...	
3. Name and address of the Research Institute	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the project	...	All India Co-ordinated Research Project on Brackishwater Fish Farming at Vyttila.
Title of the problem	...	Brackishwater Fish Farming Research. Development of scientific brackishwater fish culture under ecological conditions existing in Kerala and evolving management practices.
5. Name and designation of Principal Investigator	...	Junior Fishery Scientist.
6. Name (s) and designation of Associate (s)	...	
7. Location	...	Vyttila, Erankulam District.
8. (a) Objectives	...	1. Development of scientific brackish water fish culture practices on an All India basis in the sub centre allotted to the University by ICAR. 2. Development of suitable brackish water fish techniques under different ecological conditions and formulation of suitable management practices.
(b) Practical utility	...	More fish can be produced by adopting scientific techniques
9. Technical programme	...	1. Suruey of brackish water fish seed recourses. 2. Nursery management in brackish water ponds. a) Estimation of optimum stocking density with and without supplementary food in mixed farming. b) Estimation of optimum stocking density with and without supplementary food in mono-culture. 3. Development of management practices to maximise yield. 4. Culture of carnivorous fishes like *Lates calcarifer:*
10. Date of start	...	1975-76
11. Likely date of completion	...	1978-79
12. Estimated man months	...	36
13. Facilities required	...	1. A minum of 8 ponds of which 3 may be 0.5 ha each and the others about 0.2 ha. each. 2. Facilities for freshwater supply. 3. Laboratory and office accommodation for the staff.
14. Financing organisation	...	Indian Council of Agrl. Research
15. Approximate cost	...	Fish farm construction Rs. 2,00,000/- Office & Laboratory Rs. 50,000/- Working expences of the Scheme Rs. 2,19,500/-

RESEARCH PROJECTS

ON

MISCELLANEOUS ITEMS

1. Institute Code No. ... VA. 6-1-8-1

2. ICAR Code No. ...

3. Name and address of the Research Station ... College of Veterinary & Animal Sciences, Mannuthy.

4. Titile of the project ... Research on miscellaneous items—dogs

Title of the problem ... Clinical Trials with Cashew shell oil in the treatment of ancylostomiasis in Dogs.

5. Name and designation of principal Investigator ... P. T. Georgekutty, Associate Professor

6. Names and designation of Associate (s) ...

7. Location ... Dept. of Medicine College of Vety. & Animal Sciences Mannnthy.

8. a) Objective

A perusal of the case records of the Veterinary Hospital, Trichur revealed that 13 ty 27% of the dogs presented for treatment were exclusively for ancylostomiasis. Hence it is proposed to conduct clinical trials to determine whether cashew shell oil would be effective in the treatment of ancylostomiasis in dogs.

(b) Practical utility

If proved to be effective, this can be a cheaper and simple treatment of ancylostomiasis in dogs. Controlled exptrimental studies can be taken up to investigate various other aspects later on, the basis of the results obtained.

9. Technical programme

It is proposed to carry out ciinical trials in at least fifty cases of acute ancylostomiasis in dogs that would be presented in the Veterinary Hospitals at Trichur and Mannuthy. After ascertaining the infection by faecal sample examination, if the animal is having heavy infection, the egg per gramme is recorded on the previous day of treatment. Cashew shell oil is administered orally at a dose of 1 gm/5kg. body weight in gelatin capules. The E. P. G. is recorded again 48 hours after the treatment. The treatment efficacy is judged on the basis of this. The treated animal is watched closely for one week to ascertain whether there is any untoward signs.

10. Dateof start ... 1976-77

11. Likely date of completion ... 1978-79

12. Estimated man months ... 12

13. Facilities required ... Already available

14. Financing organisation ... Kerala Agrl. University

15. Approximate cost ... Rs. 9000/-

1. Institute Code No.	...	VA - 6. 1. 9. 1.
2. ICAR Code No.	...	—
3. Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the project	...	Research on miscellaneous items-Nutrition.
Title of the problem	...	Evaluation of the nutritive value of rain tree fruits.
5. Name and designation of Principal Investigator	...	C. T. Thomas, Asst. Professor
6. Name (s) and designation of Associate (s)	...	P. A. Devasia, Asst. Professor N. Kunjikutty, Asst. Professor
7. Location	...	Department of Nutrition, College of Veterinary and Animal Sciences, Mannuthy.
8. a) Objectives:	...	To evolve economic ration
b) Practical utility	...	If found suitable, rain tree fruits can be incorporated in the concentrate mixture.
9. Technical programme:		1. Studies on chemical composition. 2. Palatability trials. 3. Determination of digestible nutrients 4. Growth studies on kids.
10. Date of start	...	1975
11. Likely date of completion	...	1978
12. Estimated man months	...	36
13 Facilities required	...	Existing facilities will be utilised
14. Financing organisation	...	Kerala Agrl. University
15. Approximate cost	...	

1. Institute Code No. ... VA. 6-1-9-2.

2. ICAR Code No. ...

3. Name and address of Research Institute / Centre ... College of Veterinary & Animal Sciences, Mannuthy

4. Title of the project ... Research on miscellaneous items—Nutrition.

   Title of the problem ... Studies on the Nutritional requirements of the Indian Elephant.

5. Name and designation of Principal Investigator ... Dr. C. R. Ananthasubramaniam, Associate Professor.

6. Name (s) and designation of Associate (s) ...

7. Location ... Department of Nutrition
   College of Vety. and Animal Sciences, Mannuthy.

8. a) Objectives:

   To determine the nutritional requirements of the Indian elephant and to establish feeding standards for general adoption.

   b) Practical utility

   Blessed with an extensive tropical forest covering over 26% of total land, Kerala possesses a good share of the elephant population of the Indian Union, which is estimated to be over 8000. It is estimated that well over 1000 domesticated elephants are available in Kerala maintained by the State Forest Deparment, temple trusts and also by private individuals. It is seen that feeding of elephants amount to well over two third of the over all expenditure incurred in the maintanance of these animals. At present very meagre information is available regarding the feeding of elephants on Scientific basis. Expensive cereals, and other high energy yielding food stuffs now constitute the concentrate ration of these animals. The results of the investigation proposed will help to formulate feeding standards for the Indian elephant, besides furnishing basic data in regard to elephant nutrition to the undergraduate and postgraduate students in this country as well as elsewhere in the world. In brief, the findings will go a long way towards the maintenance of elephants for specific productive processes on a sound economic and scientific basis.

9. Technical Programme

   1) Initially, data on the feeding habits, nature of ration, palatability and nature of ration preferred and fill and rate of passage of feed will be collected.

   2) As a first step in working out the nutrient requirements, digestion and metabolism trial will be carried out with the conventional feeds in continuation of the work already carried out and now under investigation. Requirements will be calculated in terms of protein and energy for specific physiological function of the animal.

10. Date of start ... 1976–77
11. Likely date of completion ... 1979–80
12. Estimated man months ... 36
13. Facilities required ... Existing facilities will be utilised
14. Financing organisation ... Kerala Agrl. University.
15. Approximate cost ... Rs. 45,000/-

1. Institute Code No.	..	VA. 6. 1. 9 3.
2. ICAR Code No.	..	
3. Name and address of the Research Institute/Centre	..	College of Veterinary & Animal Sciences, Mannuthy
4. Title of the Project	.	Research on miscellaneous items–Nutrition
T itle of the problem	.	Studies on the comparative nutritive values of various hybrid varieties of straw vis a vis traditiona! varieties.
5. Name and designation of Principal Investigator	.	P. A. Devassia, Asst. Professor
6. Name(s) and designation of Associate(s)	..	1. C. T. Thomas, Asst. Professor 2. N. Kunjikutty, Asst. Professor
7. Location		College of Veterinary and Animal Sciences, Mannuthy.
8. a) Objectives	...	To find the effects of the rice breeding programmes on the nutritive values of paddy straw
(b) Practical utility	...	The beneficial effects of various rice breeding programmes if any on the nutritive values of various hybrid varieties of paddy straw in terms of nutrient yields per hectare under different manurial treatments can be exploited in the feeding of animals.
9. Technical programme	...	Collection of different varieties of straw under different fertiliser treatment and determination of chemical composition conducting digestion trials and comparative evaluation of different straws on the basis of total yield of digestible nutrients per hectare.
10. Date of start	...	1976–77
11. Likely date of completion	...	1979–80
12. Estimated man months	...	36
13. Facilities required	...	Facilities are already available.
14. Financing organisation	...	Kerala Agrl. University
15. Approximate cost	...	Rs. 9000/–

1. Institute Code No. ... VA. 6. 1. 10. 1.
2. ICAR Code No. ... —
3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy
4. Title of the project ... Research on miscellaneous items–obstetrics & Gynaecology
   Title of the problem ... Studies on Efficacy of C. M. E. (Coconut Milk Extender) as Semen Diluent.
5. Name and designation of Principal Investigator ... Dr. E. Mathai, Assistant Professor (Obstetrics & Gynaecology.)
6. Name (s) and designation of Associate (s) ...
7. Location — Department of Obstetrics & Gynaecology, College of Vety. & Animal Sciences, KAU, Mannuthy.

8. (a) Objectives:
   1. To formulate semen extender incorporating readily available chemicals and reagents for preserving semen at room temperature.
   2. To standardise the technique for extending and storing semen at room temperature.
   3. To carry out fertility studies using semen at different periods of storage in C. M. E.

   (b) Practical utility:

   A bottle neck in the complete switch over of cattle and goat breeding programmes in the state to artifical insemination is poor refrigeration facilities for the storage of fluid semen in the conventional extenders. Formulation of a suitable extender for preservation of semen at room temperature will alone solve these problems. Preliminary invesiigations carried out in India and abroad have shown the feasibility of room temperature storage of bull semen. Formulation of a proper diluent using readily available chemicals is necessary in order to enable quick application of the technique and to ensure that there is no breakdown of the programme. The result of the study will throw more light on some of the fundamental aspects of metabolism and fertilizing capacity of spermatozoa.

9. Technical Programme:
   1. Jersey bull, Jersey-Sindhi bull and buffaloe bull maintained in A. I. Centre, Dept. O & G and bucks in the Goat Project will be utilized for semen collection.
   2. CME will be prepared with modified Norman formula tried in the Deparment of Obstetrics and Gynaecology.
   3. Chemical analysis of coconut milk used in dilution will be done.
   4. Semen will be collected from bulls, buffaloes and bucks at similar intervals.
   5. Every 3 ml. 1 ml. and 0.5 ml. of semen ocllected from bull, buffalo and buck respectively will be extended in diluents using split sample technique.
   6. Motility and livesperm percentage of stored semen will be assessed at every 24 hours till 120 hours.
   7. Approximately equal inseminations from the various dilution rates will be carried out.
   8. Diluted semen samples will be shipped in padded envelopes or other simple containers in single insemination doses to distant places within the state. The motility rating and conception rate of shipped semen will be assessed.
   9. Actual fertility studies at different periods of storage in different rates of concentration will be carried out on the basis of conception rates and calf verification.
   10. Assembling and analysing the data.

10. Date of start: ... 1976–77
11. Likely date of completion: ... 1979–80
12. Estimated man months: ... 36
13. Facilities required ... Existing facilities will be availed of
14. Financing organisation ... Kerala Agrl. University:
15. Approximate co t ... Rs. 12000/–

1. Institute Code No. VA. 6-1-11-1
2. CIAR Code No. ...
3. Name and address of the Research Institute/Centre ... College of Veterinary & Animal Sciences Mannuthy.
4. Title of the Project ... Research on miscellaneous items–Parasitology

   Title of the Problem ... An investigation into the parasitic fauna in the pasture of Mannuthy Farm.
5. Name and designation of the Principal Investigator ... V. Sathianesan, Assistant Professor
6. Name (s) and designation of Associate (s)
7. Location ... College of Vety. & Animal Sciences, Mannuthy.
8. a) Objectives ...
   i) To find out how far the pasture forms a source of parasitic infection to livestock.
   ii) To find out the seasonal variations

   b) Practical utility:

   Pasture forms the main source of parasitic intection to livestock. Pasture becomes contaminated by the excreta of animals used for manuring the pasture land and also by the excreta which are passed by the animals when they graze the pasture. How long the infective materials can survive on the pasture and what are the manuring practices and grazing methods to be adopted to minimise the parasitic infection in our livestock under our field conditions are not known. A study on these line will provide informations as to how best the parasitic infections be controlled and this will inturn increase the income from the livestock industry.
9. Technical programme
   i) Cut the samples of grasses from the pasture, bring them to the lab, and isolate nematode larvae by Beermann's technique or any other suitable methods
   ii) Collected grasses from around the ponds and canal sides and examine them for encysted forms of parasites.
   iii) Maintain 2 groups each of calves and kids free of infection and allow one group each of calves and kids to graze on the pasture from which the grass for laboratory examination was collected, keeping the other groups as controls.
   iv) Continue to maintain the calves and kids under experimental conditions
   v) Examine the faecal samples of these calves and kids after allowing sufficient time for the infection to establish Faecal culture can also be resorted to
   vi) Correlate the findings of grass examination and that of the grass feeding
   vii) Repeat the experiments at different seasons
   viii) Arrive at conclusions as to (a) types of infections prevalent
   (b) seasonal variations.
10. Date of start ... 1976-77
11. Likely date of completion ... 1979-80
12. Estimated man months ... 36
13. Facilities required ... Existing facilities will be utilised
14. Financing organisation ... Kerala Agrl. University
15. Approximate cost ... Rs. 11000/-

1. Institute Code No.	...	VA- 6. 1. 11. 2.
2. I. C. A. R. Code No.	...	
3. Name and address of Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy
4. Title of the Project	...	Research on miscellaneous items - Parasitology.
Title of the problem	...	Investigation of Taeniasis of Zoonotic importance.
5. Name and designation of the Principal Investigator	...	K. Madhavan Pillai, Assistant Professor.
6. Name (s) and desigoation of Associate(s)	...	R. Padmanabha Iyer, Associate Professor.
7. Location	...	Department of Medicine Parasitology, College of Veterinary and Animal Sciences, Mannuthy.
8. (a) Objectives	...	To assess the incidence of Taeniasis of Zoonotic importance and to suggest suitable measures for eradication.
b) Practical utility	...	A complete knowledge of the incidence, pathogenicity and diagnostic procedures for Taeaiasis will help to prescribe suitable measures to eradicate the infection in animals and man.
9. Technical programme:	...	1. Collection of data on the incidence of strobilate and metacestide phases of taenid cestodes in cattle, sheep, goats pigs and dogs from slaughter houses in the state. Data on incidence in man will be collected from different hospitals. 2. Studies on pathogenisis of different larval taenids. 3. Comparative studies on the usefulness of different immunological methods of diagnosis. 4. Standardisation of diagnostic antigens. 5. Suggesting measures for eradication of the infection.
10. Date of start	...	1976–77
11. Likely date of completion	...	1979–80
12. Estimated man months	...	36
13. Facilities required	...	Facilities are already available
14. Financing organisation	...	Kerala Agıl. University
15. Approximate cost	...	Rs. 24,000/–

1. Institute Code No. ... VA. -6-1-12-1.
2. ICAR Code No. ... —
3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the project ... Research on miscellaneous items-Pathology
   Title of the problem ... Incidence and nature of diseases of young stock in Kerala
5. Name and designation of principal investigator ... Dr. M. Krishnan Nair, Professor of Pathology.
6. Name(s) and designation of Associate(s) ... Dr. K. I. Maryamma, Asst. Professor
7. Location ... Department of Pathology, College of Vety. and Animal Sciences, Mannuthy.

8. a) Objectives

1. To investigate the incidence of mortality of young stock (Cattle, goats and pigs)
2. Identify the disease problems and establish their prevalence and magnitude.
3. Stude the etiopathology of the diseases encountered and elucidate the factors associated with the differential incidence in different category of young stock.
4. Develop suitable prophylactic measures to prevent the diseases and draw up a package of practices for rearing young stock.

b) Practical utility

The observations made in the Department of pathology during the last ten years have shown that economic loss due to mortality of young stock (on an average 300 young stock per year) in Government farms is very high. The proposed investigation will yield data on the incidence and nature of diseases among young stock and will help to identify the causative factors and to formulate methods of prevention thus helping to establish an economically viable livestock farming.

9. Technical Programme:

1. Collect authentic data regarding the incidence of moratality of young stock from Government Farms University farm and organised private farms for the last ten years.
2. Analysis of the mortality with referenceto breed, age, sex, season, and management practices like breeding, weaning, feeding etc.
3. Clinico-pathological examination of ailing animals and collection of materials (Blood, urine, faeces, scrapings etc)collection of pathological and microbiological examinations.
4. Assess the nutritional status of the animals by estimating the serum proteins, haematological indices and mineral constituents.
5. Detailed gross and histopathological examination of the dead animals. Isolate the etiological agents.
6. Characterisation of the isolates (bactarial, viral and Parasitic) aud study their drug sensitivity.
7. Evaluate the immunological competence of the isolates and develop suitable vaccination programmes.
8. Experimental reproduction of the disease in experimental hosts and trial of different curative measures.
9. Study the susceptibility of different breeds of calves and goats to experimental infection with special reference to cell mediated aud humoral antibody systems.
10. Evaluate the efficacy of various therapeutic agents and biological products in natural cases. On the basis of the results of the study formulate a package of practices for profitable rearing of young stock.

10. Date of start ... 1976-77
11. Likely date of completion ... 1979-80
12. Estimated man months ... 36
13. Facilities required ... Facilities are already available
14. Financing organisation ... Kerala Agrl. University
15. Approximate cost ... Rs. 20,000/-

1. Institute Code No. ... VA-6. 1. 13. 1.

2. ICAR Code No. ...

3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy.

4. Title of the Project ... Research on miscellaneous items–Pharmacology

Title of the problem ... Effect of indigenous plants and plant materials on liver damage in animals.

5. Name and designation of the Principal Investigator ... Dr. Zacharias Cherian, Associate Professor

6. Name (s) and designation of Associate (s) ...

7. Location ... Department of Pharmacology, College of Veterinary and Animal Sciences, Mannuthy.

8. a) Objecives

Various indigenous plants and plant materials are employed for treatments of Jaundice and liver disorders in man and animals in our country. Preliminary studies conducted in this department with Andrographis paniculata (Mal. Pacha cheriata) revealed that it possesses necrotropic (liver protective effect) in dogs and *Phyanthus niruri* (MAL. Kizh-arnelli) increases the excretory capacity of liver (Zacharias and Nair, 1971). It is proposed to conduct further detailed study of the above plants with aqueous and other alcoholic extracts in dogs and bovines through oral and parenteral routes of administration. Thus the therapeutic effects of the above plants in liver disorders could be assessed.

b) Practical utility

Since liver plays a role directly or indirectly in all activities of body, any derangement of its function will have deleterious effect on growth and productivity of animals. Thus detailed investigation on plants with protective effect on liver will be of great value in livestock production.

9. Technical programme

1) A total number of 48 dogs of approximately one to two years are required for the experiments
2) The dogs will be divided into batches (each with three groups)
3) The functional status of liver of these animals would be assessed prior to the start of the experiment to eliminate animals with impaired liver function.
4) Liver damage will be induced by the administration of CC 14 at the rate of 1 ml./kg. body weight.
5) Twenty four hours after the administration of CC 14 drugs will be given for ten days (each drug will be tried in 16 dogs ie. 8 numbers orally and 8 Nos. parent-oraly) Sixteen numbers will be kept as control
6) SGPT and B&P test will be done to ascertain the condition of liver

B. The above procedure will be repeated in 48 male calves (between six months and one year) of Kerala Agricultural University Farm.

10. Date of start ... 1976–77
11. Likely date of completion ... 1978–79
12. Estimated man months ... 24
13. Facilities required ... Spectrophotometer and chemicals are required
14. Financing organisation ... Kerala Agrl. Vniversity
15. Approximate Cost ... Rs. 4750/-

1.	Institue Code No.	...	VA. 6. 1. 13. 2.
2.	ICAR Code No.	...	—
3.	Name and address of the Research Institute/Centre	...	College of Veterinary and Animal Sciences, Mannuthy.
4.	Title of the Project	...	Research on miscellaneous items-Pharmacology.
	Title of the problem	...	Further studies on corticosteriods as supportive therapeutic measure iu Snake Venom.
5.	Name and designation of Principal Investigator	...	Dr. P. Marykutty. Assistant Professor. (Pharmacology. and Toxicology).
6.	Names(s) and designation of Associate (s)...		Dr. M. Krishnan Nair, Professor of Pathology.
7.	Location	...	Department of Pharmacology and Toxicology, College of Vety. and Animal Sciences, Mannuthy.

8. (a) Objectives

Betamothazone had been found quite effective in prolonging the eurvival time in experiments conducted with rats exposed to cobra venom (one LD50-0.097/I00g. body weight of Rats) Betamethazone was given at a dose rate of 0.8 to 1mg/100g. body weight of rats at definite intervals after injection of one LD50 cobra venom Present study will involve administration of betamethazone along and later in conjunction with antiserum to see:–

1. If survival can be achieved by corticosteroid alone.
2. Dose of antiserum could be reduced by employing betamathazone.
3. If the interval time for antiserum injection could be lengthened ie. whether betamothazone could be used to over come the delay is administring the antiserum.

(b) Practical utility

In snake bite emergencies the administration of betamethazone might be valuable to prolong the survival time of the bitten animals when the proper Antivenine therapy is instituted.

9. Technical programme:

The work will be done in dogs exposed by experimental intramuscular inoculation of snake venom. Different dosage levels of betamethazone will be employed at different time interval to ascertain survival time, to evolve a suitable dosage level of the drug. Utilising this dose it will be acertained whether dose of Antivenine could be reduced, as Antivenine is quite costly and may not be immediately availible and besides serum itself can set up allergic reactions.

Animals that succumb during the course of trialswill be subjected to detailed Post mortem examination to study the Histopathological changes. A few animals in each batch that survive would also be sacrificed for this purpose.

10.	Date of start	...	1976–77
11.	Likely date of completion	...	1979-80
12.	Estimated man months	...	36
13.	Facilities ruquired	...	Facilities are already available.
14.	Financing orgainsation	...	Kerala Agrl. University.
15.	Approximate cost	...	Rs. 6,350/–

1. Institute code No. ... VA-6-1-13-4

2. ICAR Code No ... —

3. Name and address of the Research Institute / Centre ... College of Veterinary and Animal Sciences, Mannuthy.

4. Title of the Project ... Research on miscellaneous items-Pharmacology

   Title of the Problem ... Studies on the residual toxicity of commonly used insecticides.

5. Name and designation of Principal Investigator ... Dr. Jacob V. Cheeran, Asst. Professor.

6. Name(s) and designation of Associate (s) ...

7. Location ... Department of Pharmacology, College of Veterinary & Animal Sciences, Mannuthy.

8. a) Objectives

   Object of the scheme is to find out the residual toxic effect if any, of pesticides on animal fodder.

   b) Practical utility

   Practical utility of the investigation including economic implications of the results likely to be achieved through this scheme. Necessity of further research indicating lacuna in knowledge on the subject, reduce insecticide residue hazard to man and animals.

9. Technical programme

   Paddy crop will be sprayed with chemicals that are recommended in the package of practices of the Kerala Agricultural University.
   The crop will be sprayed with the pesticides in the normal strength and in concentrations 2, 3, 5 times the recommended dosage.
   The straw after harvesting will be stored under field conditions and fed to healthy male calves of 7 months age in the livestock farm. Each group will be of 6 animals with a control for each set. Clinical observations and hoemogram will be made. Their body weight at weekly intervals will be made to study the growth. Animals will be sacrificed if found necessary for histopathological studies.

10. Date of start ... 1976-77

11. Likely date of completion ... 1979-80

12. Estimated man months ... 36

13. Facilities required ... Equipment and apparatus, are required

14. Financing organisation ... Kerala Agrl. University

15. Approximate cost ... Rs. 7,500/-

1.	Institute Code No:	...	VA. 6. 1. 13. 4.
2.	ICAR Code No:	...	
3.	Name and address of the Research Institute/Centre	...	College of Veterinary & Animal Sciences, Mannuthy
4.	Title of the Project	...	Research on miscellaneous items-Pharmacology.
	Title of the problem	...	"Further studies on the influence of Chloramphenicol on Thiopentone sodium anaesthesia in rats and dogs"
5.	Name and designation of Principal Investigator	...	Dr. M. K. Rajagopalan, Associate Professor (Pharmacology & Toxicology)
6.	Name (s) and designation of Associate (s)	...	Dr. P. Marykutty, Asst. Professor (Pharmacology)
7.	Location	...	Department of Pharmacology & Toxicology, College of Vety. & Animal Sciences, Mannuthy.

8. (a) Objectives

Chloramphenicol is widely used in clinical practices; and animals under intensive chloramphenicol therapy, when subjected to operative procedures will have to be anaesthetised by Thiopentone Sodium. It will be worthwhile to study whether Thiopentone sodium can be safely used in animals under influence of Chloramphenicol. It is expected that the work will also yield useful data on the influence of chloramphenicol on 1) dose of thiopentone as anaesthesia 2. Induction time; 3) Period of anaesthesia; and 4, Sleeping time.

(b) Practical utility:

The findings will be useful for the Veterinarians.

9. Technical Programme

The work will be completed in two parts.

Part I:

Studies will be conducted in three batches of 20 white adult rats each obtained from small Animal Breeding Station.

i) Batch I.

Each rat will be given Chloramphenicol in a doge level of 50 mg/kg. body weight intraperitoneally 2 hours prior to intraperitoneal administration of Thiopentone sodium at 50 mg/kg body weight. The sleeping time will be observed by the time interval between the abolition of righting reflex and regaining of righting reflex.

ii) Batch II:

Each rate will be given Chloramphenicol at a dose level of 50 mg/kg. body weight 1 hour prior to Thiopentone Sodium administration at a dose level of 50 mg/kg and the duration of sleeping time will be observed as in the previous batch.

iii Batch III:

Each rat will be given Chloramphenicol 50 mg/kg body weight. 30 minutes prior to Thiopentone Sodium administration at a dosage level of 50 mg/kg and the duration of sleep will be observed as before.

Six rates will be kept as the control for each experimental group which will be receiving only Normal Saline instead of Chloramphenicol, prior to Thiopentone Sodium.

Part II.

Studies will be conducted in dogs. Adult nondescript dogs locally availabls will bs utilised. 36 dogs (in batches of 12) will be used for experiment and 9 dogs (in batches of 3) for control. Thus a total of 45 days will be required for this part of studies.

a) Experimental Group.

Batch I, Chloramphenicol will be administered at a dose level of 50 mg/kg 2 hours prior to the administration of Thiopentone Sodium.

Batch II Chloramphenicol will be administered at a dose level of 50 mg/kg 1 hour to Thiopentone.

Batch III Chloramphenicol will be administered at a dose level of 50 mg/kg, 30 minutes prior to Thiopentone. In all these cases Chloramphenicol will be adminstered by i/v route. Duration of Surgical Anaesthesia will be studied by observing the time interval between abolition of pedal reflex and its return. Duration of sleep will be observed from the time of loss of consciousness and to the time when the dog makes the first conscious attempt to raise its head.

Control group: Consists of 9 dogs which will be receiving normal saline prior to Thiopentone and the duration of sleep and surgical anaesthesia will be studied as before.

10.	Date of start	...	1976-77
11.	Likely date of completion	...	1978-79
12.	Estimated man months	...	24
13.	Facilities required	...	Existing facilities will be utilised.
14.	Financing organisation	...	Kerala Agrl. University
15.	Approximate cost	...	Rs. 3625,/-

1. Institute Code No. ... VA. 6. 1. 14. 1.

2. ICAR Code No. ...

3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy.

4. Title of the Project ... Research on miscellaneous items–Physiology

Title of the problem. ... Studies on some physiological aspects of Indian elephants

5. Name and designation of Principal Investigator ... Dr. C. Nirmalan, Professor of Physiology

6. Name and designation of Associate ...
   1. Dr. M. Krishnan Nair, Professor of Pathology
   2. Dr. G. P. Talwar, Professor
   3. Dr. C. K. S. V. Raja, Professor

7. Location ... Department of Physiology, College of Veterinary and Animal sciences, Mannuthy.

8. a) Objectives:
   1. To collect additonal data on the haematological norms under varying conditions.
   2. To study the reproductive features
   3. To test the efficacy of biological tests for detecting pregnancy and
   4. To explore whether calving interval could be shortened

   b) Practical utility:
   The results of the present study will be useful for suggesting ways and means by which the number of calvings under captivity could be increased in Indian elephants helping to preserve the species.

9. Technical Programme:
   i. Studies will be conducted on Indian elephants maintained by the Forest Department of the Government of Kerala in their elephant camps. The influence of physiological factors like age, sex, pregnancy and lactation on the haematological norms will be recorded by analysing the blood samples from young baby elephants and lactating ones.
   ii. Determinations of pH, specific gravity, viscosity total lipid content, haemoglobin polymorphism, amino acid make-up of haemoglobin, blood gas analysis and respiratory activity of blood, histochemical localization of enzymes in corpuscles, assay of metabolic enzymes like transaminases, aldolase, dehydrogenases (succinic, malic, lactic and glucose-6-phosphate), phosphatases and amylace.
   iii. Hormonal assay to determine the levels of FSH, LH, oestrogen and progesterone in blood/urine.
   iv. To carry out biological tests with urine samples obtained from adult females to test their efficacy in early detection of pregnancy.

10. Date of start ... 1976-77
11. Likely date of completion ... 1979-80
12. Estimated man months ... 36
13. Facilities required ... Providing a jeep and trailer is necessary
14. Financing organisation ... Kerala Agrl. University
15. Approximate cost ... Rs. 1,00,000/- for 3 year

1. Institute Code No.	...	VA. 6-1-16-1
2. ICAR Code No.	...	
3. Name and address of the Research Station	...	College of Veterinary & Animal Sciences, Mannuthy.
4. Titile of the project	...	Research on miscellaneous items—Statistics
Title of the problem	...	Estimation of success of artificial insemination in terms of fertility.
5. Name and designation of principal Investigator	...	Dr. P. U. Surendran, Professor of Statistics.
6. Names and designation of Associate (s)	...	
7. Location	...	Department of Statistics, College of Vety. & Animal Sciences Mannnthy.
8. a) Objective	...	Cross breeding is the backbone of our policy to improve milk and other products from the animals. Hence it is always necessary to know the effectiveness of the A. I. performed and this should be done at least once in an year. This effectiveness is an index of our success in improving the cattle population of the State.
(b) Practical utility	...	A measure of success of the A. I. will indicate whether we are in the right line or not and adopt the measures suited to the situation.
9. Technical programme	...	Artifical insemination in large numbers are preformed in the Departments of Animals Husbandry and Dairy Development. Part of the inseminations done are followed up in these two departments. It is enough if their results are procured and compiled and necessary computations made therefrom.
10. Dateof start	...	1976-77
11. Likely date of completion	...	Permanent programme of the Department
12. Estimated man months	...	Indefinite
13. Facilities required	...	Facilities are already available
14. Financing organisation	...	Kerala Agrl. University
15. Approximate cost	...	Rs. 200/ per year.

1. Institute Code No.	...	VA. 6. 1. 16. 2.
2. ICAR Code No.	...	
3. Name and address of the Research Institute/Centre	...	College of Veterinary & Animal Sciences, Mannuthy
4. Title of the Project	...	Research on miscellaneous items–Statistics
Title of the problem	...	Assessment of the outlook of the public towards animal husbandry
5. Name and designation of Principal Investigator	...	Dr. P. U. Surendran, Professor of Statistics
6. Name(s) and designation of Associate(s)	...	Dr. P.S. Pushkaran, Asst. Professor (Extension)
7. Location	...	Department of Statistics, College of Veterinary and Animal Sciences, Mannuthy.
8. a) Objectives	...	Per capita availability of land in Kerala was 0.11 hectare in 1971 and it is further shrinking with increase in the population. Also the percentage of population depending on agriculture for livelihood continues as before. Hence an increased interest in animal husbandry is expected from the farmers. But this expectation does not seem to be realized. Hence study of the attitude of the public towards animal huabandry is necessary
(b) Practical utility	...	Through the survey, the impediments in the way of participation of the public in keeping animals could be understood. This will help to adopt measures to correct the defects in the diffusion of information on animal Husbandry.
9. Technical programme	...	As the study is of an exploratory nature, for the time being, it will be confined to randomly selected ward of a village in the neighbourhood of the University. The study could be extended to other parts of the state depending on the results obtained. The study will consist of gathering information on views of the public on animal husbandry through personal interview with the aid of a questionnaire and is expected to cover 400 to 500 households.
10. Date of start	...	1976–77
11. Likely date of completion	...	1978–79
12. Estimated man months	...	12
13. Facilities required	...	No additional facilities are required
14. Financing organisation	...	Kerala Agrl. University
15. Approximate cost	...	Rs. 1400/–

1. Institute Code No.	..	VA. 6-1-16-3.
2. ICAR Code No.	...	
3. Name and address of Research Institute / Centre	...	College of Veterinary & Animal Sciences, Mannuthy
4. Title of the project	...	Research on miscellaneous items—Statistics.
Title of the problem	...	Statistical problems in growth studies.
5. Name and designation of Principal Investigator	...	Dr. P. U. Surendran, Professor of Statistics.
6. Name (s) and designation of Associate (s)	...	
7. Location	...	Department of Statistics, College of Vety. and Animal Sciences, Mannuthy.
8. a) Objectives:	...	To establish the pattern of growth of different species of livestock.
b) Practical utility	...	Analysis could be made more accurate.
9. Technical Programme	...	Data collected by the members of the staff of the College will be used for the study.
10. Date of start	...	1974
11. Likely date of completion	...	Continuing programme.
12. Estimated man months	...	—
13. Facilities required	...	Facilities are already available.
14. Financing organisation	...	Kerala Agrl. University.
15. Approximate cost	...	Nil.

1. Institute Code No. ... VA. 6. 1. 16. 4.

2. ICAR Code No. ...

3. Name and address of the Research Institute ... College of Veterinary and Animal Sciences, Mannuthy.

4. Title of the project ... Research on misceltaneous items - Statistics.

Title of the problem ... A study of the background information on the students admitted under trimester pattern of instruction to the undergraduate courses in the various colleges of the Kerala Agrl. University.

5. Name and designation of Principal Investigator ... Dr. P. U. Surendran, Professor of Statistics

6. Name (s) and designation of Associate (s) ...

7. Location ... Department of Statistics,
College of Veterinary & Animal Sciences, Mannuthy.

8. (a) Objectives

Every educational programme has to satisfy certain wants of the soeiety which maintains it. How well these would be satisfied will depend upon the candidates admitted to undergo the courses under the programme. The study aims at assessing the social background of the students admitted to the undergraduate programmes of the Kerala Agricultural University during the academic years 1972–1973 to 1976–1977.

(b) Practical utility ... The results of the study may help the authorities to reformulate their policies in certain respects.

9. Technical programme ... The background information on the undergraduate students admitted to the three Colleges under the Kerala Agricultural University will be collected with the help of a questionnaire. The data will then be analysed.

10. Date of start ... 1976

11. Likely date of completion ... 1976

12. Estimated man months ... 6

13. Facilities required ... No additional facilities are required.

14. Financing organisation ... Kerala Agrl. University

15. Approximate cost ... Rs. 210/-

1. Institute Code No.	...	VA. 6-1-16-5
2. I. C. A. R. Code No.	...	—
3. Name aud address of the Research Institute/Centre.	...	College of Veterinary & Animal Sciences, Mannuthy.
4. Title of the Project	...	Rsarch on miscellaneous items-Statistics
Titel of the Problem	...	Correction for guessing when section type questions are used in trimester pattern of education.
5. Name and d.signation of the Principal Inve.tigator.	...	Dr. P. U. Surendran, Professor of Statistics
6. Name (s) & designation of Associate (s)	...	
7. Location.	...	Department of Statistics, College of Veterinary and Animal Sciences, Mannuthy.
8. a) Objectives:	...	To know whether correction for guessing should be applied when selection type questions are used in trimester pattern of education.
b) Practical utility:	...	The rseults of the study would hlep to make a definite recommendation regarding correction for guessing when selection type questions are used in trimester pattern of education.
9. Technical Programme:	...	Selection type and supply type questions of equal difficulty levels were given to the students of the Colleges of Veterinary and Horticulture in their Statistics examinations. Equal number of questions were given under each category. The marks scored under each category of questions by individual students were recorded. The data so gathered were analysed.
10. Date of startiug	...	1975
11. Date of completion(anticipaaed)	...	1976
12. Estimated man months	...	12
13. Facilities required	...	Facilities are already available
14. Financing	...	Kerala Agrl. University
15. Approximate cost.	...	No cost

1. Institute Code No. ... VA - 6. 1. 19. 1.

2. ICAR Code No. ... —

3. Name and address of the Research Institute/Centre ... College of Veterinary & Animal Sciences, Mannuthy.

4. Title of the project ... Research on miscellaneous items— Veterinary Public Health.

Title of the problem ... Serological investigation of fever patients in Trichur for Brucellosis.

5. Name and designation of Principal Investigator ... M. Soman, Associate Professor.

6. Name (s) and designation of Associate (s) ... 1. R. Padmanabha Iyer, Assoc, Professor.
2. P. Prabhakaran, Asst. Professor.

7. Location ... Department of Veterinary Public Health, College of Veterinary and Animal Sciences, Mannuthy.

8. a) Objectives:

To assess the incidence of brucellosis resulting in fever and other symptoms among human population.

b) Practical utility

To evolve methods of prevention of brucellosis, if it is found to be a public health problem of population of Trichur.

9. Technical programme: ... Serum samples of fever patients will be collected and tested by standard tube agglutination test.

10. Date of start ... 1975

11. Likely date of completion ... 1976

12. Estimated man months ... 12

13 Facilities required ... Existing facilities will be utilised

4. Financing organisation ... Kerala Agrl. University

15. Approximate cost ... Rs. 1000/-

800840

1. Institute Code No. ... VA.-6-1-19-2.
2. ICAR Code No. ... —
3. Name and address of the Research Institute/Centre ... College of Veterinary and Animal Sciences, Mannuthy.
4. Title of the project ... Research on miscellaneous items-Veterinary Public health.
   Title of the problem ... A study on slaughter house practices and meat trade in Kerala with special reference to Trichur and suburbs.
5. Name and designation of principal investigator ... R. Padmanabha Iyer, Assoc. Professor
6. Name(s) and designation of Associate(s) ... 1. M. Soman, Assoc. Professor
   2. P. Prabhakaran, Asst. Professor
7. Location ... Department of Veterinary Public Health, College of Vety. and Animal Sciences, Mannuthy.
8. a) Objectives

To study the slaughter house practice in relation to the method of slaughter, hygenic conditions and recording system; to assess the sanitary environment of the meat stalls; to gain adequate knowledge on the different existing methods of transport of raw meat to assess the effect of methods of transportatation on the quality of meat and to study the existing methods and extent of adulteration in meat trade.

b) Practical utility

More than 0.5 million animals are being slaughtered in different approved slaughter houses in Kerala in a year and the meat is being sold through more than 2000 licensed meat stalls in the State. The climate, the method of slaughter, the hygenic condition prevailing in the slaughter house, the mode of transportation of raw meat, the marketing system, the sanitary conditions of meat stalls, and above all, the persons who are actively engaged in the trade from "hoof to the can" all contribute to the poor quality of meat. Adulteration of meat has also been reported. Thus the various practices and factors that contribute to poor quality, spoilage and diseases that are caused to the consumer require systematic investigation and suitable remedial measures.

9. Technical Programme:

1. Periodical visit to the slaughter house and meat stalls to study the hygenic conditions and sanitary environment prevailing
2. Collection of materials for bacteriological evaluation.
3. Evaluation of meat samples detection of putrifaction by standard technique and
4. Test for adulteration

10. Date of start ... 1976-77
11. Likely date of completion ... 1979-80
12. Estimated man months ... 36
13. Facilities required ... Facilities are already available
14. Financing organisation ... Kerala Agrl. University
15. Approximate cost ... Rs. 14,000/-

ERRATA

Page	Sl.No.	Line No.	Word No.	Read	For
2	4	2	3	Crossbred	Cerossbred
3	8(a)	4	4	Add 'with' between 'fed' and 'Sour'.	
3	8(b)	3	6	Colostrum	Clostrum
3	9	4	12	Calves	Calvts
3	9	5	last	performance	preformance
4	8(b)	last	2	from	rrom
6	9	3	3	balances	brlances
8	4	2	3	agricultural	agricultare
8	9	4	3	in	is
12	8(b)	1	2	found	foud
14	8(b)	3	11	calve	cavle
14	9	11	1	reproductive	reporductive
22	8(b)	2	4	infection	inffection
22	9	2	2	divided	devided
24	8(a)	1	4	intra	nitra
25	5	2	2	Professor	Professo
28	8(b)	1	6	animal	antmal
29	8(b)	1	last	Omit 'valy' before 'younger'	
33	8(b)	2	5	climatic	cermatic
36	14	1	1	Indian	Indion
37	8(b)	3	9	goats	gots
37	9	2	5	regiments	regimens
37	9	4	10	nutrient	nutriet
40	9	2	1	Pathological	Patholagical
44	4	3	8	development	developmenut
46	1	1	1	2-1-12-7	3-1-12-7
54	8(a)	4	3	suitable	suitade
59	8(a)	1	4	add 'of'	—
60	4	2	1	Title	Titel
60	8(b)	1	2	Knowledge	Konioledge
63	8(b)	1	2	Variety	Veriety
67	8(a)	1	10	gastrochemius	gastrocnemius
74	9	1	1	survey	suruey
75	8(a)	1	15	to	ty
75	8(b)	2	2	experimental	exptrimental
80	8(b)	1	8	infection	intection
84	8(a)	1	10	Survival	Curvival
93	8(b)	1	2	results	rseults.