DIRECTORATE OF RESEARCH LLRVAS-HISAR

Proceedings of the Technical Programme Committee Meeting of the Departments of Animal Genetics & Breeding and Livestock Production Management of College of Veterinary Sciences held on 1.8.2011

The meeting was chaired by Dr. S.M.Chahal, Director of Research and Dr. A.K.Pruthi Dean College of Vety. Sci. and attended by all HoDS of COVS, faculty of the concerned departments, HOD, Math and Stat, COBSH and Dr. Ms Nita Khanna, coordinator research (P&M).

The salient research findings, observations made and decision taken with respect to different research schemes in operation in the above mentioned departments are as under:

Department of Animal Genetics and Breeding

Research Schemes:

1. B-vi(a) Plan Vety. AB-4 “Genetic improvement in poultry and different species of livestock”
2. B-vi(a)AB-1-NP(Vety.) “Conservation and Genetic Improvement of Indigenous Livestock Breeds”
3. B-vi(a) Plan Vety. AB-1“Genetic improvement of Jakhrana goat for Prolificacy and mutton production”
4. B-vi(a) Plan Vety. AB-3“In situ conservation of Munjal and Nali sheep for Genetic Improvement and Dissemination”
5. B-vi(a) Plan Vety. AB-2“Establishment of an elite herd of Sahiwal cattle for conservation, genetic improvement and dissemination”

Salient Research Findings (2010-2011):

- Wet average of crossbred and Sahiwal cows was 9.47 kg/day/animal and 7.71 kg/day/animal, respectively.
- About 58% crossbred cows produced more than 3000 kg of milk during lactation and about 85% of the cows produced more than 2000 kg milk in lactation. About 24% Sahiwal cows produced more than 2500 kg of milk during lactation and about 55% of the cows produced more than 2000 kg milk in lactation.
- Beetal and Jakhrana produced 1.29 and 1.20 kids per kidding, respectively.
- Synthetic population of sheep showed marked improvement in wool quality. The improvement in Synthetic over Nali for staple length, fibre diameter and modulation percentage was observed as 14.99, 17.57 and 46.50 percent, respectively.
- Broiler dam line laid 84.15 eggs upto 40 weeks of age with an average egg weight of 52.81g.
Evaluation:

The research work undertaken during the year 2010-11 was evaluated as satisfactory.

Observations:

1. The department should submit two research project proposals (on Goat and Cattle) to external funding agencies. (Action: HoD, AGB and concerned scientists)
2. The minimum number of sheep and goat animals of desired breed may be procured and added to existing population as per the requirement of breeding program. The case for budget requirement may be initiated at the earliest (Action: HoD, AGB and CAU-LLRUVAS)
3. The work related to regular animals health and reproduction management may be assigned to related discipline scientists/Clinicians (Action: HoD, AGB and Director TVCSC and Dean COVS)
4. The proposal of changing objectives of sheep breeding part of C(a)AB-4-Plan (Agri.) be discussed in D.A.C. and if focus in sheep breeding is to be changed from wool production to mutton production, the proposal to change objectives may be submitted for consideration of RPC. (Action: HoD, AB and Scientist Incharge)
5. Regarding diagnostic services in relation to haemoprotzoan diseases in cattle, concerned scientist should contact Dr. Praveen Goel, Prof. of Vety. Medicine and work out the modalities (Action: Incharge, Cattle Section, AB, HoD, Vety. Medicine, Dr. Praveen Goel, Deptt. of Vety. Medicine)
6. The possibility of adding new commercial broiler and layers sire/dam line may be explored (Action: HoD AGB and section in charge)

Technical Programme of the year 2011-12:

The technical program for the year 2011-12 was approved as proposed.

Department of Livestock Production Management:

Research Schemes:

1. B-vi(a) Plan Vety. LPM-3 “Quantification of Management Practices for livestock and poultry”.
2. B-vi(a) Plan Vety. LPM-2- “Strengthening of Buffalo Research Centre”
3. C (a) LPM-3 ICAR. “Net work project on Buffalo Improvement”

Salient Research Findings (2010-11):

- The average age at first calving in buffaloes was 47.1 months and average milk yield of first calvers was 2083.4 kg with lactation length of 321.4 days.
- The wet average in buffaloes was recorded as 7.1 kg and herd average 4.9 kg.
The overall average milk yield, lactation length and 305 days milk yield were 2217.8 kg, 313.1 days and 2102 kg, respectively.

The cost of production of broilers with 0.05% multi-enzyme supplementation up to six weeks of age reduced to Rs. 2.58 per kg live weight.

Evaluation:
The research work conducted during 2010-11 was found satisfactory.

Observations:
1. The department should submit a research project proposal on “Effect of climate change on buffalo’s production and reproduction” to external funding agencies. *(Action: HoD, LPM)*
2. The data recording for daily milk production and growth should be closely monitored by concerned scientists. The mechanism for regular checking during milking hours may be devised in DAC/Faculty meeting. *(Action: HoD, LPM and concerned scientists)*
3. The growth data of buffalo heifers(Expt.-1&2) may be rechecked *(Action: HoD, LPM and concerned scientists)*
4. The work on internet based media package on animal husbandry practices for rural women may be further extended by submitting research project to out side funding agency *(Action: HoD, LPM and concerned scientists)*

Approved technical program for the year 2011-12:

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Title of the experiment</th>
<th>Scientists involved (Dr./Mrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Studies on protein feeding from different sources on growth performance in male calves</td>
<td>A.K. Verma, and Raju Kadel (PG Student)</td>
</tr>
<tr>
<td>2.</td>
<td>Effect of different protein sources and yeast supplementation on growth performance and carcass traits in rabbit.</td>
<td>H.K Gulati and Akriti (PG student)</td>
</tr>
<tr>
<td>3.</td>
<td>Effect of supplementation of Indian Gooseberry/Amla <em>(Emblica officinalis)</em> and multi-enzyme on the performance of broilers during hot weather.</td>
<td>C.P. Verma, Davender Singh, Minakshi Virmani and Mukesh Kumar (PG student)</td>
</tr>
<tr>
<td>5.</td>
<td>Effect of different sources of protein on growth performance of Murrah buffalo heifers</td>
<td>S.S. Grewal and Amee Lal (PG student)</td>
</tr>
</tbody>
</table>

The meeting ended with vote of thanks to the chair.

Approved

Sd/-

Director of Research Coordinator Research (P&M)
A copy of the above proceedings is forwarded to the following for information and further necessary action and also requested to please circulate the proceedings among the concerned scientists.

1. Dean, College of Veterinary Sciences, CCSHAU, Hisar
2. Director General, Department of Animal Husbandry and Dairying, Pashudhan Bhawan, Panchkula
3. Advisor to VC for kind information of the Vice-Chancellor.
4. Director, NRCE, Sirsa Road, Hisar
5. Director, TVCC
5-21 All HODs of COVS,
22. HOD Math&Stat, COBS
23 In charge, Central Vety. Laboratory
24 In charge, Vety. Unit, Uchani, Karnal

Coordinator Research (P&M)
Proceedings of the Technical Programme Committee Meeting of the Departments of Livestock Products Technology, Animal Nutrition and Veterinary Physiology & Biochemistry of College of Veterinary Sciences held on 3.8.2010

The meeting was chaired by Dr. S.M.Chahal, Director of Research and Dr. A.K.Pruthi Dean, College of Veterinary Sci. and attended by all HoDS of COVS and faculty of the concerned departments.

The salient research findings, observations made and decision taken with respect to different research schemes in operation in the above mentioned departments are as under:

**Department of Livestock Products Technology**

**Research Schemes:**

1. **B-vi(a) Plan Vety. APT-3 “Standardization of processing technology for meat and poultry products”**
2. **B-vi(a) Plan Vety. APT-2 “Studies of Indian milk Products and training thereof”**

**Salient Research Findings 2010-11:**

- Rogan Josh, a traditional product prepared from chicken meat was found organoleptically acceptable and microbiologically safe up to 10 days of refrigerated storage and 60 days of frozen storage. The total cost of rogan josh including 10% profit margin in consumers unit package of 250g worked out to be Rs 60/-
- Meat analogue rolls can be prepared from combination of wheat flour and maize as cereal base. Mushroom paste and textured soy grit are suitable sources of protein for meat analogue.
- Masala paneer is acceptable to around 80% of the consumers and found suitable from marketing point of view.
- 1.0% gelatin and 0.5% pectin are most appropriate to stabilize the wheying off whey soymilk beverage.

**Products developed:**
Rogan Josh, Meat Analogue, Restructured Meat roll and Masala Paneer.

**MOU signed:**

An MOU was signed between CCSHAU (LPT Deptt.) and National Meat and Poultry Processing Board (NMPPB), Ministry of Food Processing Industries
GOI on 3rd Nov., 2010 for providing technical inputs for boosting the meat and poultry industry in the country.

**PATENT FILED:**
"Development of noodles rich in protein utilizing spent hen meat". Registration NO.4.4.4/09048; **Inventors:** Nita Khanna and Surender Kumar

Transferable/ Marketable technologies:

- Technologies for Rogan Josh, Meat analogue and Masala Paneer are ready for commercial exploitation.

**Evaluation:**

The research work conducted during 20010-11 was found highly satisfactory.

**Observations:**

1. The Chairman complemented the HoD & faculty of LPT for undertaking good quality and quantity of research work as well as for preparation of nice technical program document. *(Action: HoD, LPT)*

2. The young scientists *(Asstt scientist/ Scientist)* of the deptt. must submit at least one project each to out side funding agency in their field of specialization. The senior faculty of the department should extend all possible guidance/assistance/cooperation to junior faculty in this endeavor. The noncompliance should be duly reflected in SAR of concerned scientist. *(Action: HoD, LPT and concerned scientists)*

3. Food safety aspect should be duly taken care of with respect to different milk and meat products developed by the department. For undertaking this mandate the required collaboration should be sought from the department of VPHE. The HOD, VPHE will assign this work to any scientist working in public health domain. *(Action: HoDs, LPT, VPHE and concerned scientists)*

**Approved technical programme of the year 2011-12:**

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2
1. Value addition to spent hen meat by vacuum tumbling. D.P. Sharma and Sanjay Yadav


3. Development of chicken meat rolls enriched with tomato pulp and dried orange pulp. D.P. Sharma and PG student

4. Designer chicken meat rolls and patties incorporated with fibre. S.S. Ahlawat and Ph.D student

5. Development and quality evaluation of chicken incorporated biscuits and cookies. Nita Khanna and Ph.D student


8. Standardization of process for manufacturing low calorie and dietary fibre enriched khoa based sweets. R.S. Dabur and Rekha Dahiya

Department of Animal Nutrition

Research Schemes:

1. B-vi (a) Plan Vety. AN-2 “Nutritional studies in livestock and poultry”
2. B-vi (a) Plan Vety. AN-1 “Amelioration of mineral deficiency /toxicity in livestock of Haryana State”
3. B-vi (a) Plan Vety. AFT-1 “Economic quality feed manufacturing for ruminants and poultry”

Salient Research Findings 2010-11:

- Feeding of 500 g mixture of whole and ground linseed (1:1) in lactating cattle yielding 10-15 kg milk resulted in maximum production of conjugated linoleic acid.
- Distillers dried grains soluble (DDGS) can replace 80% crude protein of mustard cake in concentrate mixture without affecting in vitro dry matter and crude protein digestibility, OMD and ME value of TMR’s.
Distillers dried grains soluble (DDGS) can replace 50% crude protein of mustard cake in concentrate mixture without affecting nutrient intake, nutrients digestibility and nutritive value of the ration in cross bred calves.

Lambs fed 50% Maize replaced with ground reconstituted sorghum showed better body weight gain followed by whole reconstituted sorghum over the control groups.

Higher body weight gains were observed when maize was replaced with intact pearl millet at day old level (50% and 100% ) compared to replacement at third and fourth week.

Evaluation:

The research work conducted during 2010-11 was found satisfactory.

Observations:

1. The status paper on mineral studies work has not been submitted which should be submitted immediately by 30th August, 2011. *(Action: HoD, AN and concerned scientist)*

2. Non completion of analysis of mineral survey studies related samples of Karnal District and incomplete fulfillment of assigned research work since last two years by mineral study group has been viewed as a serious lapse on the part of the concerned scientist, the same should be reflected in the SAR of the scientists. *(Action: HoD, AN)*

3. The survey for potential availability of feed resources *(Agro industry and Food industry byproducts availability)* in the state may be undertaken by the department. *(Action: HoD, AN and concerned scientist)*

4. The detail chemical analysis of DDGS including protein fractionation, quality of protein and total phenolic compounds etc. should be undertaken. *(Action: HoD, AN and concerned scientist)*

5. The level of DDGS as given in poultry experiment *(Table Sr No.7)* may be suitably modified as per suggestions given. *(Action: HoD, AN and concerned scientist)*

Field oriented information generated:

- Feeding of 500 g mixture of whole and ground linseed (1:1) in lactating cattle yielding 10-15 kg milk resulted in maximum production of conjugated linoleic acid.

- Distillers dried grains soluble (DDGS) can replace 50% crude protein of mustard cake in the ration in cross bred calves reducing the cost per quintal by Rs 27.

Approved Technical Programme for the year 2011-12
<table>
<thead>
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<tbody>
<tr>
<td>1.</td>
<td>To assess the mineral status of buffaloes of Kaithal district.</td>
<td>M.A.Akbar, Sajjan Sihag, D.V. Dahiya and V. Kapoor</td>
</tr>
<tr>
<td>2.</td>
<td>Effect of feeding cotton seed and Ca salt of cotton seed oil on milk yield and its composition in crossbred in cattle.</td>
<td>B.S. Tewatia, OP Lohan, V.S. Panwar and S.S. Dhaka</td>
</tr>
<tr>
<td>3.</td>
<td>To study the effect of replacing Maize with soaked Bajra grains on the performance of lambs.</td>
<td>V.S. Panwar, B.S. Tewatia, and Z.S. Malik</td>
</tr>
<tr>
<td>5.</td>
<td>Quantification and chemical analysis of different agro-industrial byproducts available in South Haryana</td>
<td>Naresh Kumar, K.K. Yadav and Sajjan Sihag</td>
</tr>
<tr>
<td>6.</td>
<td>Effect of feeding pearl millet on performance of layers</td>
<td>Sajjan Singh, S.D. Singh (PG) Student</td>
</tr>
<tr>
<td>7.</td>
<td>Effect of soymeal replacement with distillers dried grain soluble (DDGS) on the performance of layers</td>
<td>Z.S. Sihag, Sajjan Sihag, and R.S. Berwal</td>
</tr>
</tbody>
</table>

**Department of Vety. Physiology and Biochemistry:**

Research Schemes:

1. **B-vi (a) Plan Vety APP-1** “Role of motility stimulators in improving the quality of frozen semen of Murrah buffalo bulls”
2. **B-vi(a) Plan Vety APP-2** “Physiological investigation for augmenting reproduction and production in farm livestock and poultry”
3. **B-vi(a) Plan Vety VPY-1** “Studies on digestive physiology of ruminants”
4. **B-vi (a) Plan Vety VBC-1** “Biochemical changes in malnutrition and parasitic diseases.

**Salient Research Findings 2010-11:**
The decrease in TVFAs in digestive disorders cases clearly reflects inefficient feed and nutrients utilization. The blood parameters also further substantiated the findings.

The conception rate was significantly higher in Sahiwal cows induced to estrus with CIDR protocol as compared to Ovsynch treatment.

Successful induction of cyclicity and pregnancy in anestrous Murrah buffaloes was obtained after CIDR+PMSG+hCG treatment.

Sperm morphology parameters play an important role in determining the fertility of Murrah buffalo bull semen.

Incorporation of c-AMP (5mM/ml semen) significantly improved progressive sperm motility, percent live sperm cells and intact acrosomes in the frozen thawed semen of Murrah buffalo bulls incubated at 37°C for 3 hours.

The milk from mastitic buffaloes was found to contain many peptides with molecular weight less than 5kDa which are not present in milk from healthy animals. These peptides are proposed to be playing a vital role in imparting the innate immunity to the animals.

Evaluation:

The research work done during the year 2010-11 was found satisfactory.

Observations:

1. The department should submit a project on climate change and its physiological effects on animal health and production. (Action: HOD, VPY&B and concerned scientists)

2. For undertaking inter institutional work the required formalities as discussed in the meeting may be completed. (Action: HOD, VPY&B and concerned scientists)

3. The young scientists (Asstt scientist/ Scientist) of the deptt. must submit at least one project each to outside funding agency in their field of specialization. The senior faculty of the department should extend all possible guidance/assistance/cooperation to junior faculty in this endeavor. The noncompliance should be duly reflected in SAR of concerned scientist (Action: HOD, VPY&B and concerned scientists)

Approved technical programme for the year 2010-11:

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<tbody>
<tr>
<td>1.</td>
<td>Morphological evaluation of cryopreserved buffalo bull semen and its correlation with fertility in Murrah buffaloes</td>
<td>M. Virmani, R.K. Malik and Pardeep Singh</td>
</tr>
<tr>
<td>2.</td>
<td>Induction of cyclicity in anestrous Murrah buffaloes/heifers with different hormonal</td>
<td>M. Virmani, R.K. Malik and Dipankar Kar</td>
</tr>
<tr>
<td>4.</td>
<td>Biochemical changes in malnutrition and parasitic diseases in cattle and buffaloes</td>
<td>Sandeep Kumar, Sandeep Gera, P.S. Cheema, Ramesh Kumar and Anita Ganguly</td>
</tr>
<tr>
<td>5.</td>
<td>Biochemical studies on the presence of cationic peptides in the body fluids from animals suffering from bacterial and parasitic diseases. <em>(in continuation)</em></td>
<td>Sandeep Kumar, Sandeep Gera, and Anita Ganguly</td>
</tr>
<tr>
<td>6.</td>
<td>Fractionation and identification of peptides in homogenates of adult <em>Haemonchus contortus</em> in response to <em>in vitro</em> inorganic salts supplementation</td>
<td>Nirmal Sangwan and Sandeep Kumar</td>
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The meeting ended with vote of thanks to the chair.

Approved

Sd/-

Director of Research Coordinator Research (P&M)

Endst. No. DR/CR-PM)/11/ Dated:

A copy of the above proceedings is forwarded to the following for information and further necessary action and also requested to please circulate the proceedings among the concerned scientists.

1. Dean, College of Veterinary Sciences, CCSHAU, Hisar
2. Director General, Department of Animal Husbandry and Dairying, Pashudhan Bhawan, Panchkula

3. Advisor to VC for kind information of the Vice-Chancellor.

4. Director, NRCE, Sirsa Road, Hisar

5. Director, TVCC

5-21 All HODs of COVS,

22-24. HODs, Biochemistry, FST(COBS) and FN (COHS)

25 In charge, Central Vety. Laboratory

26 In charge, Vety. Unit, Uchani, Karnal

Coordinator Research (P&M)
Proceedings of the Technical Programme Committee Meetings of VPHE, TVCSC, CCL, VU-Karnal and BPD Unit of College of Vety. Sciences held on 5.8.2011.

The meeting was chaired by Dr. S.M.Chahal, Director of Research and Dr. A.K.Pruthi Dean, College of Vety. Sci. and attended by all HoDS of COVS and faculty of the concerned departments.

The salient research findings, observations made and decision taken with respect to different research schemes in operation in the above mentioned departments are as under:

Department of Vety. Public Health and Epidemiology

Research schemes:
C (a) VEPM-1 NP (Vety). Epidemiological investigations of diseases in livestock and poultry(closed w.e.f 1.4.2011)
B-VI (a) Plan Vety.VPH-1 “Studies on food-borne infections with special reference to Yersinosis”
B-VI (a) Plan Vety.VEPM-2 "Investigation and Epidemiological of diseases of livestock and poultry in Haryana"
B-VI (a) Plan Vety.VEPM-1"Diagnostic facilities for livestock and poultry farmers in eight districts of Haryana (Hisar, Ambala, Karnal, Jind, Rohtak, Bhiwani, M/garh, Rohtak and Sirsa)"

Salient Research Findings (2010-11):
Disease Investigation work:

- **Cattle and Buffalo**: Five outbreaks of haemorrhagic septicaemia were investigated in buffaloes at different places affecting 62 buffaloes with a mortality of 34 animals in Hisar, Rohtak and Jind districts. One out break of foot rot and two of haemoprotozoan diseases in crossbred cattle were investigated.
- **Sheep and goat**: A total of 36 outbreaks of different diseases were investigated in sheep and goat. Sheep pox (4), Pneumonia (8), PPR (7), enterotoxaemia (2), parasitic infestation (10), Mal nutrition/deficiency (2) were investigated during this period.
- **Pigs**: One outbreak of Swine fever was recorded in pigs.
- **Rabbit and Emus**: A total of 15 outbreaks were investigated in rabbit farms which included Coccidiosis (7), Pneumonia (5) and Mycotoxicosis (2). Four outbreaks were investigated in Emu farms and causes were mainly extreme weather conditions (cold and hot).

Laboratory Diagnostic services:
5875 milk samples were tested for mastitis at DI lab Mohindergarh, Rohtak, Sirsa and Jind. Of these 4467 were positive for mastitis. Culture sensitivity of 253 samples in DI laboratory Mohindergarh, Jind and was done and majority of samples were found sensitive to Enrofloxacin, Ofloxacin, Gentamicin, Streptomycin, Ceftriaxone and Neomycin.

2338 faecal samples were examined for the presence of eggs/ova at Rohtak, Mahendergarh, Jind, and Sirsa. Majority of samples were positive for *Strongyles* (1165), followed by *Amphistomes*, *Fasciola* and *Ascarids*.

118 urine samples and 84 blood samples were tested for routine microscopic tests.

A total of 387 animals at GLF and University farms, Hisar were tested for T.B. and J.D by D.I lab Hisar and none was found +ive. A total of 83 samples were screened for brucellosis at jind and of these 18 were found +ive for *Brucella* by SAT

1227 milk samples were tested for detection of urea by field spot test in different camps organized on the occasion of World Veterinary Day, World Milk Day and other awareness camps.

A total of 174 poultry feed samples were analyzed for the aflatoxin. Only 25.86 % samples were having aflatoxins within the permissible limits of 30 ppb

174 poultry feed samples were analyzed for the level of sodium chloride in them. A total of 68 samples (39.08%) contained salt beyond the permissible limit of 0.6%, while 106(69.02%) samples were found to contain salts within permissible limits.

19 episodes suspected for toxic conditions in cattle, buffalo, poultry and wild life were investigated.

**Poultry Disease investigation:**

Disease investigation work was carried out in 6604 Poultry flocks with a population of over 4.8 crore birds. Major diseases diagnosed on the basis of clinical findings, post-mortem examination and laboratory examination of the material were: Respiratory disease complex (RDC). *E. Coli* infections, Ranikhet disease, Chronic Respiratory Disease, Fowl Typhoid, Coccidiosis, Infectious Bursal Disease, ascites, mycotoxicosis and visceral gout. Heavy mortality (10-20%) was associated with RDC with increased incidence during summer months. Respiratory infections were major cause of morbidity and mortality in poultry affecting a population of 2.8 crore birds. *There was re-emergence of inclusion body hepatitis (IBH/HPS) after a gap of 8 years, which could be controlled by providing autogenous vaccine to farmers free of cost.*

**Food borne Infections:**

Indirect ELISA was standardized for detection of *Yersinia enterocolitica* in pork samples. Presence of *E. coli*, *Salmonella* and *Yersinia* was recorded in raw goat meat sample from local market. Microbiological quality of milk from local vendors was found very poor.

**Evaluation:**

The research work done during the year 2010-11 was evaluated as highly satisfactory.

**Observations:**

- The research project on public health aspect of Zoonotic diseases and public awareness be submitted to outside funding agency other than RKVY as per discussion held in the TP meeting. *(Action: HoD, VPHE and concerned scientists)*
A research project on climate change impact on disease prevalence in different species of livestock and poultry be submitted to outside funding agency (Action: HoD, VPHE, Scientist concerned)

Based on the disease prevalence data recorded over the years by the department most prevalent disease in different livestock species may be identified with respect to Bhiwani-Mohindergarh-Gurgaon; Karnal-KUK-Ambala; Rohtak-Jhajjar-Jind and Sirsa-Hisar-Fatehabad groups of districts and their correlation with climate change related meteorological parameters may be seen. On the basis of these correlation the possible re-emergence period/pattern of major diseases may be worked out (Action: HoD, VPHE and all concerned scientists)

Food safety related competency may be developed in the department by submitting research projects to outside funding agencies. (Action: HoD, VPHE and all concerned scientists)

The public health scientist should be involved in microbiological/food safety related information/data generation for value added livestock products developed by LPT department. (Action: HoDs, VPHE, LPT and all concerned scientists)

Approved Technical Programme (2011-2012):

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Title of the Experiments</th>
<th>Scientists involved (Drs.)</th>
</tr>
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</table>
| 1.     | a). To investigate outbreaks of diseases in livestock and poultry and to recommend suitable preventive and control measures  
        b). To carry out surveillance and screening of animals for tuberculosis, John's disease and brucellosis in field areas  
        c). Epidemiological studies on PPR in sheep and goats and respiratory diseases in poultry | N. K. Mahajan, P.C. Sharma, Suresh Kumar, Naresh Jindal          |
| 2.     | 1). To investigate outbreaks of diseases in livestock and poultry  
        2). To carry out laboratory examination of clinical samples  
        3). Epidemiological studies on parasitic and skin infections at different D.I. Labs in Haryana.  
        4). Investigation of toxic conditions in livestock and poultry, analysis of feed samples for myco-toxins and milk for urea adulteration.  
        5). To recommend appropriate control and preventive measures for various diseases | Gulshan Narang; Vandana Bhanot; Man Mohan Mata; Ramesh Kumar; P. S. Cheema |
| 3.     | Standardization of PCR test for direct detection of Y. enterocolitica in pig meat                           | Ashok Kumar                                                    |

**College Central Laboratory**

**Research Schemes:**

1. B-VI (a) Plan Vety.VCL-1. “Strengthening Veterinary College Central Laboratory”.
2. B-VI (a) Plan Vety.VCL-2 “Etiology & diagnosis of mastitis & infectious abortion in animals”.

**Salient Research Findings (20010-11):**

- Fluorescence Polarization Assay (FP A) antigen prepared indigenously was as efficacious as commercial FPA antigen for the rapid and specific diagnosis of brucellosis.
Out of 181 blood samples of goats from central sheep breeding farm, 36 were detected positive for brucellosis.

**Milk and clinical samples**: A total of 5635 milk from 1692 cows and buffaloes were subjected to cultural examination. Out of these 2755 (48.89%) samples were found culturally positive revealing isolation of 3067 organisms. *Staphylococci* were the most prevalent organisms accounting for 50.34% of the infections. On antimicrobial sensitivity testing, >80% of isolates showed sensitivity towards Cefoperazone and Ceftriaxone, Gentamicine, Enrofloxacin and Chloramphenicol. More than 90% of *E.coli* isolates revealed sensitivity towards Amikacin.

**Screening of farm animals**: A total of 343 quarters of 89 cows and 269 quarters of 68 buffaloes of LLRUVAS Animal Farm, were screened for sub clinical mastitis.

**Treatment trials with different combinations of antibiotics** in clinical and sub clinical mastitis indicated that single dose of Ceftizoxime I/V was found more effective in treating *E.coli* mastitis followed by mastitis caused by staphylococci and *Streptococci*. A combination of Ketoprofen and Enrofloxacin I/M was found more effective in treating *streptococcal* mastitis in comparison to mastitis caused by *staphylococci*.

**Determination of microbial load**: A total of 164 semen samples received from NRCE Hisar, different semen banks located in Jagadhri and Gurgaon were screened for microbial load to produce quality semen.

**Development of nucleic acid based detection of resistance genes**: PCR assay was standardised for detection of antimicrobial resistant genes associated with staphylococcal mastitis using different sets of primers.

**Evaluation**: Research work undertaken during 2010-11 in the College Central Laboratory was highly satisfactory.

**Field oriented information/technology generated**:  
- Rose Bengal test for surveillance of Brucellosis under field conditions  
- Calf hood vaccination is recommended for young animals between the age of 4 and 10 months for brucellosis prevention.  
- Conjunctival route of vaccination is recommended for adult animals including milking and pregnant animals  
- A combination of Ketoprofen and Enrofloxacin I/M was found more effective in treating *streptococcal* mastitis in comparison to mastitis caused by *staphylococci*.  
- CMT is still the best method for initial screening of mastitis under field condition.

**Observations**:  
It was desired that recommendations generated by the scientists may be communicated to Govt. Departments/agencies through the Directorate of Research.

**Approved Technical Programme for the year 2011-12**:  

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<tr>
<th>Sr. No.</th>
<th>Title of the Experiments</th>
<th>Scientists involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Serological examination of animals for abortion causing</td>
<td>Puran Chand and Dr.</td>
</tr>
</tbody>
</table>
diseases using available antigens

| 2. Cultural examination of materials from natural cases of abortion in animals for isolation of etiological agent. |
| 3. Evaluation of kinetics of antibody response following vaccination with *Brucella abortus* S19 vaccine |
| 4. Evaluation of FPA for differentiation of naturally infected animals with brucellosis from S 19 vaccinated ones. |
| 5. Milk & various clinical samples received/collected from different sources will be culturally examined & antimicrobial sensitivity of organisms isolated will be determined. |
| 6. Determination of microbial load in semen samples obtained from different semen banks in Haryana |
| 7. Screening of LLRUVAS Farm animals for detection of sub clinical mastitis. |
| 8. To study the cytokine expression in milk somatic cells during mastitis in cows and buffalo. |
| 9. Comparison of different conventional tests with acute phase proteins for detection of sub clinical mastitis. |
| 10. Evaluation of efficacy of Ceftriaxone hydrochloride in clinical and sub clinical mastitis in cows and buffaloes |
| 11. To study the acute phase proteins for diagnosis of sub clinical mastitis in cows. |

**Teaching Vety. Clinical Complex:**

1. VI (a) Plan Vety.TVCSC-1 “Studies on dysfunction of intestines in animals and their management”

2. VI (a) Plan Vety.TVCSC-2 “Studies on incidence, etiology, diagnosis and treatment of skin diseases in animals”.

**Salient Research Finding (2010-11):**

- A total of 1625 animals were diagnosed with various skin ailments/ infestations at TVCC, Ambulatory centres and Govt. farms. 857 animals were diagnosed with skin diseases at TVCC. Major skin diseases diagnosed were *Sarcoptic* (199 & *Demodectic* mange (55), Allergy (76), *Dermatomycosis* (78), Bacterial dermatitis (89), Flea allergy dermatitis (35) etc.

- At Government Livestock Farms-I, II & III; State Pig Breeding Farm and Central Sheep Breeding Farm, 83 animals were diagnosed with different skin diseases *Dermatophytosis* (24 cow and 3 buffalo calves), allergy dermatitis (2 cow calves), *Psoroptic* mange in 5 mules, *Sarcoptic* mange in 26 pigs and 8 buffalo calves and dermatitis due to other reasons in 6 sheep.

- At LLRUVAS Animal farms, 72 animals were diagnosed suffering from *Sarcoptic*/*Psoroptic* mange/ allergy dermatitis/ tick infestations and dermatitis due to other reasons.

- At a private sheep farm in Hisar, 11 sheep were diagnosed with *Sarcoptic* mange.
At a rabbit farm in village Jatu Lohari (Bhiwani) 45 out of 600 rabbits were diagnosed with Sarcoptic mange and 150 with tick infestation.

At poultry farm in village Rupana Jatan (Sirsa) 60 birds were found affected with Pediculosis.

At a private goat farm in Hisar, 30 goats were having tick infestation and 25 suffered from Pediculosis.

200 cattle were found affected with allergy due to tick infestation in a Gaushala (Fatehabad).

At ambulatory centres of Devan & Harikot, 66 & 26 animals, respectively were affected with skin problems and were treated by insecticide spray.

Out of 325 cases of skin diseases during September 2010 to March 2011 six were diagnosed with hypothyroidism on the basis of low levels of thyroid hormones in their blood.

**Evaluation:**
The research work undertaken during 2010-1 was found satisfactory.

**Observations:**
1. A comparative epidemiology of the occurrence of various skin diseases may be undertaken and reported: *not completed may be completed this year.* *(Action: concerned scientist)*
2. A suitable research project proposal skin diseases be submitted to out side funding agency. *(Action: Director TVCC and concerned scientist)*

**Approved Technical Programme for the year 2011-12.**

<table>
<thead>
<tr>
<th>Sr. No.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Epidemiological studies of skin diseases in animals at TVCC.</td>
<td>Rajesh Khurana</td>
</tr>
<tr>
<td>2.</td>
<td>Monitoring of animals for skin diseases at Animal Farms of LLRUVAS, Hisar</td>
<td>-do-</td>
</tr>
<tr>
<td>3.</td>
<td>Surveillance of skin diseases in animals at GLF-I, II, III, State Pig Breeding Farm and Central Sheep Breeding Farm</td>
<td>-do-</td>
</tr>
<tr>
<td>4.</td>
<td>To ascertain the role of diet in causation of various skin diseases in dogs</td>
<td>Rajesh Khurana and Divya Agnihotri</td>
</tr>
<tr>
<td>5.</td>
<td>Investigation of skin diseases in animals in different villages of state as and when required</td>
<td>Rajesh Khurana</td>
</tr>
</tbody>
</table>

**Vety. Unit, , Uchani, Karnal**

**Research Scheme:**
1. VI (a) Plan Vety.TVCSC-1 “Establishment of Veterinary Unit at Karnal”
2. VI (a) Plan Vety.TVCSC-1 “Studies on dysfunction of intestines in animals and their management”

**Salient Research Findings (2010–11):**
1. In the Laboratory, 1279 faecal, 2161 blood and 285 urine samples were tested. *Paramphistomes, Fasciola* and *Strongyles* were predominant parasites affecting animals. *Theileriosis, Babesiosis* and *Anaplasmosis* were causing clinical illness.

2. 1102 milk samples were tested for mastitis. In 96% cows and 90% buffaloes mastitis was tested positive.

3. The major gastrointestinal tract disorders included *Diarrhea* (Buffalo, cows, sheep, goats and equines), *colic* (buffalo, equines, cows), *Recurrent tympany* (buffalo, cows), *impaction* (buffalo, cows) and *intestinal obstruction* (buffalo and cows)

4. A total of 7925 clinical cases including 1010 surgical and 451 gynecological were attended in Veterinary Unit, Karnal during the year under report

**Evaluation:**

The work done by the scientist of Veterinary Unit Karnal was evaluated as excellent.

**Observations:**

1. The chairman complemented the In-charge Vety. Unit, Karnal and his team of scientists for their excellent performance and for undertaking outstanding work. *(Action: Incharge, Vety. Unit and Concerned Faculty members)*

**Approved Technical Programme for the year 2011-12:**

<table>
<thead>
<tr>
<th>Sr.No.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Diagnosis and treatment of referral cases of domestic animals in Eastern Haryana</td>
<td>S.S. Chaudhri, R.S. Bisla, Harpreet Singh and Vandna Bhanot</td>
</tr>
<tr>
<td>2.</td>
<td>Studies on the use of Babul pods as natural protein protectants and antiparasitic agents to enhance ruminant production</td>
<td>S.N. Rai, NDRI, Karnal, S.S. Chaudhri and Vandna Bhanot</td>
</tr>
<tr>
<td>3.</td>
<td>Studies on xylazine, ketamine and propofol anaesthetic combinations in diaphragmatic herniorrhaphy in dairy animals.</td>
<td>R.S. Bisla, Harpreet Singh and Vandna Bhanot</td>
</tr>
<tr>
<td>5.</td>
<td>Studies on specific therapy for the correction of intestinal dysfunctions</td>
<td>S.S.Chaudhri, R.S. Bisla, Harpreet Singh, Vandna Bhanot</td>
</tr>
</tbody>
</table>

**BUSINESS PLANNING AND DEVELOPMENT UNIT (COVS)**

**Scheme:** C (b) HRM -15- ICAR, NAIP

**Salient Achievements:**

*A(f). Veterinary Products and Technologies available for commercialization PHASE-1.*

<table>
<thead>
<tr>
<th>Sr.no.</th>
<th>Product/Technology</th>
<th>Patent application/Registration no.</th>
<th>Inventor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Field spot test to detect urea in milk</td>
<td>822 DEL/2004(5.5.2004)</td>
<td>Gulshan Narang and R.S.Khokhar</td>
</tr>
<tr>
<td>2</td>
<td>Rapid field test for diagnosis of H.S in</td>
<td>233446(30.3.2009)</td>
<td>Parul sharma and</td>
</tr>
</tbody>
</table>
3. ELISA kit for monitoring H.S. antibodies in serum of cattle and buffaloes

Application filed Arvind Kumar, Gita Dahiya and N.K.Kakkar

4. Monoclonal antibody based latex agglutination test for field level rapid diagnosis of trypanosomiasis(SURRA) in Domestic, Zoo and Wild animals

Application filed V.C.Rayulu, Ajit Singh and S.S.Chaudhri

5. Development of noodles rich in protein utilizing spent hen meat.

4.4.4/09048 Nita Khanna and Surender Kumar

**PHASE-2 identified products/technologies having commercial potential**

<table>
<thead>
<tr>
<th>Sr.no.</th>
<th>Product/Technology</th>
<th>Patent application/Registration no.</th>
<th>Inventor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Development of novel set of primer pair to detect the presence of buffalo tissue</td>
<td>590/DEL/2008</td>
<td>H.Singh, G.Parsad and Minakshi</td>
</tr>
<tr>
<td>2.</td>
<td>Development of novel set of primer pair to detect the presence of cattle tissue</td>
<td>591/DEL/2008</td>
<td>H.Singh, G.Parsad and Minakshi</td>
</tr>
<tr>
<td>3.</td>
<td>Protein- g based technology for the diagnosis of Brucellosis in buffalo</td>
<td>1064/DEL/2010</td>
<td>Puran Chand and Manish Kumar</td>
</tr>
<tr>
<td>4.</td>
<td>Fluorescence polarization assay for diagnosis of Brucellosis in buffalo</td>
<td>1065/DEL/2010</td>
<td>Puran Chand and Manish Kumar</td>
</tr>
<tr>
<td>5.</td>
<td>Synthesis and applications of polyacrylamide gels catalyzed by silver nitrate</td>
<td>Application filed</td>
<td>Ajit Singh</td>
</tr>
</tbody>
</table>

**A(II) Livestock products and technologies available for commercialization.**

**Milk products:**
- Low cholesterol Burfi
- Khoa based Sweets
- Sugar free Rasofulla
- Spiced paneer
- Whey beverage
- Paneer brine pickle
- Paneer Spiced sweet and sour pickle
- Paneer spiced oil based pickle
- Paneer spiced vinegar pickle

**Meat products:**
- Low sodium chicken patties
- Low sodium chicken rolls
- Gizzard pickle
- Chicken cutlets
- Chicken pickle
- Egg pickle
- Chicken spread
- Chicken loaf
- Chicken

**Inventors:** R.S.Dabur, Nita Khanna and PG students, LPT Department

**A(III) Poultry feed technologies/ supplements available for commercialization**
✓ Anti-stress effect of Indian goose berry (Emblica officinalis) and probiotic on the performance of broilers during hot humid weather (patent application registration no.NRDC/IPR/4.18.1/10038/2010)
✓ Effect of inorganic sulphate supplementation on the performance of turkey broiler in fishmeal free ration (application filed)

B. DEVELOPMENT OF ENTREPRENEURSHIP
Technology: Milk Urea Detection
Entrepreneurs registered:
• M/s D.K.S. Incorporate Marketing Solutions, Hisar
• M/s Anytime Snacks, Suneja Towers, New Delhi
• Mr. Kirti Parsad Jain, Hisar
• Mr Ashok Nandan, Hyderabad
• M/s Vanshika Milk Agro & Plastics Pvt.Ltd, Hisar

Note: Revenue of approx. Rs 24,000 generated as membership fees

C. PROMOTION OF PARTNERSHIP WITH INSTITUTIONS IN PUBLIC AND PRIVATE SECTORS:
Nine companies showed their varied interest in the commercialization of technologies developed by the university scientists.

D. FASTENING THE TECHNOLOGY TRANSFERS:
For rapid transfer of technologies a number of awareness and market sensitization programs were organized by BPD unit at different platforms.

E. OTHER MAJOR ACTIVITIES AND ACHIEVEMENTS:
1. Agreement for purchase of milk urea detection reagent by entrepreneurs:
   • An MOU with M/S K.S. Incorporate Marketing Solutions, Hisar was signed on 28.7.10 for the purchase of Milk Urea Detection Reagent@ Rs 10000/- per litre.
   • A revenue of 55000/- has been generated through the sale of Milk Urea Detection Reagent
2. The work of BPD unit was appreciated at annual workshop of NAIP Component Projects held at NASC Complex, ICAR, New Delhi from 19-20 October, 2010
3. Training of scientists at NAARM, Hyderabad: Four scientists of LLRUVAS underwent capacity building training on “IPR Management and Commercialization Techniques”. The scientists trained were N.K.Kakkar, R.S.Dabur, Nita Khanna and Gulshan Narang.
4. Entrepreneurship Development Workshop: to pursue the cause of commercialization, strengthening of collaboration with industry and entrepreneurship development for veterinary and livestock products, a one day workshop was organized on Jan. 14, 2011. In total there were 90 participants.
5. An MOU was signed for Non-Exclusive Licensing of “milk urea detection technology” with M/S D.K.S. Incorporate Marketing Solutions for the production and sale of the “Milk Urea Detection Kits” on 20.4.2011 with a total value of Rs 8.5 lacs for five years. As per terms and conditions of MOU, initially a revenue of Rs 4.0 lacs has been generated through licensing of Milk Urea Detection technology
6. An MOU was signed between CCSHAU (LPT Deptt.) and National Meat and Poultry Processing Board (NMPPB), Ministry of Food Processing, GOI on 3rd Nov., 2010 for
providing technical inputs for boosting the meat and poultry industry in the country.

The meeting ended with vote of thanks to the chair.

Approved

Sd/-

Director of Research Coordinator Research (P&M)

Endst. No. DR/CR-PM)/11/ Dated:

A copy of the above proceedings is forwarded to the following for information and further necessary action and also requested to please circulate the proceedings among the concerned scientists.

1. Dean, College of Veterinary Sciences, CCSHAU, Hisar
2. Director General, Department of Animal Husbandry and Dairying, Pashudhan Bhawan, Panchkula
3. Advisor to VC for kind information of the Vice-Chancellor.
4. Director, NRCE, Sirsa Road, Hisar
5. Director, TVCC
5-21 All HODs of COVS,
22 In charge, Central Vety. Laboratory
23 In charge, Vety. Unit, Uchani, Karnal

Coordinator Research (P&M)
DIRECTORATE OF RESEARCH, LLRUVAS-HISAR

The meeting was chaired by Dr. S.M.Chahal, Director of Research and Dr. A.K.Pruthi Dean, College of Vety. Sci. and attended by all HoDS of COVS, faculty of the concerned departments and Dr. Nita Khanna,Coordinator Research(P&M).

The salient research findings, observations made and decision taken with respect to different research schemes in operation in the above mentioned departments are as under:

**Department of Animal Biotechnology**

Research Schemes:

i) **B-VI (a) Plan Vety.ABT-1. “Use of Molecular markers for characterization of livestock breeds and their relation with traits of economic importance”**

ii) **B-VI (a) Plan Vety.ABT-2. “Development of molecular diagnostics for canine parvo, fowl adeno, Marek’s disease, calf diarrhea and peste des petits ruminants viruses(PPRV)”**

iii) **B-VI (a) Plan Vety.ABT-3. Development of reproduction bio-techniques for improvement of farm animal fertility”**

**Salient Research Finding (2010-11):**

**A. Molecular diagnostics:**

**Marek’s disease virus infection in poultry:**

- On the basis of meq (oncogenic gene) specific nPCR analysis, 67% MD suspected samples were found positive for MDV1 serotype, while 80% suspected samples were found positive through real time PCR analysis.
- On the basis of sequence analysis, it can be concluded that four major strain of MDV1 are circulating in Hisar and its adjoining districts Bhiwani and Jind

**Canine parvovirus infection in pups:**

- The VP2 gene based PCR assay for Genotyping of canine parvovirus has been successfully applied for typing of field samples. The clear cut difference was seen in vaccine and field strains of CPV by PCR-RFLP analysis.

**Rotavirus infection in pups:**

- Out of 218(83 bovines calves+ 81 human kids+54 poultry) samples, 6 buffalo (7.2%), 4 poultry (7.4%) and 16 human (19.75%) were found positive for presence of rotavirus on RNA-PAGE analysis.

**B. Reproductive Biotechnology:**

- The expression of GDF 9 was higher in small follicles followed by medium and large follicles. This expression pattern of GDF 9 reaffirms its role in regulating follicle recruitment and early folliculogenesis and thereby it can be an important factor for regulation of fertility in buffalo.

**C. Animal Genomics:**
As no polymorphism was observed in exon 4 of IL-8 gene, and partial intron 1 and exon 2 of β4-defensin gene, hence its association with mastitis was not established. However, there was significant difference between Somatic cell count in healthy and mastitic animals.

Evaluation: Research work undertaken by the department during 2010-11 was found highly satisfactory.

Observations:
- Chairman complemented the HoD and scientists of ABT department for having maximum numbers of outside funded projects and undertaking good quality and quantity of research work. *(Action: HOB,ABT and all concerned scientists)*
- The work for developing diagnostic tools for silent heat detection and early pregnancy confirmation in buffaloes and cattle may be initiated. *(Action: HOB,ABT and concerned scientists)*
- The department should emphasize on multidisciplinary research approach and collaborative research experiments may be planned, accordingly to widen the departmental research horizons. *(Action: HOB,ABT and concerned scientists)*

Approved Technical Programme for the year 2011-12.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Title of the Experiments</th>
<th>Scientists involved (Drs./Mrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Detection and characterization of bovine rotavirus and canine parvovirus in diarrhoeic faecal samples</td>
<td>Minakshi &amp; PG student</td>
</tr>
<tr>
<td>2.</td>
<td>Isolation and molecular characterization of Mareks Disease viruses (MDV) from field samples of poultry</td>
<td>Narender maan, Aman Kumar and NK Mahajan(VPHE)</td>
</tr>
<tr>
<td>3.</td>
<td>Expression of profile of candidate gene Nr4A1 in Buffalo Cumulus-Oocyte Complexes during <em>in-vitro</em> maturation process</td>
<td>Trilok Nanda and Vishal Sharma &amp; PG students</td>
</tr>
<tr>
<td>4.</td>
<td>Polymorphism in Lactoferrin gene and its association with mastitis in Murrah Buffaloes</td>
<td>M.L.Sangwan and PG Student</td>
</tr>
<tr>
<td>5.</td>
<td>Polymorphism in TLR 2 gene and its association with mastitis in Murrah Buffaloes</td>
<td>M.L.Sangwan and PG Student</td>
</tr>
<tr>
<td>6.</td>
<td>Association of IL 8 Receptor gene polymorphism with mastitis in Murrah Buffaloes</td>
<td>M.L.Sangwan and PG Student</td>
</tr>
<tr>
<td>7.</td>
<td>Leptin gene Polymorphism and its association with mastitis in Murrah Buffaloes</td>
<td>M.L.Sangwan and PG Student</td>
</tr>
</tbody>
</table>

Department of Vety. Microbiology:

Research scheme:
B-VI (a) Plan Vety.VMI-1"Studies on the infection and immunity in relation to Haemorrhagic septicemia”.

Salient Research Findings (2010-11):
Total 4458 serum samples of cattle and buffaloes tested for H.S. immunity levels. In cattle, 44%, 32% and 24% were recorded as Protected, Partially protected and not protected, respectively. In Buffaloes, 77%, 19%, and 4% were recorded as Protected, Partially protected and not protected, respectively. Overall the protection level of bovine was 61% protected, 25% partially protected and 14% not protected.

The use of oil as adjuvant in HS vaccine was consistently found to be the most effective for protection upon challenge in the mouse model during a period of more than three months. Conventionally used adjuvant (alum) in the HS vaccine improved the immunity only marginally as compared to the use of bacterin without any adjuvant. These results highlight the scope for improving the efficacy of HS vaccine (magnitude as well as the duration) by incorporating oil as adjuvant.

Only one FMD outbreak (FMD virus serotype O) was recorded in Karnal during April, 2011.

A total of 8707 (4507, pre- and 4200, post vaccination) sera samples from Haryana and Delhi were processed for sero-monitoring of FMD- control program (FMD-CP, Phase IX, X and XI) against FMDV serotype O,A and Asia-1 in four serial dilutions by LPB-ELISA.

The overall percent of animals demonstrating protective antibody titres (>1.8 log10) against FMDV serotype O, A and Asia 1 were 49.62, 61.68 and 53.55, respectively in cattle and buffaloes together from eleven non-FMDCP districts and ASCAD programme.

Staphylococcus aureus beta-hemolysin gene expression, purification and characterization done.

Hemagglutination test for anti-PPR antibodies in goats standardized.

Lipopolysacharide (LPS) - binding nanobody clones expressed in large amounts. Nanobody clone 27-4-2 purified for studying its LPS-neutralizing and other biological activities.

Blocking ELISA for determining sero- prevalence of West Nile Virus (WNV) was developed using mAb.

The NSP tests were most suitable for detection of infected /carrier animals. The IgA ELISA and RT-PCR followed by virus isolation may be used as an adjunct to NSP based tests for DIVA strategy.

### Products/technology Developed:

- Polyacrylamide gel-based biomaterials synthesized using silver nitrate as a novel catalyst.
- *Staphylococcus aureus* beta-hemolysin expressed by recombinant DNA technology

### Field oriented information generated:

Seromonitoring of vaccination programme must be continued for effective control of HS in bovines in the state.

### Evaluation:

The research work done by the department during 2010-11 was Evaluated as outstanding.

### Observations:

1. The chairman complemented the HOD and scientists of the department for undertaking good quality and quantity of research work. *(Action: HOD, Vety. Microbiology and concerned scientists)*
Approved Technical Programme for the year 2011-12:

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Continuation of monitoring of HS immunity levels</td>
<td>Arvind Kumar</td>
</tr>
<tr>
<td>2.</td>
<td>Standardization/optimization of indirect ELISA for H.S. antibody detection using captured crude LPS of <em>Pasteurella multocida</em> B:2 as antigen</td>
<td>-do-</td>
</tr>
<tr>
<td>3.</td>
<td>Continuation of studies on developing ELISA for H.S. diagnosis</td>
<td>-do-</td>
</tr>
<tr>
<td>4.</td>
<td>Isolation, identification and characterization of isolates from HS suspected outbreaks.</td>
<td>-do-</td>
</tr>
<tr>
<td>5.</td>
<td>Comparative evaluation of <em>Pasteurella multocida</em> B: 2 bacterin preparations incorporating different adjuvant viz. alum, aluminum hydroxide gel and oil for induction of serum antibodies and their correlation with protection on the mice model</td>
<td>S.C. Gupta</td>
</tr>
<tr>
<td>6.</td>
<td>Studies on the role of the respiratory tract IgA antibodies in protection against H.S. in the mouse model</td>
<td>-do-</td>
</tr>
</tbody>
</table>

The meeting ended with vote of thanks to the chair.

Approved  
Sd/-  
Director of Research  
Coordinator Research (P&M)  

Endst. No. DR/CR-PM)/11/ Dated:  

A copy of the above proceedings is forwarded to the following for information and further necessary action and also requested to please circulate the proceedings among the concerned scientists.

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2. Director General, Department of Animal Husbandry and Dairying, Pashudhan Bhawan, Panchkula  
3. Director, NRCE, Sirsa Road, Hisar  
4. Director, TVCC  
5-21 All HODs of COVS,  
22-23. HODs -Microbiology and BMB (COBS)  
24. In charge, Central Vety. Laboratory  
25. In charge, Vety. Unit, Uchani, Karnal  

Coordinator Research (P&M)
Proceedings of the Technical Programme Committee Meetings of Veterinary Medicine, Veterinary Pharmacology and Toxicology, Vety. Pathology and Vety. Parasitology of College of Vety. Sciences held on 12.8.2011.

The meeting was chaired by Dr. S.M.Chahal, Director of Research and Dr. A.K.Pruthi Dean, College of Vety. Sci. and attended by all HoDS of COVS, faculty of the concerned departments and Dr. Nita Khanna, Coordinator Research (P&M).

The salient research findings, observations made and decision taken with respect to different research schemes in operation in the above mentioned departments are as under:

Department of Vety. Medicine:

Research Schemes:
1. **B.vi(a)PlanVety.VCM-1** “Clinical investigations on mastitis, metabolic/nutritional deficiency diseases and hepatic insufficiency in farm animals”

Salient Research Finding (2010-2011):

- Enrolfloxacin along with vitamin A and serratiopeptidase was found to be more efficacious in cases of clinical mastitis compared to enrolfloxacin alone and its combination with vitamin A.
- Ultrasonographic imaging of teats revealed that teat canal was significantly shorter, secretary tissues anechoic and blood vessels congested in mastitic quarters of buffaloes in comparison to healthy ones. Besides, hypoechoic image was observed at the base of teat cistern due to occurrence of fibrosis.
- Tranexamic acid when given @ 3 gram intra-venous daily for 3-5 days was highly efficacious treatment of post-parturient haemoglobinuria in buffaloes; however, its therapeutic efficacy was further improved when given in combination with ascorbic acid and sodium acid phosphate.

Products/technology developed:

- Use of tranexamic acid (*a new antifibrinolytic drug*) @ 3 gram intra-venous daily for 3-5 days in clinical cases of post-parturient haemoglobinuria in buffaloes.

Transferable technology develop/recommendations generated for field applications

Therapy of mastitis should include vitamin A and serratiopeptidase along with the antibiotic for best results.

Evaluation: The research work done during 2010-11 was found satisfactory.
Observations:

1. The department should explore the possibility of devising a non antibiotic regime for cow dry therapy for effective control of mastitis (Action: HOD, Vety. Medicine and concerned scientists)

Approved Technical Programme for the year 2011-12:

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Title of the Experiments</th>
<th>Scientists involved (Drs.,/Mrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Study of therapeutic efficacy of buffered phosphorus, pyruate and inosine combination in clinical cases of post-parturient haemoglobinuria in buffaloes</td>
<td>V.K. Jain, Rakesh Kumar, Sridhar, Yudhbir Singh and N.K. Rakha</td>
</tr>
<tr>
<td>2.</td>
<td>Clinico- therapeutic studies on impactive colic in equines.</td>
<td>V.K. Jain, Rakesh Kumar, Sridhar, and N.K. Rakha</td>
</tr>
<tr>
<td>3.</td>
<td>Molecular studies of Theileria equi in latently infected equines</td>
<td>Ashok Kumar and PG student</td>
</tr>
<tr>
<td>4.</td>
<td>Development of recombinant antigen based EIISA for sero-diagnosis of Theileria equi in equines.</td>
<td>N.K. Rakha and PG student</td>
</tr>
<tr>
<td>5.</td>
<td>Impact analysis of recommendations in regard to control measures against haemoprotozoan diseased in Distt. Hisar.</td>
<td>N.K. Rakha and S.P. Singh</td>
</tr>
</tbody>
</table>

Department of Veterinary Pathology

Research Schemes:

1. Bvi(a)PlanVety.VPT-1 “Pathological investigations of the diseases affecting various systems of poultry”
2. Bvi(a)PlanVety.VPT-2 “Studies on pathological changes of gastro-intestinal tract disorders of ruminants”

Salient Research Findings (2010-2011):

- Most common conditions in chicken were hepatitis, omphalitis, pneumo-enteritis, fatty liver, ascites and coli septicemia.
- *E. coli* infection in chicken revealed that colibacillosis caused systemic lesions such as fibrinous perihepatitis, pericarditis and lymphocyte depletion in lymphoid organs indicating immunosuppresion.
- Fowl typhoid in young chicks caused hepatic dysfunction, necrotic hepatitis, and lymphoid depletion in lymphoid organs, catarhal enteritis, myocarditis, pericarditis, interstitial nephritis and pneumonitis.
- Maximum mortality in bovine calves was due to gastroenteritis associated with hepatitis and pneumonia.
- The mortality in sheep was seen in age group of 6-12 months and was higher in males. *E.coli* was the main infection causing gastro-intestinal disorders in sheep.
- Main bacterial organisms isolated were *E. coli*, Salmonella typhimurium, *Staphylococcus aureus*, *Streptococcus pyogenes*, *Proteus mirabilis* and *Klebsiella pneumonae*. 
Parasitological studies revealed prevalence of *Strongyle*, *Strongyloides* and *Moniezia* spp. infection.

Evaluation: The research work undertaken during 2010-11 was evaluated as satisfactory.

Observations:

1. The young scientists should be encouraged to take up the work of field relevance and initiate work on subclinical aspect of important diseases and should not confine to postmortem related work only. *(Action: HOD, Vety. Pathology and concerned scientists)*

2. Along with *Ashwagandha* roots possibility of one or more other plant materials having specific therapeutic relevance may be explored. *(Action: HOD, Vety. Pathology and concerned scientists)*

3. Emu farming is emerging as new alternative bird in poultry farming in the state. The research work on disease prevalence, diagnosis and control/treatment aspect of different disease conditions of this bird needs to be investigated. *(Action: HODs, Vety. Pathology, VPHE and concerned scientists)*

Approved Technical Programme for the year 2011-12:

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<thead>
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<tbody>
<tr>
<td>2.</td>
<td>Pathobiological studies on <em>E. coli</em> infection in Newcastle disease virus vaccinated chickens</td>
<td>R.P. Gupta, S.K. Mishra, Deepika and Vikas Nehra</td>
</tr>
</tbody>
</table>

Department of Vety. Parasitology:

Research Scheme:

**Bvi(a)Plan Vety VPS-1 “Studies on epidemiology, pathobiology and integrated management of animal and poultry parasites in western Haryana”**

Salient Research Findings (2010-2011):

- Hot spots as well as coldspots of *Lymnaea* and *Indoplanorbis* snail habitation were detected in Rohtak and Jhajjar districts using snail collection data and spatial scan statistics and kernel smoothing techniques. These snails are the major transmitters of the economically important diseases like *Faciolosis* and *Amphistomosis* of livestock in Haryana.

- Studies on development of reversion to susceptibility of fenbendazole/morantel resistant *Haemonchus contortus* strain in goats on the LLRUVAS goat farm revealed that complete reversion to susceptibility of morantel (@20 mg/kg. body wt.) resistant strain of *Haemonchus contortus* has occurred.
Anthelmintic resistance by *H. contortus* against Ivermectin (0.4 mg/kg b.wt.) has been detected for the first time in the goats of University animal farm.

**Field oriented recommendations generated:**

- As there is a complete reversion to susceptibility of morantel (@20 mg/kg. body wt.) resistant strain of *Haemonchus contortus*, its use on goat farm is recommended.
- In view of Anthelmintic resistance by *H. contortus* against Ivermectin (0.4 mg/kg b.wt.) has been detected on the university goat farm, its use is not recommended.

**Evaluation:** Research work undertaken during 2010-11 was evaluated as highly satisfactory

**Observations:**

1. The experiment planned to study the efficacy of Mushroom against *Coccidiosis* in chicks is not approved as the feeding of mushroom extract is not economically viable. *(Action: HOD, Vety. Parasitology and concerned scientist)*

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<tbody>
<tr>
<td>1.</td>
<td>GIS based identification of priority areas in Haryana for the control of parasitic diseases in buffalo calves</td>
<td>Arun K. Sangwan and R.S. Hooda/Ajit Singh</td>
</tr>
<tr>
<td>2.</td>
<td>Spatio-temporal analysis and change detection in snail-borne parasitic diseases of district Karnal</td>
<td>Arun K. Sangwan and S.S. Chaudhary</td>
</tr>
<tr>
<td>3.</td>
<td>Studies on status of anthelmintic resistance and efficacy of anthelmintic combinations against gastrointestinal nematodes in goats.</td>
<td>Satyavir Singh, J.S. Punia (AGB) and Priyanka Singh (PG Student)</td>
</tr>
<tr>
<td>4.</td>
<td>Studies on status of anthelmintic resistance and efficacy of anthelmintic combinations against gastrointestinal nematodes in sheep.</td>
<td>Satyavir Singh, Rajinder kumar, A.K. Vinayak (AGB) and Sarika (PG Student)</td>
</tr>
</tbody>
</table>

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**Department of Vety. Pharmacology and Toxicology:**

**Research Schemes:**

B.vi.(a) PlanVPTX-1“Toxicological Evaluation of Newer Pesticides: Development of specific biomarkers and antidotes”

**Salient Research Finding (2010-2011):**

The subcutaneous administration of imidacloprid insecticide in male rates revealed no significant changes in behavior parameters, body weight change, sperm cells and seminal parameters as well as testis histology. Therefore, *imidacloprid in male rats is a safe insecticide for sub acute duration.*

**Evaluation:** The research work undertaken during 2010-11 was found satisfactory.
Observations:
The department should submit a project proposal to outside funding agency. *(Action: HOD, VPTX, and concerned scientists)*

Approved Technical Programme approved for the year 2011-12

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<td>1.</td>
<td>Effect of subchronic administration of Imidacloprid- A Neonicotinoid insecticide on reproductive functions of male rats.</td>
<td>J.S. Punia, S.K Jain and Rajiv Ranjan (Ph.D student)</td>
</tr>
</tbody>
</table>

The meeting ended with vote of thanks to the chair.

Approved

Sd/-

Director of Research Coordinator Research (P&M)

Endst. No. DR/CR-PM)/11/ Dated:

A copy of the above proceedings is forwarded to the following for information and further necessary action and also requested to please circulate the proceedings among the concerned scientists.

1. Dean, College of Veterinary Sciences, CCSHAU, Hisar
2. Director General, Department of Animal Husbandry and Dairying, Pashudhan Bhawan, Panchkula
3. Advisor to VC for kind information of the Vice-Chancellor.
4. Director, NRCE, Sirsa Road, Hisar
5. Director, TVCC
6-21. All HODs of COVS,
22. In charge, Central Vety. Laboratory
23. In charge, Vety. Unit, Uchani, Karnal

Coordinator Research (P&M)
DIRECTORATE OF RESEARCH, LLRUVAS-HISAR


The meeting was chaired by Dr. S.M.Chahal, Director of Research and Dr. A.K.Pruthi Dean, College of Veterinary Sciences and attended by all HoDS of COVS, faculty of the concerned departments and Dr. Nita Khanna, Coordinator Research (P&M).

The salient research findings, observations made and decision taken with respect to different research schemes in operation in the above mentioned departments are as under:

Department of Veterinary Anatomy

Research Scheme:

1. B VI (a) Plan Vety.VAH-1 “Gross, light and electron microscopic studies on the different body systems in ruminants and pigs”.

Salient Research Findings (2010-11)

- **Light microscopy of the compound stomach of the sheep:** An additional layer comparable to stratum lucidum was present at the oesophageo-ruminal junction.
- **Light microscopic studies on the gustatory and mechanical tongue papillae of adult pig:**
  Large number of taste buds were observed in the foliate and vallate papillae especially towards the basal portion of the medial wall of the trench.
- **Histomorphology, histochemistry and micrometry of the duodenum of sheep:** The duodenal villi were lined by simple columnar epithelium with few goblet cells. The villi were both pointed & blunt, muscularis mucosae was interrupted because of infiltration of lymphoid tissue.
- **Gross Anatomical and histomorphological studies on the buccal and labial glands of sheep (ovis aries):** The buccal and labial glands were compound tubuloalveolar consisted of secretory units and duct system.

Evaluation: The research work undertaken during 2010-11 was evaluated as satisfactory

Observations:
1. The department should submit at least one research project to outside funding agency. *(Action: HOD, VAH and concerned scientist)*

2. The title of the research scheme as revised in 44th RPC meeting should be got corrected in the university budget. *(Action: HOD, VAH, CAU and concerned scientist)*

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<tr>
<td>1.</td>
<td>Histomorphology, histochemistry of soft plate of the sheep.</td>
<td>Pawan Kumar</td>
</tr>
<tr>
<td>2.</td>
<td>Histomorphological study on the oviduct and uterus of goat (<em>capra hircus</em>) during follicular and luteal phase.</td>
<td>Gurdial Singh, Pawan Kumar and Bharti Katare (PG student)</td>
</tr>
<tr>
<td>3.</td>
<td>Gross anatomical and radiological investigations on blood vessels of head of goat.</td>
<td>R.K. Jain and Tej Parkash (PG Student)</td>
</tr>
<tr>
<td>4.</td>
<td>Histomorphology, histochemistry and micrometry of jejunum of sheep.</td>
<td>Parveen kumar and Gurdial Singh</td>
</tr>
</tbody>
</table>

**Department of Vety. Surgery and Radiology**

**Research Scheme:**

1. B VI (a) Plan Vety.VSR-1-Plan “Studies on management of surgical disorders in domestic animals”

**Salient Research Finding (2010-11)**

- Ultrasonography is useful technique to image postnatal developmental changes of reticulum in buffalo calves and radiography is a better diagnostic technique for cases of traumatic reticulitis as compare to ultrasonography in buffaloes.
- The ultrasonography is a better technique for cases of diaphragmatic hernia.
- Perireticular and sternal abscess are better diagnosed by plain radiography as well as ultrasonography.
- Butorphanol and Pentazocine have comparable analgesic effects in combination of glycopyrrole-Xylazine-ketamine during peri and postoperative period in buffaloes undergoing diaphragmatic herniorrhaphy.
- Butorphanol and Pentazocine are better analgesics than dipyrone in buffalo’s undergoing diaphragmatic herniorrhaphy.

**Evaluation:** Research work conducted during 2010-11 was evaluated as satisfactory.
1. The research work on pre and post operative supportive therapy in DH cases may be undertaken in collaboration with VPY&B department. *(Action: HODs, VSR, VPY&B and concerned scientists)*

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**Department of Veterinary Gynaecology:**

**Research Scheme:**

1. C (g) VGO-1 OA. "Improving economy of farmers through very early assessment of pregnancy and understanding the causes of infertility and solving the problems in buffaloes”.

2. C (g) VGO-2 OA “Development of mechanical detorsion device to correct uterine torsion in buffaloes”.

**Salient Research Findings:**

- Field veterinarians and internship students were given training on ultrasonography
- Motivation of farmers through different extension media to adopt ultrasonography for diagnosis of early pregnancy and other reproductive disorders.
- 4-D Ultrasonographic procedures were standardized for advanced diagnosis of reproductive disorders.

**Evaluation:** Research work conducted during 2010-11 was evaluated as satisfactory.

**Observation:**
Uterine torsion is closely related to wallowing in buffaloes therefore suitable extension material/exhibits should be developed for farmer's awareness to minimize the incidences. *(Action: HOD, VGO and concerned scientists.)*

**Approved Technical Programme for the year 2011-2012:**

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<tr>
<td>1.</td>
<td>Ultrasonographic services for the early pregnancy diagnosis and reproductive disorders</td>
<td>R.K.Chandolia and N.S.Bugalia</td>
</tr>
<tr>
<td>2.</td>
<td>4-D imaging technique standardization in large animals</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Training field veterinarians and internship students in ultrasonography and providing services to farmers.</td>
<td></td>
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The meeting ended with vote of thanks to the chair.

Approved  

Sd/-  

Director of Research  Coordinator Research (P&M)

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