

## MISSION STATEMENT

*"To be the foremost Veterinary Research Institute in Africa,  
Producing international quality standard vaccines and  
offering services for the identification, control and eradication of  
economically important livestock diseases, through best practices, research  
excellence and applying modern technology, with highly motivated,  
Trained and experienced personnel."*

## MANDATE

- a) Conduct research into all aspects of animal diseases, their treatment and control.*
- b) Develop and produce animal Vaccines, Sera and Biologicals to meet the national demand.*
- c) Provide Surveillance and Diagnosis of animal disease.*
- d) To introduce exotic stock for improved egg, meat and milk production.*
- e) Provide Extension Services and Publications to poultry and livestock farmers.*
- f) Train intermediate manpower in Veterinary and Medical Laboratory Technology and Animal Health and Production Technology.*

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## Preface

The Institute has continued to make giant strides in providing research facilities and creating conducive operating environment for staff. In 2009, the epidemiological investigations carried out in the Institute showed that the dreaded Avian (Bird) flu has apparently subsided. All the 327 samples received across the country were found to be negative. The major research activities and achievements are highlighted and others are also presented in the Divisional reports especially in the area of disease surveillance, diagnosis, treatment and control strategies. Over 40 journal publications and numerous conference/seminar presentations were made by staff. This is a clear indication that staff performed creditably in the year under review.

A new laboratory complex was built and commissioned at Umudike in October 2009. This ultramodern laboratory would be serving as the zonal laboratory for the South-Eastern zone of the country. The plan to build a similar laboratory complex in each zone in the country is under way. Also, the newly upgraded NVRI Staff Club was commissioned by the Senate President on November 21, 2009.

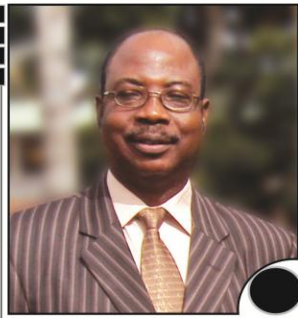
It is pertinent to also note that a new Board was put in place by the Federal Government for the Institute. The members are Dr. Isaac A. Egboja (Chairman), Mr. Dapo Ojora, Col. Aminu Isa Kontagora, AVM Umaru Abbass, Senator Walid Jibrin, Dr Iyke V. Njoku, Dr Joseph Nyager representing Federal Ministry of Agriculture and Prof. O. O. Oni representing the Agricultural Research Council of Nigeria. Others are Dr Mrs. L. H. Lombin (Executive Director and Board Secretary), Dr A. O. Olabode (Ex-Officio) and Prof. M. M. Aliyu (Ex-Officio).

Three new livestock vaccines namely, Lumpy Skin Disease, Sheeppox and Goatpox Vaccines were produced during the year and ready for release soon. Other achievements of note include staff promotion, confirmation of appointments as well as abundant opportunities given to staff to attend their various professional conferences and workshops, graduate and post-graduate training programmes nationally and internationally.

The Institute owes its remarkable progress in 2009 to the Federal Government funding, good leadership foresight and innovativeness provided by the Management as well as staff's commitment, diligence and positive attitude that will continue to lift the Institute to greater heights.

Dr (Mrs.) L. H. Lombin MFR  
Executive Director  
NVRI, Vom

## THE INSTITUTE'S BOARD MEMBERS



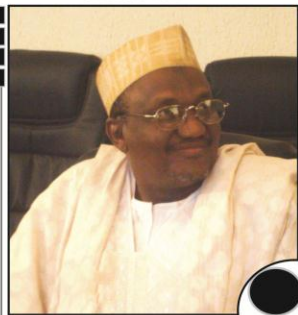
Dr Isaac A. Egboja  
*Chairman*



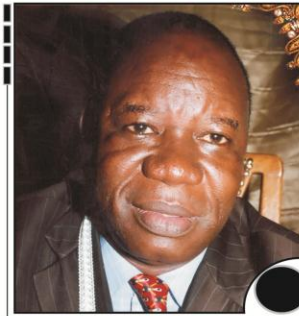
Dr Mrs. L. H. Lombin MFR  
*Executive Director/  
Board Secretary*



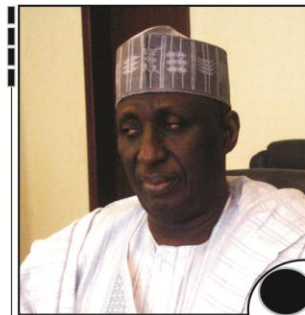
Mr. Dapo Ojora  
*Board Member*



Col. Aminu Isa Kontagora  
*Board Member*



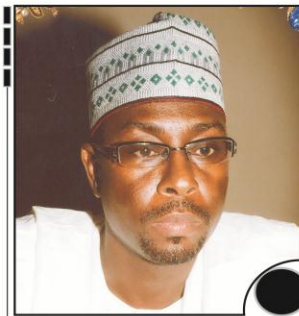
Dr A. O. Olabode  
*Ex - officio*



AVM. Umaru Abbass  
*Board Member*



Senator Walid Jibrin  
*Board Member*



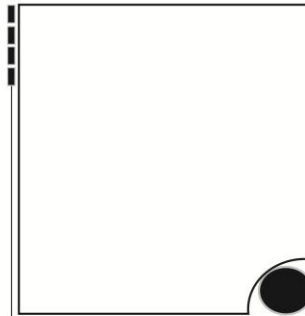
Prof. Murtala M. Aliyu  
*Ex - officio*



Dr Iyke V. Njoku  
*Board Member*



Prof. Olusola O. Oni  
*Board Member*



Dr Joseph Nyager  
*Board Member*

## KEY OFFICERS OF THE INSTITUTE AND HEADS OF DIVISION

<b>S/n</b>	<b>Name</b>	<b>Position</b>
1.	Dr (Mrs.) Lami Lombin MFR	Executive Director
2.	Dr Adesoji A. Makinde	Director (Diagnostic and Extension)
3.	Dr Mohammed S. Ahmed	Director(Livestock Services)
4.	Dr David Shamaki	Director (Research)
5.	Dr John U. Molokwu	Director (planning)
6.	Dr J. O. Salami – Shinaba	AD (Outstation, Extension & Publication)
7.	Dr A. E. Itodo	AD (Monitoring and Evaluation)
8.	Dr P. A. Okewole	AD(Diagnostic)
9.	Dr R. A. Ocholi	AD(Quality Control)
10.	Dr E. Irokanulo	AD(Bacterial Vaccine Production)
11.	Dr A. O. Olabode	Provost (Fed. Coll. Vet. Med. Lab. Tech.)
12.	Prof M. M. Aliyu	Provost (Fed. Coll. Ani. Hlth & Prod. Tech)
13.	Mr. A. Idoko	Head of Accounts
14.	Mr. J. N. Zinkat	Head of Administration

## HEADS OF DIVISIONS (HODs)

<b>S/n</b>	<b>DIVISIONS</b>	<b>HODs</b>
1.	Administration	Mr. J. N. Zinkat
2.	Bacterial Research	Dr M. Odugbo
3.	Bacterial Vaccine Production	Dr E. Irokanulo
4.	Biochemistry and App. Mol. Biology	Mrs. A. L. Samuel
5.	Consultancy	Dr A. Ogunsan
6.	Dagwom farm	Mr. I. Jibrin
7.	Diagnostic	Dr P. K. Okewole
8.	Extension and Liason Services	Dr L. U. Muhammad
9.	Fed. Coll. Ani. Hlth. & Prod. Tech.	Prof M. M. Aliyu
10.	Fed. Coll. Vet. Med. Lab. Tech.	Dr A. O. Olabode
11.	Finance/Accounts	Mr. A. Idoko
12.	Internal Audit	Mr. Y. Zal
13.	Library and Documentation	Mrs. Eunice O. Yusuf
14.	Livestock Investigation Div. (LID)	Dr N. J. Zwandor
15.	Monitoring and Evaluation	Dr A. E. Itodo
16.	NVRI Staff Primary School	Mr. C. I. Ugbong
17.	NVRI Staff Secondary School	Mrs. G. N. Chima



18.	Outstations, Extension & Publications	Dr J. O. Salami-Shinaba
19.	Parasitology	Dr G. I. Dogo
20.	Poultry	Dr U. Musa
21.	Printing and Publication	Mr. J. P. Kaigama
22.	Quality Control	Dr R. A. Ocholi
23.	Stores	Mr. A. Baso
24.	Viral Research	Dr T. M. Joanis
25.	Viral Vaccine Production	Dr C. I. Nwosuh
26.	Workshop	Mr. S. M. Dido

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## Pictorials

Photo 1



The building of the Biochemistry and Applied Molecular Biology Division renovated in 2009 and provided with some new equipment

Photo 3



The building was renovated to accommodate University Dons on sabbatical leave and other Special Guests of the Institute

Photo 2



The inside of the Rabies Diagnostic Laboratory upgraded with modern equipment and working environment

Photo 4



The upgraded Staff Club of the Institute was commissioned in November, 2009

## RESEARCH REPORTS (HIGHLIGHTS/UPDATES)

### 1. **Phenotypic and genotypic characterization of Pasteurella multocida isolated from birds at post-mortem in Jos metropolis.**

The study commenced on 26<sup>th</sup> January, 2009. A total of 503 bird carcasses were examined at post-mortem. Three samples consisting of the liver, spleen and lungs were taken from each carcass. In all, 170 suspected bacterial isolates were recovered and examined biochemically. The tests carried out in the Laboratory revealed that the majority of the isolates did not belong to Pasteurella species. At the end of the study, a total of twelve (12) P. multocida isolates were obtained from the dead birds examined, using polymerase chain reaction assay. However, work on P. multocida isolation continues.

### 2. **Epidemiology and sampling of dermatophilosis-infected cattle, sheep and goats in Jos-South Local Government Area of Plateau State.**

A survey was carried out to determine the prevalence of dermatophilosis among cattle, sheep and goats in Jos-South Local Government Area of Plateau State. A total of nine thousand, seven hundred and thirty-four (9,734) cattle, one thousand five hundred and seventy-five (1,575) sheep and thirty-nine (39) goats were examined for dermatophilosis lesions. The study showed that two hundred and nine (209) cattle and two (2) goats were positive for Dermatophilus congolensis. Some of the samples collected during the survey were cultured for D. congolensis isolation. In all, sixteen (16) isolates were obtained and lyophilized. The study further confirms dermatophilosis as one of the endemic diseases of ruminants in Nigeria and thus requires the development of more control strategies in the field.

### 3. **A new test for Brucellosis**

A new Brucella test, the Lateral Flow Assay, was introduced in the Brucellosis Research Section of the Institute. This was possible through the collaborative work with KIT Biomedical Research, Royal Tropical Institute, Amsterdam, the Netherlands.

The test is a one-step immunochromatographic lateral flow assay which is very easy and convenient to use as it does not require electricity, equipment or special training. One thousand one hundred (1100) test

kits were donated by the Royal Tropical Institute. About 90% of the kits had been used and gave satisfactory results.

#### **4. Impact assessment of NVRI animal vaccines on Nigeria Livestock Industry.**

The objective of this study was to assess the impact of NVRI animal vaccines on Nigerian livestock industry. A total of one thousand and eighty five (1085) livestock farmers from across the country were randomly selected and interviewed using structured questionnaire. Secondary data were also collected from State Directors of Veterinary Services and NVRI and these were analyzed using simple descriptive statistics.

About 91% of the livestock farmers were aware of the critical role that animal vaccines play in animal health and production. Again 76% of the farmers reported that Veterinarians and Para-veterinarians handled vaccine administration on their farms. Majority of the farmers attested to the importance of NVRI vaccines being purely and locally produced biological technologies. Many farmer respondents (86%) preferred the use of NVRI vaccines as first option on their farms. Effectiveness and reliability are the main benefits derived from these biological products by the poultry and livestock farmers.

Also, many respondents indicated that recommended practices are observed with respect to vaccine administration on the farms. However, the challenge of inadequate supply is a major constraint. This inadequacy has led to the entry and indiscriminate importation of foreign vaccines. This could also be a source of introduction of new microbial agents that may cause infection of Nigeria livestock and poultry. It is therefore concluded that NVRI continues to play its leading role as producer of high quality animal vaccines in the country and would put all hands on deck to ensure constant availability of these products to meet the demand of the farmers. This also will put a check on quacks who parade fake and inferior animal vaccines which adversely affect the poultry and livestock industry in the country.

#### **5. Efficacy of Neem Azal T/S against ectoparasite infestations in Nigeria**

Over 1000 cattle, 120 dogs and 300 sheep have been treated to evaluate the efficacy of Neem Azal T/S drug against common tick infestations in Plateau, Kaduna and Taraba States of Nigeria. The results are promising, showing about 60% efficacy against ticks and 100% against fleas on goats. Trials are still on-going and plans are underway to start the molecular work on ticks treated with the product.

## 6. Development of Capripox Vaccines

The objective of the project is to develop vaccines for cattle, sheep and goats against Lumpy Skin Disease (LSD), Sheeppox (SP) and Goatpox (GP) respectively in enzootic areas. Capripox viruses used for LSD, SP and GP vaccines were isolates obtained from the field and, attenuated by tissue culture passages.

Method of Manufacture:

Vaccine batches (LSD Vaccine, SP Vaccine, GP Vaccine and the LANAVET Vaccine) were produced on monolayers of VERO cells.

Vaccination and Infection Dose:

All vaccines were freeze-dried in 2ml-aliquots in vials sufficient for 100 doses for sheep and goat vaccination and 50 doses for cattle. Sheep and goats were inoculated subcutaneously on the flank with 0.5ml of 1.100 dilution in PBS of the freeze-dried vaccine and cattle received 1ml of the same dilution.

Safety and Efficacy:

None of the animals vaccinated developed pyrexia or any other sign of illness over 17 months post-vaccination. However, those that received intradermal inoculations developed subcutaneous nodules. From one month to a year post-inoculation, vaccinates consistently showed precipitin antibodies to capripox viruses, indicating adequate protection against challenge with virulent field strains. The vaccines have been tested and confirmed to be pure, safe and efficacious.

However, there is need to carry out the following:

1. More challenge experiments
2. Cross-immunity studies to confirm and finally conclude the project.
3. Define the history, potency and cross-protection properties of the LANAVET strain.

## 7. Development of Killed Adjuvanted Rabies Cell culture Vaccine

The objectives of this study are:

1. To adapt the previous egg based LEP rabies virus to cell culture (BHK-21 CL13, VERO).
2. To inactivate cell culture adapted rabies virus with Acetyleneimine (AEI) or Beta-propiolactone.
3. To formulate killed adjuvanted rabies cell culture vaccine.

4. To immunologically compare the existing egg based vaccine with the new killed adjuvanted cell culture rabies vaccine.

5. To make recommendations based on the results to be obtained.

**Work Done So Far:**

**A. Mice Assay:**

The Low Egg Passage (LEP) vaccine seed virus was passed in 1-7 week old mice (0.03ml/ mouse, IC inoculation; observed for 21 days post inoculation).

After three repeated tests; 102.75/0.03ml LD<sub>50</sub> titre was obtained and used as seed virus for adaptation in cell culture.

In young adult mice (3weeks old) assay titre not more than 10<sup>1.55</sup> /0.03ml LD<sub>50</sub> was obtained.

**B. Vero Cell Line**

The rabies virus (LEP STRAIN), earlier adapted in embryonated eggs, was passed into VERO cell lines up to 5<sup>th</sup> passage.

The 5<sup>th</sup> passage harvest was freeze dried in glass vials and stored at 20°C.

The Vero adapted freeze dried virus was titrated in both baby mice (1-7 days old) and adult mice (3-6 weeks old). No infective virus titre was obtained.

**C. BHK-21 Cell Line**

The rabies Virus was also passed into BHK-21 cell line up to 4<sup>th</sup> passage.

The cell culture harvests were tested in both baby and adult mice with no infective virus titre obtained. However, evidence of tumors on the head, tail and limbs in both tests and control mice was recorded.

The 4<sup>th</sup> passage harvest from BHK-21 cell is ready for freeze drying and titrations by Fluorescence Antibody Test (FAT).

## Future Work Anticipated

1. Inactivation of virus suspension.
2. Formulation of vaccine.
3. Vaccine Testing (sterility, safety, potency and challenge).
4. Comparative studies between the current vaccine and the newly developed cell culture rabies vaccines.
5. Immunization of animals and determination of immune duration in target host (dogs and cats) from 2 weeks to 18 months.
6. Recommendations based on results of the project.

## 8. Development of Multivalent Black Quarter (BQ), Hantavac and Haemorrhagic Septicaemia (HS) Vaccines for Large Animals

The three vaccines are currently being produced as separate monovalent products. This project intends to develop and evaluate a multivalent vaccine that will possess all the three antigenic and immunogenic properties for the control of these diseases. It will therefore alleviate the problems and challenges associated with production, storage and administration of the monovalent vaccines.

Purification of vaccine seed cultures and Virulence tests for Pasteurella multocida (types b (3,4) (standard), and P. multocida E:2 (Obudu) were carried out. Pure cultures of the vaccine seeds were confirmed by morphology and biochemical tests.

Purification of vaccine seed cultures and virulence test on the HANTAVAC and BQV seed cultures had commenced.

Virulence studies for Clostridium novyi type B strain used in the production of HANTAVAC vaccine commenced in November, 2009.

All the three vaccine seed cultures are ready for the next phase of vaccine development.

## 9. Development of Multivalent Fowl Typhoid (FT), Fowl Cholera (FC) and Newcastle Disease virus – Lasota (NCDVL) vaccine for Poultry

Fowl typhoid (FT), Fowl cholera (FC) and Newcastle (NCD) disease are among the common diseases known to be afflicting poultry in Nigeria. There is need therefore to develop effective and efficient multivalent vaccine to control these diseases. The Institute has been producing the



three vaccines as separate monovalent products. The FC, FT, and NCD vaccine seed characterization, inactivation and culture validation have been concluded.

The vaccine manufacture was carried out according to protocols from LANAVET Cameroun and SEPPIC France.

The vaccine formulated is currently undergoing observations to ascertain stability of the emulsions (Aluminum Hydroxide and Montanide ISA 70) in the vaccine and at varying temperatures, as well as determination of the shelf life.

The field strain of Salmonella enterica subsp. enterica serotype gallinarum had been isolated and would be tested for virulence in chickens before incorporation in the multivalent vaccine production.

#### **10. Formulation of Pelleted Thermostable Food Vaccine**

The NDV-I<sub>2</sub> vaccine virus was propagated and multiplied in readiness towards the execution of the project on the formulation of a pelleted food vaccine for rural poultry. Final approval of the proposal which was submitted to the Agricultural Research Council in the year 2009, is being awaited for continuation.

#### **11. African Swine Fever (ASF) Update**

The Institute collaborated with World Reference Laboratory for African Swine Fever (ASF), CISA-INIA, Spain for serological analysis, molecular diagnosis and viral sequencing of suspected ASF samples. Sample invoice/manifest for 330 groups of tissues and 1274 sera was received and samples were exported to CISA-INIA. Of the 330 groups of tissues (spleen, liver, kidneys and lungs) 157 (48%) were positive for ASF by PCR. Also, of the 1274 sera submitted for antibody detection, 111 (9%) were positive for ASF. These results indicate further that ASF is still prevalent in Nigeria

#### **12. Epidemiology, Diagnosis and Control of ASF in Nigeria-Update**

Field surveillance for ASF and sample collections were done in the abattoir, live markets, farms and wildlife parks across the country. The result of the study showed that the national prevalence of ASF was 9% by serology and 48% by virology. It is important to note that a total of 77 ASF virus isolates were obtained from the field samples collected during the surveillance. The research work is still going on. There is also an on-going ethno-veterinary study on a plant with antiviral potentials against ASF.

**13. African Horse Sickness (AHS) Update**

A total of 8 samples were received in 2009 for AHS diagnosis, including a set of tissues from a zebra in the Yankari Wildlife Park. Samples were packaged and sent to Ouderstepoort Veterinary Institute (OVI), South Africa for detailed analysis. All the samples were positive by Real- Time Polymerase Chain Reaction (RT-PCR).

**14. Foot and Mouth Disease (FMD)-Update**

In 2009, a total of 12 samples were received from six States (Plateau, Ogun, Bauchi, Oyo, Ekiti and Adamawa States) for FMD diagnosis. The samples were packaged and ready for shipment to the World Reference Laboratory for FMD (WRLFMD) Pirbright. The unit is still awaiting the delivery of the FMD Diagnostic Kits.

**15. Survey for PPR Antibodies from Abattoir Sera in Jigawa State**

One hundred and forty two (142) serum samples from sheep and goats were collected from an abattoir in Jigawa State. They were tested using C-Elisa for the detection of PPR Antibodies. Twenty six (18.3%) of the samples were positive. This further indicates the spread of PPR across the country.

**16. Continued Surveillance for Highly Pathogenic Avian Influenza (HPAI) virus in Nigeria**

Field samples suspected to be Avian Influenza were received nationwide in a passive surveillance in the reporting year. From a total of 327 samples received, none was positive for Avian Influenza. Similarly, active surveillance targeted at live bird market in the Agricultural Research Council-approved research project being jointly executed with NADIS and AICP resulted in the submission of over 18,000 samples. Even though the samples were collected in risk areas for Avian Influenza and in sick birds and water fowls as prescribed in case definitions, no Avian Influenza virus was detected. The success of Avian Influenza containment as indicated by failure to detect the virus by both active and passive surveillance in line with Organization of International Epizootic (OIE) pathway for the declaration of disease free status is a welcome development.

**17. Ante Mortem diagnosis of Cowdriosis in Ruminants**

An attempt was made to develop a diagnostic method of detecting Cowdriosis when the animal is still alive. This is to enable clinicians treat the condition and reduce mortality. This is done by using aspirates from the pre-scapular lymph node, fixed, stained and examined under oil immersion for the presence of Cowdria elementary bodies. Even though

the test proved useful, it needs further validation using experimental positive cases to determine its sensitivity and specificity.

**18. Trials on the in-vitro susceptibility of *Mycoplasma mycoides mycoides-small colonies* (MmmSC) field isolates to antibiotics.**

Trials have been conducted on the two strains of MmmSC used for the virulence test based on the protocol of the Sensititre System® (produced by Trek Diagnostic Systems, UK) in which broth cultures of both strains were inoculated into 96-well antibiotic coated plates and incubated for 5 days.

Both strains of MmmSC were susceptible to Tylosin tartarate, Clindamycin, Tulathromycin, Enrofloxacin, Chlortetracycline, Tilmicosin. Tiamulin, Florfenicol and Oxytetracycline to varying degrees and resistant to Penicillin, Ampicillin, Ceftiofur, Gentamycin, Neomycin, Danofloxacin, Sulfadimethoxine, Trimethoprim and Spectinomycin.

From this preliminary finding, the MmmSc field isolates (the challenge organism inclusive) were susceptible to tylosin *in-vitro* thereby justifying its selection as drug of choice for therapy on cattle that would be experimentally infected with CBPP

## **ADMINISTRATION**

The Division is charged with the responsibility of assisting the management on the day-to-day administration of the Institute. This includes matters relating to Establishment, Staff Welfare, Maintenance of Records, Appointments, Retirements, e.t.c. The Division is divided into various units according to their functions.

### **Establishment Unit**

The unit was responsible for:

1. Handling of staff Appointments and Promotions, Disciplinary cases.
2. Taking charge of the Open Registry.
3. Preparation of Quarterly/Annual reports for the Division.
4. Liaising with the Records Unit to update staff nominal roll.
5. Coordinating General Duties
6. Taking a custody of Staff Records and Files
7. Handling the Implementation of Institute's Policies
8. Interpreting Government Circulars and Regulations

The Unit recorded a total of 58 new appointments, 143 Junior and 114 Senior Staff promotion, 9 advancements and 2 Senior and 4 Junior disciplinary cases during the year under review.

### **Records Unit**

The Records Unit carried out the following schedules.

1. Maintaining Staff Records of Service
2. Processing of Staff Leave: i.e Maternity Leave, Annual Leave, Casual Leave, Examination Leave and Sick Leave.
3. Compiling documents for both Junior and Senior Staff's graded files.
4. Keeping records of both the Junior and senior staff on new appointments.
5. Continual updating of Staff Nominal Roll as due and when necessary.

A total number of staff in the Institute was 950.

Other records included 14 retired Staff, 1 dismissed, 3 terminated and 6 death cases in 2009.

### **Pension Unit**

The Pension Unit was responsible for:

- a. Handling the Institute's Pensioners who were covered by the Old Pension Scheme.
- b. Handling the Institute's Group Life Assurance Scheme for staff.
- c. Handling staff welfare matters e.g. Death cases, end-of-year packages, etc.

The Old Pension Scheme came into force during the Obasanjo Military Regime by the promulgation of Decree 102 of 1979 and terminated by Pension Act 2004 ascertained into law by President Olusegun Obasanjo on the 25<sup>th</sup> July 2004.

### **Attachment Unit**

The Attachment unit of the Division accepted students on industrial training, Corp Members from NYSC, Graduates on NDE attachment programme, Interns on internship training and conducted students/participants from various Institutions who came for educational visits to the Institute. A total of 24 Corp Members were accepted to serve in the Institute and three graduates on NDE programme. Also 87 schools/Institutes visited the Institute in 2009.

### **Legal /Protocol Unit**

The Legal Unit liaised with the Institute's external solicitors on the need to perfect the Title Deeds of the Institute's Landed Properties as well as:

1. Ensuring that various individual trespassers to the Institute's Triangular land are traced and effectively served with court processes.
2. Ensuring that the case of the defunct Savannah Bank is speedily disposed off for the evacuation of the Bank's properties for the Institute to recover her property.
3. Ensuring that the Certificate of Incorporation of the Institute consultancy Service Unit was out without further delay.

The Protocol Unit was charged with the responsibility of receiving, accommodating, entertaining and transporting visitors and very important

personalities (VIPs) of local and international repute in the Institute. These activities are carried out in liaison with the other relevant Sections/Departments of the Institute, Ministries and Government Agencies.

### **Training Unit**

The Training Unit carried out the following duties:

1. Advising on training needs of staff
2. Recommending staff for appropriate training in accordance with the Institute's Training Policy.
3. Processing of staff request for training
4. Liaising with the Records Unit in keeping records of staff on Training

### **Security Unit**

The survival of every establishment depends on its ability to secure the lives and properties of staff from any form of insecurity and threats. The Unit was able to discharge its statutory duties appropriately in line with the Institute's policies and directives.

Activities of persons of security concern were closely monitored. Students' activities in the two Colleges as well as their clandestine modus operandi passed through prime eyes of security. Nocturnal activities of hoodlums were also carefully monitored and managed. The Unit provided escort services ranging from escort of vaccines from the Institute to Airport for dispatch to various Outstations as well as escort duties to staff during the curfew periods imposed on the State following the sectarian/religious crises that engulfed some parts of Plateau State in November 2009. Following the fortification of the entire Institute with amphibious services, clandestine activities of persons of security interest were brought to manageable proportions.

The service also during the year under review liaised with other security agencies in the discharge of its statutory responsibilities. These liason activities



helped tremendously in policing and providing adequate security to the staff. The activities of hawkers and commercial motorcyclists within the Institute’s premises were continually put in check and controlled.



## BACTERIAL RESEARCH

### (A) Research Activities

#### (a) *Campylobacter* Laboratory

#### Project Title:

#### Prevalence of *Campylobacter* species in Aborting and Apparently Healthy Cattle in Plateau State

#### Progress Report

A total of 28 *Campylobacter* isolates were confirmed using Polymerase Chain Reaction (PCR) assay as *Campylobacter jejuni* (21) and *Campylobacter coli* (7)

Antimicrobial resistance test was conducted on 28 *Campylobacter* strains (21, *C. jejuni*; 7 *C. coli*) isolated from cattle in 2008 using 10 antimicrobial agents.

18 (64.4%) were resistant to 1 or more antimicrobial agents tested

12 (42.8%) were resistant to Nalidixic acid

14 (50%) were resistant to ciprofloxacin

Resistance to other antimicrobial agent namely, streptomycin, tetracycline, sulfamethoxazole, erythromycin, gentamycin and trimethoprim, ranged from 5.2%-36.7%

All were susceptible to Chloramphenicol and Clindamycin

Susceptibility tests are useful epidemiological tools. Routine susceptibility tests on such major pathogens of cattle are useful as part of the programme of surveillance, possible emergence of resistant strains and the need to modify treatment schemes.

Further molecular characterization (sequencing) of isolates was done using Multilocus Sequence Typing (MLST)

A total of ten isolates (6, *C. jejuni coli*; 4, *C. coli*) were further confirmed and sequenced using MLST

The *C. jejuni* were identified as ST 4066, ST 1932, ST 3554, ST 607, ST 1036

The *C. coli* were identified as ST 425, ST 4042, 4050, St 1181  
Sequence types 4066, 4042 and 4050 were novel.

The significance of the sequencing is that for the first time in Nigeria, data on the sequence types were indentified, with many sequence types encountered similar to that in other countries. However, three other sequence types, novel to other countries, were recorded in Nigeria.

#### (b) **Brucella Laboratory**

##### **Project Title:**

##### **Molecular Characterization of Brucella Isolates from Livestock in Nigeria**

##### **Objectives**

- To characterize the Brucella isolates from Nigeria livestock using Polymerase Chain Reaction (PCR) technique.
- To detect Brucella DNA from samples such as milk, blood and tissues of livestock by PCR
- To carry out sequencing of all Brucella species isolated from Nigeria livestock.

##### **Progress Report**

All stored *Brucella* species isolated from 1970 to 2009 were identified and stored at -20 C. The laboratory took delivery of Bruce-ladder primers and reagents for molecular characterization of all *Brucella* species including vaccine strains. Sample collection and isolation of *Brucella* species was carried out simultaneously with the molecular work. The laboratory carried out Bruce-ladder PCR and Gel electrophoresis of the following Brucella reference strains: *B.abortus*, *B.abortus* S19, *B. melitensis*, *B. melitensis* Rev 1, *B. canis*, *B.ovis* *B. suis* and *B.abortus* RB 51. The laboratory conducted Bruce-ladder PCR and Gel electrophoresis and analyed 14 stored Brucella organisms. PCR photograph showed bands typical of *Brucella abortus*. The results further confirmed the sensitivity, specificity and reliability of PCR assay as a modern diagnostic technique for the confirmation of microbial aetiological agents.

(c) **Mycoplasma Laboratory**

**Project Title:**

**Antibiotic Therapy for the Control of Contagious Bovine Pleuropneumonia (CBPP) in Nigeria**

**Objectives**

- a. To establish clinical infection of Contagious Bovine Pleuropneumonia using sero-negative cattle and apparently health cattle in Nigeria
- b. To carry out antibiotic trials on animals infected with CBPP
- c. To determine the drug(s) of choice and the effective period of therapy for the disease
- d. To build capacity through national workshop and training

**Progress Report on:**

**Pre-infection Screening and Evaluation of Virulence of *Mycoplasma mycoides mycoides*-Small Colonies (MmmSC) field isolates from Northern Nigeria:**

All animals purchased for the antibiotic therapy were screened by C-ELISA, treated for common parasitic infections and stabilized for at least three weeks before the major experiment. Based on the protocol for the MmmSC virulence test, 20 animals were used. Two groups of ten animals each were inoculated with two strains of MmmSC (field isolates 06059 and 06060) subcutaneously. The development and rate of inflammation of the inoculated region was monitored and recorded to determine the more virulent of the two strains.

At the termination of the experiment, only two reactors were observed in Group 1; their swellings measuring 2.26 and 16.0cm in diameter. None of the animals displayed fever. In Group 2 all the 10 animals displayed local lesions that were much more pronounced although varied between individuals (11.5cm-41.0cm in diameter). In five cases, the oedema extended to the dewlap and in two of these, over the left shoulder. Pyrexia was displayed especially in animals with severe local reactions.

The experiment clearly demonstrated that MmmSC field Isolate 06060 was more virulent of the two isolates and would be used as the challenge organism for the antibiotic therapy experiment.

## BACTERIAL VACCINE PRODUCTION

The tempo of vaccine production activities as recorded in the Division in 2009 was slightly higher than that recorded in 2008. Seven of the eight bacterial vaccines were produced throughout the year. The only exception, Brucella vaccine, was produced only once during the year. On the other hand, the production of Black Quarter Vaccine which was hampered due to lack of screw caps for glass bottles in 2008 recorded the highest production percentage increase of 279.6% in 2009 (see Table 2).

The total combined production figure for all the bacterial vaccines in 2009 was **28, 035, 620** doses, showing a marginal increase over the **27,743,780** doses recorded for 2008. Production was at the peak during the third and fourth quarters of the year with the freeze dried vaccines (BV, CBPPV and FTV) recording decreases in production, due in part to the decontamination exercise at the Dispensing Unit of the Freeze-drying Section of the Viral Vaccine Production and repairs on the Institute's Stand-by Generator. Nonetheless, production was highest for CBPP vaccine (7,181,200 doses) see Tables 1, 2 & Fig. 1

The dispatched record for the year, however, showed that the total dispatched figure of 30,008,220 was higher than the total production figure. The bulk of the difference came from the CBPP which was produced in 2008 and carried over to 2009.

### Production Report

#### **Anthrax Spore Vaccine (ASV):**

A total of **6,943,200** doses were produced in 2009, representing an increase of 26.6% over the **5,484,000** produced in 2008.

**Black Quarter Vaccine: (BQV) 4,364,500**doses were produced. This represents a 279.6% increase over the production figure recorded for 2008 (1,149,500 doses).

#### **Brucella (S19) Vaccine: (BV)**

Production of Brucella vaccine decreased in 2009, a total of **435,100** doses were produced compared with the **1,694,100** doses produced in 2008; a 74.3% decrease.

#### **Contagious Bovine Pleuropneumonia Vaccine: (CBPP)**

A total of **7,181,100** doses were produced, a decrease from the 2008 figure of **8,943,500**.

### **Fowl Cholera Vaccine: (FCV)**

**3,909,400** doses were produced, giving a production increase of 21% over that of 2008 (**3,395, 800** doses).

### **Fowl Typhoid Vaccine: (FTV)**

A total of **4,000,200** doses were produced; a decrease from the **5,615,200** of the 2008 production.

### **Haemorrhagic Septicaemia Vaccine: (HSV)**

**765,600** doses of HSV were produced. This figure is higher than the amount recorded for 2008 (**595,800** doses) representing an increase of 28.5%.

### **Hantavac:**

A total of **436,520** doses of HANTAVAC were produced showing a decrease over the 557,880 doses produced in 2008.

### **On-going Academic Research projects:**

The following academic research activities for degree programmes earlier embarked on by some staff are still on-going. They include;

Dr. A. A. Masdooq – “Bordetellosis in Poultry within Plateau State, Nigeria” (MSc)

Dr. David Ehizibolo – “Epidemiological Survey of Foot and Mouth Disease Virus (FMDV) in Ruminants in Plateau State” (MSc)

Dr. Sugun Manasah – “Plasmid DNA Analysis of *Pasteurella multocida* isolated from Cattle in Plateau State” (PhD)

Dr. Y Akalusi – “Reconstruction of *Mycoplasma mycoides mycoides* Small Colony Strain agent of Contagious Bovine Pleuropneumonia for vaccine production” (PhD)

### **Infrastructural Development**

It is pertinent to note that the building of a new and modern Bacterial Vaccine Production Laboratory has commenced.

### **Working Materials**

The following equipment media and other materials were procured for the Division. They are: Karstulam Metal Air Cleaner, Drying Cabinet, Memmert Incubator (Table Top), Hot plate Stirrer, Clifton Water Bath, Avery Berkel/Ohaus Weighing Balances, Light microscopes, Stereomicroscope, Digital Memory Thermometer, Potable Autoclave, Anaerobic jar and Automatic Voltage Regulators.

**Others are:**

Air conditioners at the Division's corridors and laboratories Media, Reagents, Chemicals and other consumables.

**Short Courses/Workshops/In-House training**

All staff in the Division embarked on departmental In-house seminar as well as the Institute's bi-monthly seminars. Six members of staff attended their Association/National Scientific Annual Conferences, the Nigerian Veterinary Medical Association in Awka and Association of Medical Laboratory Scientists of Nigeria (AMLSN), Anambra 2009.

**Table 1: Bacterial Vaccines Produced (Doses) in 2009**

MONTH	ASV	BV	BQV	CBPP	FCV	FTV	HSV	HANTAVAC	
<b>Jan.</b>	730400		626500		298000		54000	36560	
<b>Feb.</b>	358800				199400		55640		
<b>March</b>				773500	31100	392800	38880		
<b>APRIL</b>	737600		588500		332400	-	23400	51520	
<b>May</b>	720800		625500		300800	393200	76880	33880	
<b>Jun</b>	1002800		440500	1553800	247600	444200	79240	35320	
<b>July</b>	733200		561500	1205000	275200	402900	99600	74320	
<b>Aug</b>	730000			446800	369900		93280	39480	
<b>Sept.</b>	319200			487600	15600	273600	29680	36320	
<b>Oct</b>	594000	435100	850000	1377800	159400	944700	68680	67680	
<b>Nov.</b>	649600		268000	1336600	328000	427300	62760	28200	
<b>Dec.</b>	366800		404000		267000	721500	83560	33240	
<b>TOTAL</b>	<b>6,943,200</b>	<b>435,100</b>	<b>4,364,500</b>	<b>7,181,100</b>	<b>3,909,400</b>	<b>4,000,200</b>	<b>765,600</b>	<b>436,520</b>	<b>28,035,620</b>

**Table 2: Bacterial Vaccine Production (Doses) – Comparison of 2008 and 2009 Figures**

YEAR	ASV	BQV	BV	CBPP	FCV	FTV	HSV	HANTAVAC	TOTAL
<b>2008</b>	5,484,000	1,149,500	1,694,100	8,943,500	3,395,800	5,615,200	595,800	557,880	<b>27,743,780</b>
<b>2009</b>	6,943,200	4,364,500	435,100	7,181,100	3,909,400	4,000,200	765,600	436,520	<b>28,035,620</b>

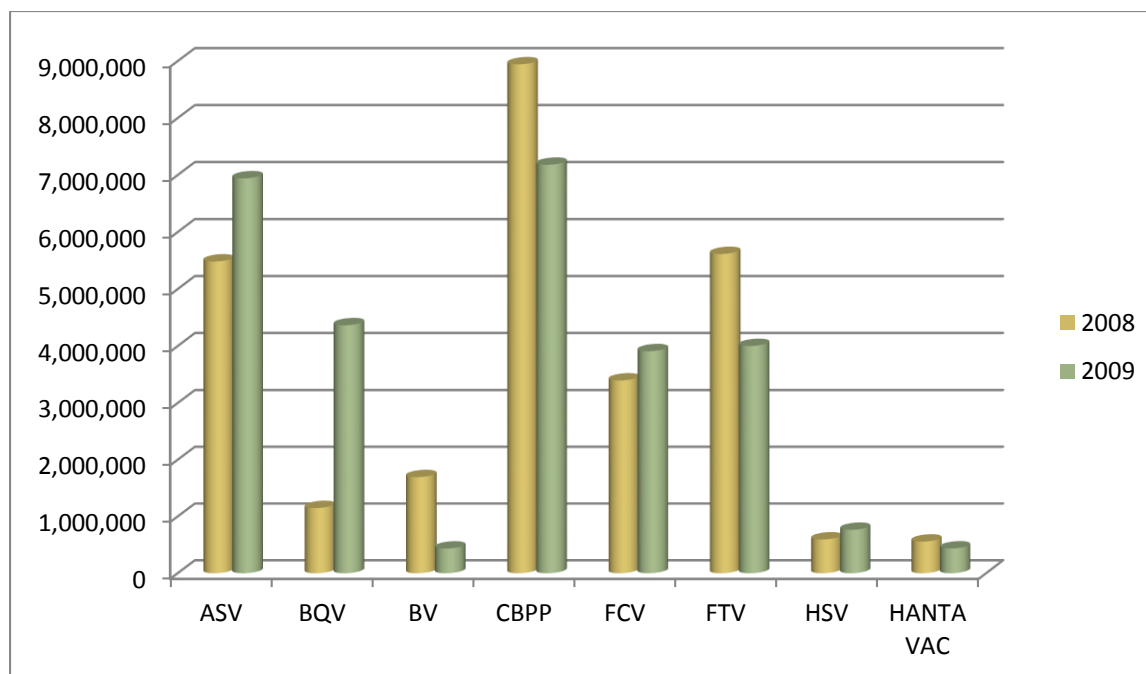


Fig. 1  
**Bacterial Vaccine Production (Doses) – Comparison between 2008 – 2009 Production Figures**

### Future Projection

It is envisaged that better quality vaccines will be produced under GMPs as the Division is preparing to move into the new and modern Production Laboratory, with a minimum 25 % increase over the 2009 production figure, in 2010.



## BIOCHEMISTRY AND APPLIED MOLECULAR BIOLOGY

### Activities

#### a. Investigation of veterinary drug residues in food animals in Nigeria.

Preliminary trial was conducted to adopt a qualitative tetracycline screening method using test rabbits which were administered at high dose. The project was halted at the confirmation stage using High Performance Liquid Chromatography (HPLC) as a technical challenge was experienced with the equipment. Work on the project would resume when a new HPLC is available.

#### b. Compositional studies and nutritional potentials of some lesser known and unconventional feed resources.

Various seeds (*Moringa oleifera esculentus*, *Amaranthus SSP*, *Sesame*, *Hibiscus cannabinus*), were analyzed to determine their chemical composition. In addition, antinutritional factors and nitrogen solubility studies were carried out as a prelude to evaluate their nutritional potential in rats. However, the work could not continue due to lack of pepsin standard, a key component of the study. It is hoped that the work will resume as soon as the standard pepsin is obtained.

### Collaborative Research

A collaborative Research work between Trifolio-M Company (a German-based Company) and the Division was conducted on a product called 'Quassia'. Quassia is a plant-based insecticide which was developed by the company for the treatment of red mites in poultry and other ectoparasites of small ruminants. The aim of the project was to assess its toxicity at sub-chronic levels in rabbits. The work was completed and the result is being harmonized for a comprehensive report to the company.

### Training Programme

A 4-day (2<sup>nd</sup> -5<sup>th</sup> Nov. 2009) international workshop organized by the European Union on Avian Influenza titled EU-FLUTRAIN, took place in the Institute. Four staff of the Molecular Biology section of the Division participated in the workshop. The purpose of the training was to get updates on the status of avian influenza in Africa, have an insight into the laboratory facilities of all countries within the influenza network and get acquainted with novel diagnostic techniques and methods for virus characterization.

## NEF-NVRI Toxicology Internship Training Programme

The Division designed, coordinated and supervised the internship training for the year 2009. The theme for the program was: "TOXICOLOGICAL INVESTIGATION FOR DRUG DEVELOPMENT".

Under the theme, two project topics were developed and executed by the internees.

The topics:

1. Determining the efficacy of crude aqueous extract of *Senna occidentalis* in the amelioration of tetracycline-induced hepatotoxicity and nephrotoxicity in rabbits
2. Evaluation of the efficacy of aqueous extract of *Phyllanthus niruri* in the amelioration of acetaminophen-induced hepatotoxicity and nephrotoxicity in rabbits.

The plants were analyzed for bioactive principles. Rabbits of both sexes were used in these studies. Tetracycline and Acetaminophen at sub-lethal doses were administered to the rabbits on alternate days and treated with the aqueous extracts of the plants" samples at varying doses orally and daily. The experiment lasted two weeks. Tetracycline and Acetaminophen caused hepatic and kidney damages in the rabbits. Treatment with the plants" extracts ameliorated these changes in a dose-dependent manner. It was concluded that the plant extracts may be useful in ameliorating the adverse effects of these drugs in animals and these plants are readily available.

## Routine Analysis

A total of 363 samples made up of plant materials; grass, feed, foodstuff and blood were analyzed for various parameters. The samples were from the Institute and external clients. Parameters analyzed included bicarbonates, sulphates, oxalates, tannins, cyanide alkalinity, chlorides, aflatoxin, phytic acid, heavy metals, PH, extraction and phytochemical screening (Phosphours, Calcium, moisture, Aspartate aminotransferase(AST), Alanine aminotransferase (ALT). Alkaline Phosphatase (ALP) creatinine and urea).

Routine biochemical analyses of water samples from the Institute water treatment plant/reservoir were carried out on a daily basis. Seven hundred and sixty eight (768) water samples were analyzed in 2009 for PH, chlorine content, total hardness and alkalinity. The results showed that the water supplied by the treatment plants is good for consumption.

In addition, polymerase chain reaction (PCR), multiplex PCR and Reverse Transcription (RT)-PCR methods were employed in the diagnosis, detection and characterization of Campylobacter, Listeria, African Swine Fever and Rabies. The result had been released to the appropriate Division in the Institute.

### **New Equipment Received for the Division**

A number of new equipments were received in the Division. This included Absorption Spectrophotometer (AAS), Amino Acid Analyzer, and High Performance Liquid Chromatography (HPLC). The laboratories are being reequipped to enhance research operations.

### **Constraints**

The Division needs new refrigerators and deep freezers for proper storage of samples. The current ones are very old and leaking, while some have stopped functioning.

A real-time PCR machine and a DNA sequencer are required for phylogenetic analyses.

Staff would require further training on the optimal use and application of the above listed new equipment to enhance capacity building.

## **CONSULTANCY SERVICES UNIT**

The Consultancy Services Unit was registered by the Corporate Affairs Commission, Abuja during the year under review. The Unit is now established as one of the revenue-generating outfits of the Institute.

The Division carried out the following activities:

### **Ambulatory Services**

These services involved the delivery of veterinary services to the door steps of livestock and poultry farmers by creating awareness, diagnosing, treating and vaccinating against animal diseases, and offering professional advice as well. The unit visited a number of farms in Plateau, Nasarawa, Bauchi, Niger, Sokoto and Kebbi States in 2009 to provide these services.

An Artificial Insemination (AI) working group was constituted and worked in partnership with Livestock Investigation Division (LID). They carried out AI work in Sokoto and Kebbi States. Seven (7) cows of the ten (10) certified pregnant at Dabagi farm dropped their calves. Also, one of the three pregnant cows belonging to a client also dropped her calf. These are products of artificial insemination. Retainership with Dabagi farm of Usman Danfodiyo University, Sokoto, Labana farms, Aliero, Kebbi State and Sharna Integrated Farms Jos, Plateau State is on-going.

### **Training**

The training arm of the unit successfully trained and passed out the first set of thirty three (33) students on weekend certificate courses in beef and poultry production. The unit would be taking another set of students for the same courses and also working on developing a course in Dairy and Milk products in partial fulfillment of the Federal Ministry of Agriculture and Natural Resources (FMANR) peri-urban dairy programme.

### **Waste Management**

One of the objectives of the Consultancy Unit is to maintain a clean environment within the Institute. The unit engaged a licensed solid waste operator for collection and disposal of solid waste from both senior and junior staff quarters. Additional waste bins were provided to meet the demand of the staff. This service went well in the year under review.

## **Rentals**

The Unit acquired some canopies and tables in addition to the plastic chairs provided by the Institute. Substantial revenue was generated in this enterprise. The unit would also be acquiring small canopies specifically for bride and bridegroom comfort for wedding ceremonies.

## **Laundry Services**

The Unit took over the management of the Guest House Laundry Services in May, 2009. Repairs of facilities and renovation work were carried out and still on-going. The Unit also acquired additional five (5) pressing irons for the laundry services.

## **Transport Enterprise**

Modalities for running of bus shuttle to convey staff to and from work on daily basis were put in place. This service, when commenced, would be extended to interested organizations including State Government staff. The bus would also be available for occasions or engagements such as marriage, launching etc for rentage. The fares for the bus shuttle had been worked out in form of ticket purchases.

## **Accommodation**

The Unit is located within a research laboratory complex. The Unit wishes to be relocated and provided with more office rooms so as to discharge its duties efficiently. Office accommodation in a more conducive environment will also help to advertise the Unit's diverse services.

## **Constraints**

The Unit faced some crucial constraints which include shortage of operational staff. There is an urgent need for a senior staff to handle each of the areas of operation. The categories of staff needed are:

- 1) Data Processing Officer
- 2) Die-cutting machine operator
- 3) Accounts staff and an Accountant
- 4) Store Officer to take charge of stocks and stores.
- 5) Receptionist
- 6) Bus driver
- 7) Driver assistant

## **DAGWOM FARM**

Dagwom Farm Division (formerly Chaha farm) was acquired by the Institute in the year 1988 from one Mr. John Chaha. The farm started with the establishment of the National Rabbitry Programme, a concept launched under the Directorate of Foods, Roads and Rural Infrastructure (DIFRRI) program of the Federal Government during the past military era. The farm was later expanded into three main sections as follows;

- i. Feedmill/Oil mill Section
- ii. Rabbitry Section
- iii. Fabrication Section

### **The Feedmill**

The Feed Mill produced standard quality livestock feed to support vaccine production and research. The Feed Mill also produced full fat and soya bean cake and crude soya oil. The feeds were produced mainly for birds in the Poultry Division, experimental animals in the Farm and the Research Divisions.

In the year under review, a total of 599.95 tons of livestock feed were produced, of which Poultry Division received 431.9 tons, Dagwom Farm received 11.215 tons and Research Divisions 23.525 tons. Similarly, a total of 8920.2 litres of crude soya oil were produced of which 8,700 litres were sold and 200 litres released to the Research Divisions.

However, it is pertinent to note that the purchases of a new fabricated feed mill and spare parts were made to enhance production performance. The Feed mill has five senior and ten junior staff

### **Constraints**

- a) Vehicle: The section lacks vehicle for the collection and conveying of materials from the Stores to the Feedmill.
- b) Wheel barrows, metal buckets, caustic soda are also lacking.
- c) Lack of telephone and internet services has hampered easy communication and encourages staff movement.
- d) Poor storage facilities for feed ingredients in the Store.

### **Other Needs by the Feedmill**

- a) A van is required to ease work and improve bio-security.
- b) A mild-fencing of the section is needed to enhance bio-security.
- c) Spare parts of the machines are to be provided promptly.
- e) Telephone and internet services are need to facilitate performance.

### **Rabbitry Section**

The rabbitry section maintained its role as a multiplication and distribution center for breeding stock to all interested farmers, institutions, government and non-governmental organizations.

A contract to construct a forty-unit hutches (200 individual hutches) to replace the already bad hutches was awarded for the Section.

Other requirement includes acquisition of pure gene breeds of rabbits to prevent interbreeding within the existing stock. Also, more feeders and drinkers are needed as additional to the existing ones to meet up with the increasing rabbit population.

The section has a total number ten (10) staff comprising of two Technical Officers, one Research Officer and seven Livestock Overseers/Attendants .

### **Fabrication Section**

The Fabrication section provided the following services

- i) Production of cheaper and affordable kerosene incubators with high productivity and efficiency for the general public.
- ii) Consultancy services, setting up of incubators and maintenance work
- iii) Production of different incubators using other sources of energy and designs.

It is pertinent to record that a total of forty (46) 150-capacity and seven 300-capacity Kerosene Incubators were produced and sold to the public.

Major constraints include lack of some tools and use of obsolete machines. The Staff strength consists of two senior Foremen, one Foreman, two Assistant Craftsmen, six Craftsmen and two Livestock Overseers.



## CENTRAL DIAGNOSTIC LABORATORY

The Diagnostic Division, also referred to as Central Diagnostic Laboratory, (**CDL**) is responsible for the diagnosis of all animal diseases. It is made up of Post Mortem, Rabies, Epidemiology, Microbiology, Histopathology, Clinical Pathology, and Small Animal units.

CDL contributes significantly to the Institute's role as a national and regional laboratory for Avian Influenza, and other Transboundry Animal Diseases for West and Central Africa.

The Division, apart from disease diagnosis, carries out clinical ambulatory services and surveillance activities across the country and the sub-region as situations warrant.

The summary of the activities is expressed in tables and figures. Table 3 shows the number of cases received per animal species on quarterly basis. Table 4 illustrates the number of samples received by species from different states across the country. Figure 2 shows the geographic spread of samples received by CDL during 2009, while Figure 3 shows the geographic and species distribution of Rabies cases diagnosed at the CDL during the year under review.

The highlights of this report showed that from 789 avian cases handled by the CDL, 471 (59.7%) cases were positive for diseases like Fowl typhoid, Colibacillosis, Coccidiosis, Marek's Disease, Newcastle Disease and Infectious Bursal Disease. Of the 66 cattle cases, 18 (27.3%) were positive for diseases of which Contagious Bovine Pleuropneumonia and Helminthosis were prominent. Rabies was the major disease diagnosed in dogs. Of the 386 clinical cases of dogs handled, 285 (74.9%) were positive for canine rabies. (Table1) Out of 1,285 samples received across the country, 1,070 (83.3%) came from Plateau State. Others are 37, 36, 28, 25 and 14 from Bauchi, Federal Capital Territory, Kaduna, Nasarawa and Edo States respectively (Table 3, Figs. 2&3). From a total of 1480 cases received by species of animals, 860(61.1%) of them were positive for disease identification (Table 1).

It is pertinent to note also that the Small Animal section raised and kept small laboratory/experimental animals like mice, rats and rabbits. A total of 765 mice and 63 rabbits were issued to several Divisions and Units for experimental purposes in the year under review. Also, the section sold a total of 2,714 mice, 443 rats and 69 rabbits to students from various universities and colleges across the country. The revenue generated from the sales was N343,350.00.

**Table 3: Number of cases received by species of animals at the CDL on quarterly basis.**

<b>Species</b>	<b>1st Quarter</b>	<b>2nd Quarter</b>	<b>3rd Quarter</b>	<b>4th Quarter</b>	<b>Total</b>	<b>No of diseased samples</b>	<b>Percentage positive</b>
Avian	185	241	201	162	789	471	59.7
Bovine	11	13	15	27	66	18	27.3
Canine	71	90	117	108	386	289	74.9
Caprine	3	12	15	17	47	23	48.9
Equine		2	1	2	5	1	20.0
Feline			1	2	3	2	66.7
Laprine	3	10	11	1	25	2	8.0
Ovine	2	3	20	32	57	2	73.7
Pisces			2	3	5	1	20.0
Porcine		3	3	3	9	4	44.4
Wildlife	3	13	1	3	20	7	35.0
<b>Total</b>	<b>278</b>	<b>387</b>	<b>387</b>	<b>360</b>	<b>1412</b>	<b>820</b>	<b>58.1</b>

**Table 4: Number of submissions to the CDL by species across the Nigerian States in 2009**

STATE	SPECIES											Total
	Avian	Bovine	Canine	Caprine	Equine	Feline	Laprine	Ovine	Pisces	Porcine	Wildlife	
Abia	-	-	-	-	-	-	-	-	-	-	-	0
Adamawa	4	1	-	-	-	-	-	-	-	-	-	5
Akwa Ibom	-	-	-	-	-	-	-	-	-	-	-	0
Anambra	-	-	-	-	-	-	-	-	-	-	-	0
Bauchi	26	3	3	1	-	1	-	2	-	1	-	37
Bayelsa	-	-	-	-	-	-	-	-	-	-	-	0
Benue	1	-	-	-	-	-	-	-	-	-	-	1
Borno	1	-	-	-	-	-	-	-	-	-	-	1
Cross River	-	-	-	-	-	-	-	-	-	1	-	1
Delta	1	-	-	-	-	-	-	-	-	1	-	2
Ebonyi	-	-	-	-	-	-	-	-	-	-	-	0
Edo	12	1	-	1	-	-	-	-	-	-	-	14
Ekiti	1	1	-	-	-	-	-	-	-	1	-	3
Enugu	1	-	-	-	-	-	-	-	-	-	-	1
FCT	30	1	5		-	-	-	-	-	-	-	36
Gombe	-	1	-	-	-	-	-	3	-	-	-	4
Imo	-	-	-	-	-	-	-	-	-	-	-	0
Jigawa	4	1	-	-	-	-	-	-	-	-	-	5
Kaduna	4	3	20	1	-	-	-	-	-	-	-	28
Kano	9	-	-	1	-	-	-	1	-	-	-	11
Katsina	1	1	-	-	-	-	-	-	-	-	-	2
Kebbi	3	1	-	-	-	-	-	-	-	-	-	4
Kogi	5	-	-	-	-	-	-	-	-	-	-	5
Kwara	4	-	-	-	-	-	-	-	-	-	-	4
Lagos	1	-	-	-	1	-	-	-	-	-	-	2
Nasarawa	19	6	-	-	-	-	-	-	-	-	-	25
Niger	1	1	-	-	-	-	-	-	-	-	-	2
Ogun	3	-	-	-	-	-	-	-	-	-	-	3
Ondo	-	-	-	-	-	-	-	-	-	-	-	0
Osun	1	1	-	3	-	-	-	3	-	1	-	9
Oyo	-	-	-	-	-	-	-	-	-	-	-	0
Plateau	638	36	246	37	4	1	25	54	5	4	20	1070
Rivers	-	-	-	-	-	-	-	-	-	-	-	0
Sokoto	1	-	-	-	-	-	-	-	-	-	-	1
Taraba	2	1	-	-	-	-	-	2	-	-	-	5
Yobe	3	-	-	-	-	-	-	-	-	-	-	3
Zamfara	1	-	-	-	-	-	-	-	-	-	-	1
<b>Total</b>	<b>777</b>	<b>59</b>	<b>274</b>	<b>44</b>	<b>5</b>	<b>2</b>	<b>25</b>	<b>65</b>	<b>5</b>	<b>9</b>	<b>20</b>	<b>1285</b>

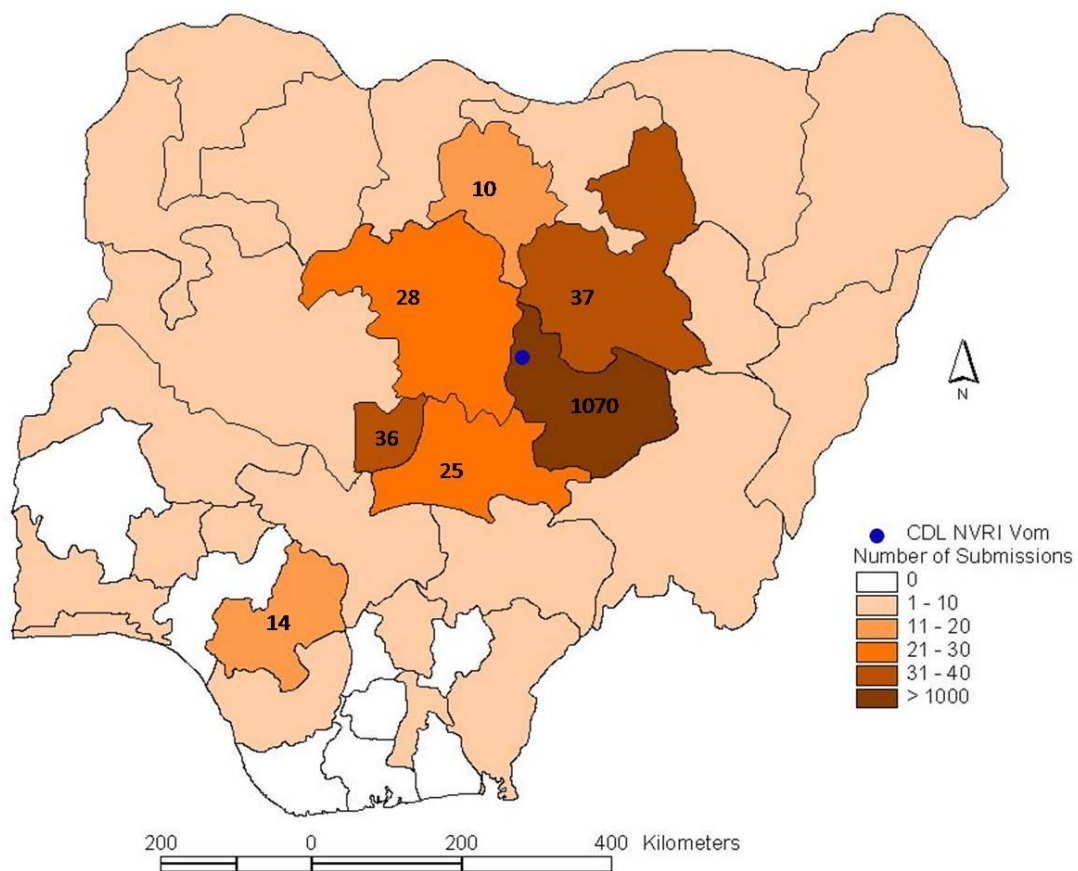


Figure 2: **Geographic spread of samples received by the CDL during 2009**

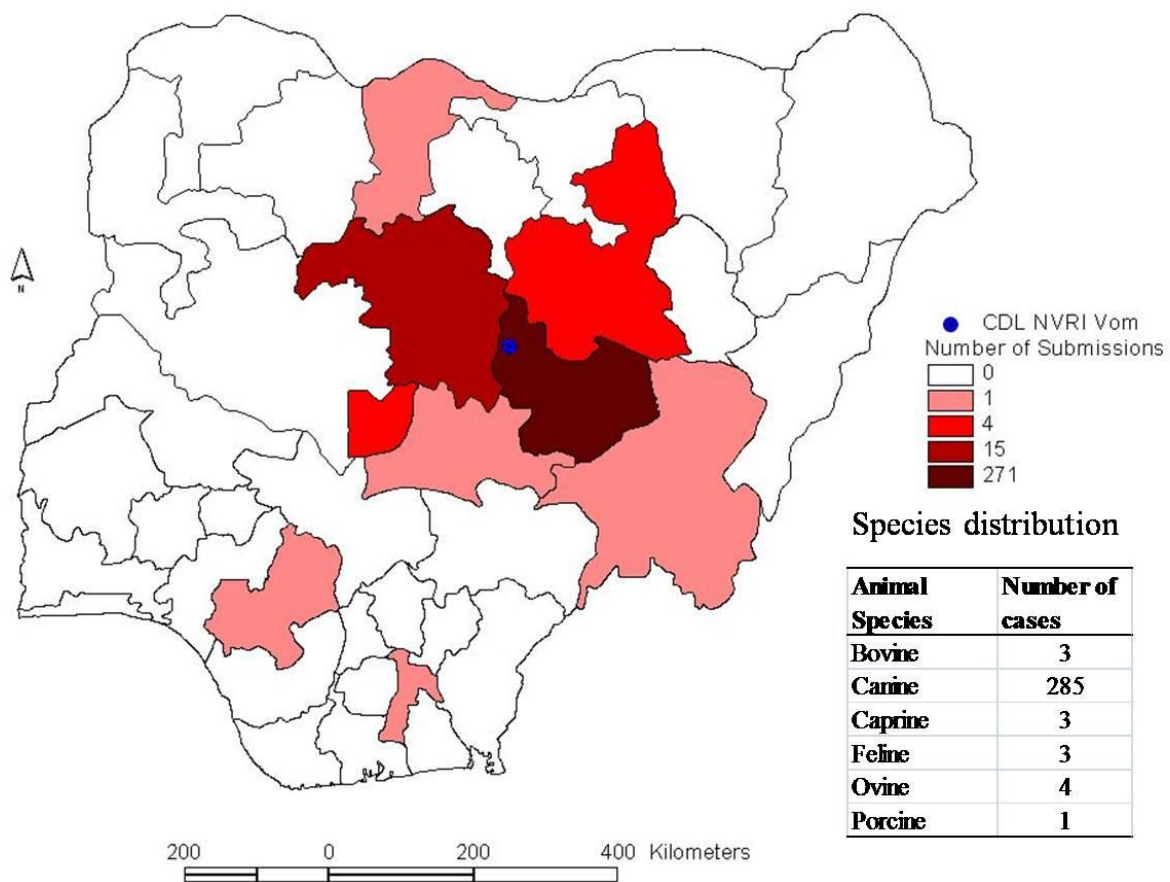


Figure 3: **Geographic and species distribution of Rabies cases diagnosed in 2009**

## **EXTENSION AND RESEARCH LIAISON SERVICES**

The National Veterinary Research Institute (NVRI) continues to reach livestock and poultry farmers in Nigeria through the Veterinary Extension and Research Liaison Service (VERLS). The task is to disseminate proven animal health technologies of the Institute for adoption. The aim is to improve livestock and poultry health and productivity, providing the much needed animal protein and generating income to farmers.

### **Technical Meetings**

#### **Monthly Technology Review Meeting (MTRM)**

One was attended by Dr. Bala Akawu of the Extension Division with respect to official invitation from Nassarawa State on the 26<sup>th</sup> of June, 2009.

The Institute attended and actively participated in the Zonal Steering Committee Meeting of the Middle Belt Zone of Nigeria. One of such meetings was hosted by the Institute on the 31<sup>st</sup> March, 2009. The Institute was also well represented at the annual National Agricultural Extension Review Meeting which took place at the NAERLS Auditorium in Zaria between 7<sup>th</sup> – 11<sup>th</sup> December, 2009.

#### **Zonal Steering Committee (REFILS) Meeting**

Dr J. O. Salami-Shinaba attended and participated in the above meeting of the Middle Belt Zone on behalf of the Institute. The meeting took place on 29 July, 2009 at Taraba ADP in Jalingo.

### **Impact Assessment**

The study was conducted on NVRI Vaccines in the year under review. The results and recommendations emanating from the study have been highlighted in this annual report.

### **Training Workshop**

The Division participated in the following trainings:

- ARCN Impact Assessment Training in NAERLS, Zaria and Abuja.
- Organizational, Managerial and Inter-personal Communication Skill in-house training.

- Specialized training on Television, Radio and Extension Publications in NAERLS Zaria
- Artificial Insemination training in the Institute.
- Total Quality Management organized for Heads of Divisions and the management.

### **Radio Programmes**

A total of 13 radio programmes on different aspects of livestock health, management and production were produced for “Muleka Rugage”, FRCN Kaduna. Similar radio programmes are being produced in Yoruba “Itoju Ohun Osin” by FRCN Ibadan.

### **Print Publications**

The Division was able to produce the following publications.

- NVRI Info
- The NVRI News bulletin
- Extension guides for farmers and other agricultural stakeholders

### **Women in Agriculture**

A Workshop on rabbit rearing and health management was organized for women in Plateau Agricultural Development Programme in the year under review.

### **Staff Disposition**

The staff strength of the Division is fourteen (three veterinarians, four Agric. Graduates, four technical officers (Animal Health & Production) one editor and two junior staff).

### **Agricultural Research Outreach Centre (AROC)**

The Institute was able to select two adopted villages (Kogom and Zawan) and two Colleges (NVRI Staff Secondary School, Vom and Government Secondary School, Du), all within 20 kilometer radius from the Institute. Preliminary activities have already begun. The AROC committee held meetings and had already identified the technologies needed to be disseminated and adopted by the selected Centers.

## **FEDERAL COLLEGE OF ANIMAL HEALTH AND PRODUCTION TECHNOLOGY**

The College provides middle level technical manpower in the Animal Health Production Technology for the purpose of establishing and managing livestock farms to maximum advantage.

It also trains extension staff in the area of agro-veterinary research and innovations to the livestock farmers and feed-back the farmers' problems to the appropriate authorities for solutions.

### **Sections of the College**

The College is made up of both academic and non-academic sections. The Academic Sections are Pre-National Diploma, National Diploma in Animal Health and Production Technology, Higher National Diploma in Animal Production Technology, Higher National Diploma in Animal Health and Higher National Diploma in Agricultural Extension and Management while the non-academic sections are Administration, Accounts and the Internal Audit.

Apart from the regular programmes run by the various academic sections, the College continued to run Certificate courses in Beef and Poultry production and Vocational Training Programmes in Animal Fattening and Poultry Production.

The College had service units that rendered special services to students, staff and the general public in line with the mandate of the College. These service units include the Veterinary Clinic, Student Clinic, Livestock Farm and Library.

In the year under review, a total of 214 students passed their various programmes. Table 5 showing the accreditation status of the programmes and students' results for the year under review.

### **AROC Programme/Vocational Trainings**

The College in the Year under review organized series of programmes and also commenced the Agricultural Research Outreach Centre (AROC) activities. Besides the successful completion of its certificate courses in Beef and Poultry Production, the College also in collaboration with the Government of the 19 Northern States organized the following.

- a. Pastoral Skill Development
- b. Vocational Training in Poultry Production
- c. Vocational Training in Animal Fattening



The College also collaborated with the National Food Reserve Agency in the year under review to organize a special training on Special Agricultural Extension Service Providers meant for unemployed Nigerian Youth in Agricultural Enterprises.

The College under the Agricultural Research Council (ARC) initiated and commenced the implementation of the AROC programme. The Villages and Schools adopted are Chaha and Riyom Villages and Government Secondary School Riyom and Government Secondary School Vwang

**Table5: Showing the accreditation status of programmes and students results.**

<b>S/n</b>	<b>Name of programme</b>	<b>Accreditation status</b>	<b>No. registered for 2009/2010 session</b>	<b>No. of graduates 2008/2009 session</b>	<b>Certificate offered</b>
1.	Pre-National Diploma	Accredited	47	82	Nil
2.	Animal Health and Production Technology	Accredited	71	51	Higher National Diploma in Animal Production Technology
3.	Animal Production Technology	Accredited	30	23	Higher National Diploma in Animal Production Technology
4.	Animal Health	Accredited	21	33	Higher National Diploma in Animal Health
5.	Agricultural Extension and Management	Accredited	19	25	Higher National Diploma in Agricultural Extension and Management

## **Workshops, Conferences, Seminars Attended and Papers Presented**

A total of about 150 staff (both Senior and Junior) attended different Workshops, Conferences and Seminars within the year under review. A total of ten papers were presented by staff of the College in both local and international conferences.

## **Capital Projects**

All the projects approved in the budget were carried out. These included the Construction of Livestock Housing (Milking Parlour, Calf Pens and Isolation Maternity Unit), and Construction of Livestock Housing (Animal Crush/Spray Ray Insemination Unit. Others were Hay Barn, Stores & Feed Mill, Electrical Transmission /Distribution, Construction of Engineering Workshop, Procurement of Engineering Workshop Equipment, 1.6km Grading of Internal Road, Construction of drainages and culvert, Construction of 1 km fencing using galvanized chain-links with casted pillar poles and the construction of Gate House and Steel Gate at the new site, Chaha. The College also embarked on the drilling of 5No. Bore hole/Steel ground and overhead tank for students' hostels.

**Externally Funded Projects.** The Education Trust (ETF) funded the procurement of laboratory equipment and also equipment for Small and Large Animal Clinics

## **Seminars Organized within the year: These included**

1. Enlightenment on e-payment System
2. Procedure and Documentation for Accessing Retirement and Death Benefits by Government Employees under the Contributory Pension Scheme

## **Other Miscellaneous Activities**

1. Establishment of Mini-livestock Unit for adaptation and management of Snail (*Achatina spp*), African Bees, and Grasscutters (*Tryonomys swinderianus*) for student practicals and to encourage entrepreneurship.
2. The College organized the Provost's Cup among students of the various sections, partook in the EDVR's Sport competitions and came overall 2<sup>nd</sup> position. In the NICARD games which took place in Danbata Kano, the College came overall 12<sup>th</sup> position and also actively participated in the RIGAN games that made the Institute (NVRI) earn the second highest

medalists in the competition. The RIGAN games for 2009 was hosted by the Institute in Vom.

3. The Veterinary Clinic handed a total of 2420 cases with 1993 from canine, 352 from Bovine, 25 Ovine and 26 Caprine cases, while 4 Lapine, 4 Porcine and 13 poultry cases were treated in the year under review. The most common clinical cases handled were those of Helminthoses, Hemo-parasitism, Ecto-parasitism, dog bite and wounds. Others were canine myiasis, canine distemper, pneumonia, pasteurellosis and clostridial infections in cattle. The clinic also vaccinated a total of 248 dogs against rabies

## **FEDERAL COLLEGE OF VETERINARY AND MEDICAL LABORATORY TECHNOLOGY**

The College was established in 1956 with a mandate to produce initially middle level manpower for all cadres of laboratory personnel for the Institute. The College now admitted and received students across the country.

The regulatory body for the training of Medical Laboratory personnel in Nigeria was the Institute of Medical Laboratory Technology of Nigeria (IMLT). This Institute was renamed by Decree 54 of 1999 as the Institute of Medical Laboratory Science and Technology of Nigeria (IMLSTN). In 2003, Act 11 of 2003 was passed into law to give birth to the Medical Laboratory Science Council of Nigeria (MLSCN). This body has since converted all its Diploma programmes to Degree programmes to enhance greater productivity and in compliance with what obtains in similar Institutions all over the world. The College currently runs Courses approved only by the MLSCN (the regulatory body) based on the approved entry requirements and duration of all Courses. All examinations are set and marked by the MLSCN which also awards the Certificates. The NVRI Laboratories including those of the College have been accredited by the IMLT London, IMLT Nigeria, Ambrose Alli University and University of Maiduguri which approved the latest affiliation to the College in June, 2005 after a visit to evaluate the facilities available. Thus, the College was found suitable to run Degree Programmes in the Veterinary and Medical Laboratory Sciences.

### **Training Activities**

The College currently conducts training in the following areas;

- Two-year Veterinary and Medical Laboratory Assistant course (MLA)
- Three-year Veterinary and Medical Laboratory Technician course (MLT)
- Two-year Graduate Studentship course leading to the award of Associateship Certificate of Medical Laboratory Science Council of Nigeria.
- One-year Fellowship of Medical Laboratory Science Council of Nigeria.

### **College Activities**

The sections in the College include; Bacteriology, Chemical Pathology, Haematology and Blood Group Serology (BGS), Histology and Histopathology, Molecular biology, Parasitology and Virology (Technical) while Administration, Accounts, Audit, Consultancy Services and Library were the non-technical sections.

The technical sections are responsible for the overall training of students with particular reference to organizing lectures, seminars and practical classes as required by the MLSCN (the regulatory body). The various courses include; Bacteriology, Biostatistics, Chemical Pathology, Computer Application, Haematology and Blood Group Serology, Guidance and Counseling, Histology and Histopathology, Immunology, Immunohaematology, Immunochemistry, Laboratory Animals, Molecular Biology, Mycology, Organizational behavior, Parasitology/Entomology, Serology and Virology.

### **Bacteriology/Mycology**

This section is charged with the responsibility of training students in the diagnosis of disease-causing microbial agents of Livestock, Poultry, Human, Public Health and other diseases of economic importance. The section is also, charged with the routine laboratory diagnosis of animal and human diseases through specimens, microbiological analysis of water, foods, vegetables and confectioneries. Research into the development and production of biologicals (antigens and sera) was also included.

### **Chemical Pathology**

The Chemical Pathology section is responsible for training students in chemical pathology course. This also includes biochemical analyses related to zoonotic diseases of Livestock and Poultry, Human Public Health and other diseases of economic importance.

### **Haematology**

This section is charged with the training of students and the routine laboratory analysis of haematological and blood group serology parameters of livestock, poultry and humans as well as other diseases of economic importance. The department also, conducts research into the development and production of biological for teaching purpose.

### **Histology/Histopathology**

The College also trained students in histopathologic diagnosis and processing of normal and diseased tissues in Livestock, Poultry and Humans. This also includes the development of histological stains and preparation of slides for demonstration in Colleges, Universities, Secondary and Primary Schools.

### **Molecular Biology**

The section trains students in the application of Molecular Biology techniques for the diagnosis of zoonotic bacterial and fungal diseases of Livestock and Poultry, Human and Public Health. The section also involved in molecular

(genotypic) characterization of zoonotic microbial isolates using PCR-Polymerase Chain Reaction, Hybridization, Immunoblotting-Western and Southern blotting and DNA probes techniques for research and diagnosis of other diseases of public importance.

### **Parasitology/Entomology**

The section trains students in the diagnosis of parasitic zoonotic diseases of Livestock and Poultry, Human and Public Health. Also, research was conducted into the identification of disease vectors and ectoparasites e.g. ticks.

### **Virology**

The section trains students in the diagnosis of viral diseases of Livestock and Poultry, Human and Public Health. The section is also involved in the research and production of HA/HI biologicals from viral agents in animal and human samples.

### **Achievements**

In the year 2009, the College admitted 240 students. This comprised 35 for Fellows, 170 for Medical Laboratory Technicians and 35 for Medical Laboratory Assistants. The College graduated 286 students from the following courses; Chemical Pathology 46; Haematology and BGS 5; Histology and Histopathology 23; Medical Microbiology 21; Parasitology 21; Virology 59; Medical Laboratory Technicians 73 and Medical Laboratory Assistants 38.

### **Animal and Human Samples in the College:**

A total of 2,077 samples from animals and man consisting of the following tests, 117 Electrolytes, 120 Urea, 121 Creatinine, 36 Uric acid, 27 Lipid profile, 991 Urinalysis, 401 Glucose, 79 Pregnancy tests and 33 Occult blood, were assayed for Chemical Pathology parameters.

A total of 2,133 blood samples of animals and man were tested for various haematological values. Also, 1,339 samples comprising of 1,219 stools and 120 skin scrapings from animals and man were examined for ecto and endo parasites of economic importance.

Furthermore, a total of 592 Viral infection samples consisting of 208 for RVS, 278 for Hepatitis B and 106 Hepatitis C screening were carried out in the College in the year under review.

A total of 4,278 samples made up of 1,113 widal, 825 stool, 734 urine, 698 skin scrapings, 426 VDRL, 140 blood, 114 wound and pus, 79 HVS, 75 AFB,

63 sputum and 11 semen samples were examined for bacteriological cultures and microscopy.

The College Consultancy/Clinic recorded a total of 1,505 patients for different ailments in the year under review. After using some of the animals for laboratory experimental purposes, the experimental livestock section of the College had the following in stock: Cattle 11, Goats 14, Sheep 14, Rabbits 42, Guinea pigs 24, Albino rat 69, Albino Mice 26 and Poultry. In the library, there are presently, 1,337 Textbooks, 664 periodicals, 1,139 students' projects and 7 annual reports.

### **General**

Most members of staff attended their yearly mandatory continuous development education programmes and workshops in their related fields. The College organized 53 seminars and members attended many conferences in 2009.

Twenty six (26) staff members were undergoing post graduate and certificate courses in various Nigerian tertiary institutions.

In the year 2009, thirty two (32) staff were promoted both in senior and junior cadres.

Two (2) members of staff namely; Mrs. P. Abiliu and Mr. Dalyop G. Mang retired from the services of the College.

Dr Chukwu O. Chukwu and Dr A. O. Olabode in 2009 co-authored a book titled "The Evolving Trends in Food Safety and Environmental Hygiene" A Public Health Challenge.

## **FINANCE /ACCOUNTS**

The Finance and Accounts Division is responsible for the following activities:

1. Formulating financial policies in line with the Government Financial Rules and Regulations, Curricular and the Institute's Policies;
2. Developing and maintaining sound and effective accounting systems for the Institute;
3. Liaising with all departments to fashion out a budget for the Institute;
4. Ensuring that all incomes due to the Institute are received and properly documented and adequate control measures are put in place;
5. Maintaining a sound system of budgetary control;
6. Ensuring proper documentation and accountability of Institute's assets and properties;
7. Advising the Institute's Management on financial matters;
8. Ensuring reliability of all records of transactions;
9. Providing the Management with timely and accurate financial report and information for decision making.

### **Sections/Units in the Division:**

- i) The Salary/Payroll/Advances Section
- ii) The Cash Office
- iii) The Revenue/Sales Section
- iv) The Final Accounts Section
- v) Other Charges Unit
- vi) Pension Unit
- vii) Budget Formulation Unit and
- viii) Computer Unit

### **Staffing:**

The Division has 39 members; 31 based in Vom and 8 in the Outstation Laboratories.



## Receipts of Funds

### A. Subvention

i)	Capital.....	N1,173,258,577.00
ii)	Overhead.....	480,000,001.00
iii)	Personnel Emolument.....	<u>937,625,640.84</u>
	<b>Total</b>	<b><u>N2,590,884,218.84</u></b>

### B. Internally Generated Revenue

i)	Vaccine Sales.....	N210,212,991.68
ii)	Other Sales.....	<u>38,038,212.77</u>
	<b>Total</b>	<b><u>N248,251,204.45</u></b>

### 1. Revenue/Sales

All efforts to effectively document and account for the Institute's revenue have been put in place. The Sales Unit has relocated to the Veterinary Clinic for efficient service delivery to the Institute's customers particularly the Fulanis who have had to shuttle from one place to another procuring vaccines.

All sales activities are now centralized in one place removing all previous impediments and greatly shortening the transaction period.

### 2. Internally Generated Revenue

-	Vaccine Sales	-	210,213,391.68
-	Parasitology	-	67,045.00
-	Small Animals	-	343,500.00
-	Contract-Tender/Registration	-	7,335,000.00
-	LID Sales	-	2,318,580.00
-	Auditorium use	-	10,000.00
-	Rent	-	7,379,159.77
-	Printing Press	-	707,060.00
-	Feedmill (Dagwom Farm) -		3,141,166.00
-	Poultry	-	5,205,515.00
-	Guest House Income	-	7,171,897.00
-	Virology	-	157,300.00
-	Vet Journals	-	79,000.00
-	Cheque Opening	-	30,000.00
-	Biochemistry	-	98,150.00
-	Dermatophilosis	-	1,359,750.00
-	Diagnostic	-	199,100.00
-	Cyber Café	-	1,545,380.00
-	Bacteriology	-	18,900.00
-	Library Department	-	45,460.00
-	Others	-	826,250.00
		=	<b>248,251,204.45</b>

**Other Sources**

- Club Levy	-	1,200,000.00
- Donation for Rigan (Jatco)	-	100,000.00
- “ “ (Grand Cereal)	-	100,000.00
- “ “ (Coplan)	-	200,000.00
- “ “ (Trust fund Pension)	-	100,000.00
- Prepaid Rent (UBA)	-	200,000.00
- Contribution from Colleges for Chaha Road		
- FCV&MLT	-	1,215,000.00
- FCAH&PT	-	1,215,000.00
- Colleges’ Contribution to Servicom Workshop	-	291,814.00
	=	<b>4,621,814.00</b>

**3. e-Payment**

The e-payment manual type came into effect fully in the year 2009. The Division is awaiting directive from the Accountant-General of the Federation (AGF) on when to implement the end-to-end type of e-payment. Already there were discussions with some banks to install software that could enable the Institute access all her accounts, print statements and effect transfers in the office in Vom.

**Award/Staff Promotion**

Mr. Idoko Anebi, the Head of Accounts, and a Fellow of the Chartered Institute of Taxation of Nigeria (FCTI) was appointed a Fellow of the Certified National Accountant (FCNA) in November, 2009.

**Staff Training**

Staff have continued to attend the MCPD of ANAN at least once a year. It is hoped that the Institute would avail staff of Accounts and Audit the opportunity to attend other training programmes both within and outside the country to boost performance.

## INTERNAL AUDIT

### Activities include:

- Ensuring compliance with rules, regulations and procedures in the conduct of government businesses.
- Making an unbiased examination of books of accounts and records of the Institute with the aim of ensuring their adequacy and accuracy.
- Examining the procedures and processes of all major operations with the aim of identifying areas where efficiency and effectiveness can be improved.
- Ensuring that the system for the control of the issue and consumption of any and every store item is adequate and that all issues are properly authorized and correct.
- Ensuring proper documentation and accountability of the Institute's assets.
- Undertaking special investigation where necessary.
- Reporting and giving advice to management through the Executive Director whenever necessary.
- Carrying out any other internal audit duties as they arise.

### Progress Highlights:

#### a) Financial Audit:

- i) Prepayment Audit - The Division continually checked all vouchers sent to it by the Accounts Division.
- ii) Post-payment Audit - The Division also took a random sample of vouchers which were paid and these vouchers were checked again to ensure completeness of documentation.

#### b) Revenue Points:

- i) Revenue Generating Points – The Division checked the following points: Poultry, Dagwom Farm, Cyber Café, Vaccine Sales Unit,

Printing Press, Guest House, LID to ensure completeness of records and accuracy.

- ii) The Division evaluated the efficiency of revenue operations and made recommendations to the Executive Director on ways to improve efficiency and boost revenue generation.
- iii) Personnel Audit – The Division checked the staff nominal roll as well as payroll every month of the year and ensured that each staff got his/her due salary.
- iv) Debt/Stock Control – The Division visited the Outstations in the South-East and South-West to carry out reconciliations of their Accounts with the Institute and also confirmed the number of staff on the payroll.
- v) It examined the stock held by each Outstation to caution on expiry of vaccines, and made enquiry on adequacy of vaccines supplied to the stations.

**c) Verification:**

- i) The Division checked and verified the receipt of grains to the Institute and ensured that all supplies adhered to specifications on the contract agreement.
- ii) The Division also participated in the verification of various projects undertaken in the Institute.

**Challenges/Constraints:**

- The Division could not visit the North-Eastern and North-Western Outstations of the Institute as a result of lack of funds.
- The Division is in dire need of a clerical staff.

**Future Plan:**

- The examination of revenue points will continue to be carried out on a monthly basis.
- Audit reports will be given to the Executive Director on a quarterly basis.
- The Division intends to broaden the scope of the post-payment audit and endeavour to visit all the Outstations this year in the following year.

## LIBRARY AND DOCUMENTATION

The Library was established in 1940 to support veterinary research activities in the Institute. It provides information to the research staff, students from universities and colleges of veterinary and allied courses on referral. It also attended to others with interest in the library resources through relevant journals, books, CD-ROMs and online materials.

**The Circulation Section** received 296 Reference Queries and maintained clientele record at 2,939. Lending services stood at 96 text books. One hundred and ninety seven (197) volumes of books were added to its collections for users' consultation. The inter-library cooperation was facilitated through students on referral.

**The Serial Section** provided journal retrieval services to the users and 603 bibliographic queries were received and attended to. A total of 44 journal titles were subscribed and added to serial collections in 2009.

**The Technical Section** received 123 book titles subscribed for the year and 28 books were donated from individual, government and international agencies.

**The e-library** provided library users access to information from online sources available in the library. Also, consultations were made from CD-ROMs like CAB abstracts, Medline, Veterinary CDs, etc. A total of 634 clienteles used the e-library while the sum of thirty thousand, one hundred and twenty naira was realized from commercial printing of documents.

Other activities which took place in the library include:

- (a) A two-day poster presentation by NEF-NVRI collaboration on pharmaceutical drug discovery and development in Africa, and
- (b) A two-week refresher course on "Dairy Husbandry and Milk processing by PTC<sup>+</sup> and NVRI collaboration.

Furthermore, the library was able to capture research staff publications from inception of the Institute to date into the computer system towards the preparation of a bibliography. Also, the library was able to meet the increasing need of data storage, a window 2003 server while a 3.0KVA APC UPS Power back-up was purchased by the management to boost data storage bank.

## Constraints

The installation of Liberty-3 library software which was purchased along with one-user license made the retrospective conversion of library holdings very slow and cumbersome. This did not allow more than one person to work at a time.

Moreover, the computer systems are generally slow and make data entry tedious. Few computer systems are available in the e-library for internet browsing by staff.

### **Future Plan**

The library intends to have a scanner which will enable her prepare library holdings into digital files in preparation for onward transfer into the Institute's website. Also, additional five computers will be needed for the e-library to provide better information retrieval services. Also three sets of computers would be dedicated for storage and retrieval of the system software (Liberty-3) used for the automation of the catalogued resources of the library in the Circulation Section.

## **LIVESTOCK INVESTIGATION DIVISION**

### **Sections:**

The Livestock Investigation Division has the following sections: Livestock Health, Dairy Production, Beef Production, Small Ruminants Production, Laboratory and Replacement Animals, Monogastric Animals, Nutrition and Feed Mill, Farm Machineries and Forage Conservation, Pasture and Range Management, Artificial Insemination and the College Poultry sections.

### **Functions**

The Livestock Investigation Division is under the Department of Livestock Services and accommodates the College farm. The integrated Livestock Health and Peri urban Dairy Project was coordinated by the Division. The Division functions to fulfill the Institute's mandate by introducing improved animal breed for increased meat and milk production and training of middle-level manpower in livestock health and production. In addition the Division collaborated with other Divisions in animal disease research, diagnostic, treatments, control and production of vaccine and biologicals. The Division also involved in pasture development, forage production and providing modern animal farm facilities for students' industrial experience and livestock farmer education.

### **Animal Species and Population**

Species of animals reared in the Division were cattle (A.I bulls, Dairy & Beef, 420), Sheep (189), Goat (60), Horses (21) and Poultry (2500).

### **Summary of Achievements**

#### **Production**

- i. The Division achieved a successful on-Farm insemination fertility trial in 2009 using Vom-produced frozen chilled bovine Holstein Friesian semen. The trial was conducted on the farm and in Sokoto on Bunaji cows both in the dry and rainy seasons. Pregnancy rate was 45.12%. This was the first documented report on insemination trials using frozen semen produced in Vom and in Nigeria.
- ii. The farm introduced the use of Artificial Insemination (AI) as a breeding practice using Vom-produced chilled and frozen semen from Holstein Friesian bulls for improved dairy production as part of the Integrated Livestock Health and Peri urban Dairy project.

- iii. A total of 25 young bulls at an average weight of 200kg were released to Bacterial Vaccine Production Division for vaccine production
- iv. Maize Silage production increased from 1200 metric tons in 2008 to 1500 metric tons in 2009 against the targeted 1600 metric tons.
- v. Staff were trained for Artificial Insemination (AI) in cattle in preparation for on-farm A. I projects of the Integrated Livestock Health and peri-urban Dairy Project.

### Acquisition of New Equipment for Project

- i. A new Liquid Nitrogen Plant, "**Stirlin I extendible**" was acquired, installed and tested in 2009. It is a continuous and fully automated production system that does not require defrosting. It has a production capacity of 10 litres of liquid nitrogen per hour which can be increased to 20 litres per hour with the addition of an additional cryogenerator. It was acquired to meet the increasing need especially for introduction of improved animal breed for both milk and meat production through artificial insemination. It was found useful for the storage and preservation of both research and vaccine production materials of the Institute and clients. State-of-the-art equipment were also purchased for semen evaluation, processing and artificial insemination.

### Research activities

- i. **Evaluation of Semen quality AI to improve milk and meat production status:** Both chilled and frozen bovine semen produced were of good quality. Both on-station and on-farm insemination trials in Vom and Sokoto showed good results. Further trials would continue in 2010.
- ii. **Evaluation of homologous PPR vaccines on Small Ruminants:-** This was done in collaboration with Viral Research Division. As a result of the preliminary results obtained in 2009, some new vaccine batches would be evaluated on-farm in 2010.
- iii. **Farm animal diseases surveillance.** Treatment and control trials for Cutaneous Bovine Papillomatosis using Ivermectin and autogenous vaccine were investigated. This was found useful and adopted. The disease was controlled in the Institute's cattle herd. Work however is still on-going.



- iv. **Research on “Causes of mortality in young animals on the farm” and “efficacy trials of common dewormers on farm animals”.** The research is still on-going.

### **Constraints**

Some of the constraints of the Division were inadequate water storage, unsteady power supply, lack of telephone intercom and internet services, inadequate security, illegal encroachment into paddocks by Fulani herds, need for upgrading farm structures and renovation of office accommodation. However, the Management has started to gradually attend to some of the constraints.

## **PLANNING, MONITORING AND EVALUATION**

### **Activities**

The Planning Division uses the results of the collated, processed and analyzed data for the formulation, co-ordination, monitoring & evaluation of the Institute's projects and programmes.

During the reporting year, the Division in conjunction with Statistics Unit updated staff documentation for use by National Pension Commission under the Contributory Pension Scheme. The Division also processed data relating to human resource development, socio-economic activities such as the staff nominal roll, staff training and production of the Institute's staff identification cards.

The Division in conjunction with the Protocol Unit assisted in receiving dignitaries to the Institute especially as a Regional Centre for Trans-Boundary Animal Diseases on Avian Influenza in Central and West Africa. A total of 87 visits to the Institute were recorded. They came from tertiary institutions, primary and secondary schools, ministries and other government agencies. Notable among such dignitaries are (1) the Senior Executive Course 31 Participants, NIPSS, Kuru, Senate ad-hoc Committee on the Investigation of the Nigeria Food Crisis and Agricultural Sector, RIGAN Council and International Conference on Avian Influenza. Others were the Senate Committee on Agriculture and House Committee on Agriculture.

The Division was also charged with the responsibility of procuring and distributing computer sets for use in the Institute and coordinating students on industrial work experience scheme (SIWES). The students came from Universities of Jos, Ibadan, Nsukka, and Maiduguri.

The Procurement Unit processed contract documents and local purchase orders (LPOs) for award and supplies.

Furthermore, an Enlightenment Programme on the National Health Insurance Scheme (NHIS) was held from May 31<sup>st</sup> to June 7<sup>th</sup>, 2009 and August 12<sup>th</sup> to 13<sup>th</sup>, 2009. Staff were able to update their dependants, change their health care providers while new staff registered with the scheme. Maintaining and coordinating the Institute's telecommunication system, more intercom lines were provided to other Divisions and Units. A total of 175 units of Fire Extinguishers were serviced and maintained by the Division.

### **Servicom Unit**

The Institute's Servicom unit commissioned the new SERVICOM/Institute's Reception Office and improved conduct and work habits of staff through awareness lectures, reprinting and redistribution of SERVICOM Work ethics, Servicom Charter and Servicom Registers. Also, the Third Quarterly Ministerial Nodal Officers' SERVICOM Meeting took place in the Institute on 23<sup>rd</sup> to 24<sup>th</sup> September, 2009.

### **Cyber Café Unit**

The major activities include: (a) Internet browsing, (b) printing and scanning of documents (c) laminating (d) writing to CD (Compact Disks). The Café functioned optimally except for days when power to the Café was cut off. The unit also managed the Institute's connection with servers at the Administration Building and Diagnostic Division.

### **Monitoring and Evaluation**

The Division, through the process of monitoring and evaluation of projects, assisted the management in providing the feedback required on performance, implementation and completion.

The Statistics Section received and analyzed several research and production data for staff of the Institute and those from the two Colleges of the Institute. The Section also continued to compile data for vaccine production, sales and storage.

The Section also updated staff documents needed by the National Pension Commission and liaised with the Pension Fund Administrators on behalf of the staff if and when need arises.

## NVRI STAFF PRIMARY SCHOOL

The school resumed the 2008/2009 session on the 22<sup>nd</sup> September, 2008 and ended the session on the 24<sup>th</sup> July 2009, observing all the three terms of the session. The pupil population stood at 687 in 2009

Activities of the school during the reporting year include:-

1. Teaching and organizing pupils for daily school activities
2. Open Day once a term- a platform for parents, guardians, teachers and school authority to meet and discuss the problems and progress of the pupils, Continuous Assessment Tests and Termly Examinations.
3. Organizing children for educational trips and excursions
4. Preparing pupils for external examinations into Colleges of their choice.

## External Examination Results

Table 6: **The number of students presented, admitted and percentages admitted into Secondary Schools.**

The External Examinations taken by the pupils in Primary five and six are shown in the following table

S/NO	NAME OF SCHOOL	NO. OF CANDIDATES	NO PASSES	%PASS
1.	NVRI Staff Sec. School, Vom	44	43	97.7
2.	St. Joseph College Vom	7	7	100
3.	Rochars Foundation	1	1	100
4.	C. M. I. Zawan	2	2	100
5.	Boys Secondary Sch. Gindiri	10	5	50
6.	Air Force Comprehensive College Jos	1	1	100
7.	St. Ritas High School Vom	5	5	100
8.	Baptist High School Jos	2	1	50
9.	Nigerian Military School Zaira	3	3	100
10.	St Louis College Jos	6	4	66.7
11.	St. John's College Jos	1	1	100
12.	Winner's International Coll. Jos	1	1	100
13.	Girl's High School Gindiri	12	4	33.3
14.	St. Luke's College Jos	3	2	66.7
15.	ECWA Secondary School Miango	3	3	100
16.	ECWA High School Jos	2	2	100
17.	St John's Vianney Minor Seminary B/Ladi	1	1	100
18.	Airforce Military School Jos	9	Awaiting	
19.	Unique High school. Jos	5	3	60
20.	Mount Tabar Inter'I Coll., Jos	1	1	100

21.	Command Sec. Sch. Jos	5	5	100
22.	Anglican Girls College, Abuja	2	1	50
23.	St Helen's College Pankshin	1	1	100
24.	Emmanuel Inter'I College Jos	1	1	100
25.	Redeemed Academy, Jos	2	2	100

## **Sports**

The School organized the 13<sup>th</sup> Annual Inter-House Athletics Competition on the 7<sup>th</sup> March, 2009. This was well attended by the distinguished invited guests, parents, guardians, NVRI staff and pupils from other schools. It was a memorable day for the pupils, students and staff of the school.

## **Graduation Speech and Prize-giving Ceremony**

The fourth Joint Annual Graduation, Speech and Prize Giving Ceremony also took place and was well attended by invited dignitaries, management, staff of the schools and the Institute, the students and the pupils

## **Teaching Practice**

Five students from Federal College of Education, Pankshin, College of Education, Gindiri and NTI Jos were in the school for teaching practice. Also two Corpers were posted to the school.

## **Seminar/Workshop**

Mr. C. Ugbono the Head Teacher attended the 1<sup>st</sup> International Conference and Workshop on National Council for Exceptional Children (NEC) held between 4<sup>th</sup> and 8<sup>th</sup> August, 2009 at the University of Calabar.

## **Training**

At present, eleven staff are on training in various institutions within the country for various certificates (NCE, B.ED., and M.ED.)

## **General**

The Executive Director, proprietor of the school, visited the school for an on-the-spot assessment of the school in all areas. The school has been connected to the Institute's Generator for constant light. The Chairman of the school also visited on several occasions to encourage the teachers to work harder.

The primary six pupils and their teachers undertook an excursion to Polo Field, Jos during the Trade Fair in October 2009. It was quite educative to the children because they saw things taught in class.

Immunization against filariasis and Vitamin A were given to all the pupils and staff in March, 2009. Poliomyelitis Oral Polio and booster doses of measles were also given to Nursery pupils.

### **Challenges**

1. There is need to replace one deceased staff and two class assistants to reduce excess workload and managerial problems.
2. The school desires to have a library, computer, Laboratory, two French teachers, one Mathematics, one English and one Music Teacher to boost capacity building and student performance in the subjects.

## **NVRI STAFF SECONDARY SCHOOL**

The Institute has an established Secondary School meant to accommodate the wards and children of Staff and others within and outside Vom after their primary education. The school provides sound and qualitative education that builds for a future generation.

The functions of the school include classroom teaching, educational visits/excursions, and sporting activities, counseling sessions and conducting examinations.

The yearly Inter-House sports competition took place on the Institute's sports ground on March 7, 2009. The occasion was graced by the Management, Staff, Parents and other important dignitaries within and outside Vom. Also, the 2009 Annual Speech and Prize giving ceremony was held on the 17<sup>th</sup> July, 2009. Students who excelled in various fields were acknowledged and rewarded.

The Staff School was designated as a centre for the conduct of the yearly University Matriculation Examination (UME). The maiden examination in the school was conducted on April 4, 2009. Counseling sessions for students especially on social values were held on 5<sup>th</sup> February, 5<sup>th</sup> March and 27<sup>th</sup> October, 2009.

It is worthy to note that four science Teachers received sponsorship to attend the Annual Science Teachers Association of Nigeria Conference at Minna between 27<sup>th</sup> and 31<sup>st</sup> August, 2009. The master results for the WASSCE and NECO external examination are still being awaited.

The level of discipline improved significantly among students as a result of concerted counseling programmes provided by the school management. The school continued to consolidate on the student's acquisition of relevant textbooks in the reporting year.

The student population stands at 495 in the year under review.

A new French teacher, Mr. D. Dakuut was engaged to replace Mr. J. Y. Nyango, who resigned his appointment. The school is till advocating for a functional Parents' Teachers Association (PTA) to partner with the Management in the areas of infrastructural development and inculcating moral values in the students.

More importantly, there is need for the second phase of work to commence at the permanent site. This is expected to cover facilities such as Administrative block, Science Laboratories and Library. The school stands the risk of being

disaccredited by the External Examination Bodies such as WAEC and NECO as a result of the continued absence of these important facilities for the students.

Other challenges include:

1. Provision of computers and photocopiers to cope with examinations and secretarial work
2. Engagement of Teachers to handle English Language, Geography, Christian Religious Knowledge and Mathematics.

### **Future Direction**

The school is hoping and desiring to re-introduce Computer Education in the curricula. The school is poised to inaugurate the Old Students Association in the New Year (2010). This would provide a platform for the old students to meet and contribute their own quota to the development of the school. Meanwhile, the school would continue to ensure sustainable and qualitative academic and moral education to the students.



## **OUTSTATION LABORATORIES**

The twenty three (23) Outstation Laboratories of the Institute spread across the geo-political zones of the country. They were established to meet the mandate of investigating and diagnosing animal diseases, their treatment and control. The laboratories are located in Uyo, Oji River, Umudike and Calabar in the South-East; Ilorin, Lagos, Benin, Ibadan, Ikire and Akure in South-West; Makurdi, Shendam, Keffi, Bauchi and Abuja in the Central zone; Kano, Kaduna and Katsina in Kano zone; Sokoto and Birnin Kebbi in the North-West and Maiduguri, Jalingo and Yola in the North-East. Ambulatory and extension services were also carried out by these laboratories.

### **Activities**

The activities of the Outstation laboratories are:

- a) Use of history, clinical manifestations and post-mortem examinations for tentative diagnosis of animal diseases, backed up by laboratory bench-work in some laboratories.
- b) Offering professional advice on animal diseases, treatment and control.
- c) Provision of veterinary services following demand from poultry and livestock farmers.
- d) Provision of enlightenment on the use of NVRI-produced vaccine and other products e.g. kerosene incubators and ethno-veterinary products.
- e) Collection of samples and specimens for confirmatory diagnosis.
- f) Visits to animal farm for disease surveillance especially for samples collection specifically for Avian Flu, African Swine Fever, Foot & Mouth Disease and Peste des petits ruminants.
- g) Major external distribution channels for vaccines produced by the Institute.
- h) Individual staff research projects for higher degree programmes.
- i) Other ad-hoc duties assigned by the Executive Director or the Departmental Director from time to time.

## **Achievements**

The Outstation Laboratories have continued to build more confidence in poultry and livestock farmers as a result of veterinary services rendered and vaccines made available to them. There was also improved enlightenment on new vaccines, their application, vaccination programmes and other products of the Institute. The Outstations were able to effectively and efficiently complement the efforts of the State Veterinary Services in their various locations in the areas of disease surveillance, investigation, diagnosis and control.

## **Challenges/Constraints**

- i) Insufficient facilities to provide diagnostic laboratory services.
- ii) Provision of furniture and laboratory equipment to the renovated outstation laboratories at Ikire, Ibadan, Umudike, Sokoto, Maiduguri and Kano.
- iii) Refresher courses to update knowledge and skills of Outstations Officers.
- iv) Vehicles to facilitate mobility.

## **Way Forward**

To facilitate and enhance services rendered by these laboratories, some basic laboratory equipment and consumables are to be provided. These include microscopes, autoclaves, centrifuges, incubators, refrigerators, deep-freezers post-mortem kits and consumables like chemicals, reagents, media, stains etc. Other areas of need are (a) funding of the Outstations and (b) provision of vehicles to facilitate mobility and field services. However, collection of field samples for investigation of Avian Flu, African Swine Fever, Swine Flu, African Horse Sickness, Foot and Mouth Disease, and Peste des petits ruminants shall continue nationwide. However, the Management has started making effort to attend to the requirements of the Outstation Laboratories.

## PARASITOLOGY

The role of the Division is to conduct research and diagnosis of all economically important ecto and endoparasites of livestock and poultry along with the development of treatment and control strategies.

The Division consists of the following sections; Molecular Parasitology, Helminthology, Protozoology/Diagnostic Parasitology, Entomology, Ethno-veterinary and Parasite Immunology. During 2009 the renovation of the Division was completed.

### Diagnostic Activities

#### Protozoology and Helminthology Sections

A total of 294 blood samples were received for diagnosis from 214 cattle, 36 dogs, 20 sheep/goats, 20 avian, and 4 horses.

The prominent parasites seen were *Babesia* spp. (73%) and *Trypanosoma* spp. (1%). Also 1,150 faecal samples were processed comprising 570 avian, 249 bovine, 180 Caprine/ovine, 72 Porcine, 43 Equine and 36 canine species.

Thirty-six percent of birds, 77% of bovine, and 71% of caprine/ovine were positive for helminthes.

Table 7: **The number of identified endoparasites from blood and faecal samples received across the country**

BLOOD SAMPLES				FAECAL SAMPLES		
Animal species	Total sample	Parasites seen	Number seen	Total sample	Parasite seen	Number seen
Avian (Poultry)	20	No parasite seen	-	570	<i>Ascaridia galli</i>	125
					<i>Raillientina tetragona</i>	72
					<i>Tetrameres</i> spp.	10
					<b>Eimeria spp.</b>	
					<i>E. tenella</i>	133
					<i>E. maxima</i>	70
					<i>E. acervulina</i>	60
Bovine (Cattle)	214	<b>Babesia spp.</b>	167	249	<i>Strongyle</i> eggs	117
		<i>B. bigemina</i>	3		<i>Strongyloides</i>	9
		<i>B. bovis</i>	20		<i>Eimeria</i> spp.	39
		<b>Trypanosoma spp.</b>	18		<i>Paramphistomum cervi</i>	7

		<i>T. vivax</i>	4		<i>Moniezia benedeni</i>	2
		<i>T. congolense</i>	2		<i>Fasciola gigantica</i>	10
<b>Canine</b> (Dog)	36	<i>Babesia canis</i>	21	36	<i>Ancylostoma caninum</i>	2
					<i>Toxocara canis</i>	3
					<i>Eimeria spp.</i>	3
<b>Caprine/Ovine</b> (Goat/Sheep)	20	<i>Babesia motasi</i>	2	180	<i>Strongyle eggs</i>	123
					<i>Strongyloides papillosus</i>	
					<i>Cysticercus ovis</i>	5
					<i>Ceonus cerebri</i>	1
					<i>Eimeria tenella</i>	1
					<i>E. ovis</i>	45
					<i>E. parva</i>	70
<b>Equine</b> (Horse)	4	No parasite seen	-	43	<i>Strongyle eggs</i>	31
					<i>Parascaris equorum</i>	1
<b>Porcine</b> (Pig)	-	-	-	72	<i>Eimeria suis</i>	14
					<i>Stephanuris dentatus</i>	2
					<i>Hyostrogylus rubidus</i>	11
					<i>Globocephalus connorfilii</i>	4
					<i>Metastrongylus apri</i>	8
					<i>Ascarops strongylina</i>	3
					<i>Necator spp.</i>	2
<b>TOTAL</b>	<b>294</b>		<b>239</b>	<b>1150</b>	<i>Strongyloides ransomi</i>	5
						<b>988</b>

## Entomology Division

Below is the summary of samples collected and parasites found for each animal species examined across the country.

A total of 1,100 samples across the country, were collected from 344 Avian, 522 Bovine, 141 Canine, 53 Caprine/Ovine, 8 Equine, 17 Laprine, and 15

Porcine species. Table 8 shows the number and ectoparasites identified from animals and birds.

Table 8: **The number of samples and identified ectoparasites from birds and animals.**

Animal species	Total sample collected	Parasite seen	Number seen
<b>Avian</b> (Poultry)	344	<i>Menacanthus stramineus</i>	135
		<i>Goniocotes gigas</i>	110
		<i>Dermanyssus gallinae</i>	20
		<i>Cnemidocoptes mutans</i>	45
		<i>Cnemidocoptes gallinae</i>	34
<b>Bovine</b> (Cattle)	522	<i>Amblyomma variegatum</i>	370
		<i>Boophilus decoloratus</i>	116
		<i>Hyalomma spp.</i>	36
<b>Canine</b> (Dog)	141	<i>Demodex canis</i>	6
		<i>Rhipicephalus sanguineus</i>	79
		<i>Amblyomma variegatum</i>	26
		<i>Ctenocephalides canis</i>	4
		<i>Larvae of Cordyllobia spp.</i>	26
<b>Caprine/Ovine</b> (Goat/Sheep)	53	<i>Amblyomma variegatum</i>	24
		<i>Boophilus decoloratus</i>	19
		<i>Sarcoptes scabies varcaprae</i>	4
		<i>Larvae of Oestrus ovis</i>	6
<b>Equine</b> (Horse)	8	<i>Boophilus decoloratus</i>	5
		<i>Rhipicephalus spp.</i>	3
<b>Laprine</b> (Rabbits)	17	<i>Larvae of Cordyllobia spp.</i>	12
		<i>Psoroptes cuniculi</i>	5
<b>Porcine</b> (Pig)	15	<i>Boophilus decoloratus</i>	8
		<i>Amblyomma maculatus</i>	7
<b>TOTAL</b>	<b>1,100</b>		<b>1,100</b>

This is important to note that the prevalence of the ectoparasites is nationwide and has negative economic impact on the well being of poor resource farmers in the country.

## Effectiveness of Scabicur Lotion Against Mange and Other Skin Infections in Nigeria

Below is the table showing the efficacy of Scabicur lotion against mange and other skin infectious in man and animals.

Table 9: **Efficacy of scabicur lotion against human and animal ectoparasites.**

Species	Herd/ Population size	Breed	Sex/Age	No. Positive for Ectoparasites	Remark
Human	203	Human	Female/ Adult	<i>Sarcoptes scabiei</i> 70	80% efficacy
Bovine (Cattle)	48	Sokoto gudali (23)  White Fulani (25)	Female/ Adult	<i>Sarcoptes</i> (33)  <i>Amblyomma variegatum</i> (48)	100% efficacy
Porcine (Pig)	10	Landrace	Female/ Adult	<i>Sarcoptes scabiei</i>  <i>scabiei</i>	100% efficacy
Ovine (Sheep)	300	Yankasa	Female/ Adult	<i>Sarcoptes scabiei</i>  <i>Ovinae</i> (250)  <i>Hyallomma/Boophilus spp.</i> (100)	100% efficacy
Caprine (Goat)	200	Sokoto red	Female/ Adult	<i>Sarcoptes scabiei</i>  <i>Caprine</i> (80)  <i>Fleas and Lice</i>  <i>Boophilus decoloratus</i> (90)  <i>Amblyomma Variegatum</i> (50)	100% efficacy
<b>TOTAL</b>	<b>461</b>				

### Challenges

As the molecular laboratory is being equipped, there is need to train staff on the use of modern Molecular Parasitology techniques.

### Future Direction

The Division is fine-tuning its plan to engage in molecular diagnosis and characterization of pathogenic parasites. Tissue culture work is also envisaged in the near future to propagate and preserve some important parasites.

## POULTRY

The Division continued in the year under review to:-

- i. Produce fertile eggs for the production of various poultry vaccines
- ii. Produce chicks for vaccine testing and research purposes
- iii. Investigate diseases of poultry that could hamper productivity
- iv. Investigate nutritional and management aspects of all classes of poultry and their effects on disease management
- v. Create enabling environment for the introduction, adoption and disease management of exotic breeds of poultry and
- vi. Establish nutrients status of locally available feed ingredients for ration formulation

The stock balances of poultry and eggs as at the end of 2009 were as shown in the table 10 below. The total value of the stock balance of various birds and eggs was fifteen million, six hundred and forty three thousand, one hundred and thirty five naira (N15, 643,135.00). This was higher than N12,830, 510.00 reported for the year 2008.

The capital projects completed in 2009 were (1) the renovation of poultry houses (2) procurement and installation of new vaccine egg incubator (3) fencing of vaccine birds section and (4) renovation of bore holes. The contract for litter belt for vaccine birds section was awarded. Also a total of 433.4 tons of various types of poultry feed were supplied to the Division from the Dagwom farm of the Institute. This consisted of Chick mash, Growers mash, Layer mash, breeder mash, Broiler starter and finisher.

### Production of Birds and Eggs

A total of 220,221 birds were produced in the year under review. This consisted of 2005,430 Quails, 7, 828 vaccine birds, 2,921 Ducks, 333 Turkeys, 1,675 Guinea fowls, 1,131 Black Bantam, 900 Naked Neck and 21 Geese.

Similarly a total of 1,097, 194 eggs were produced in the same year from the poultry stocks. This comprised 648,689 eggs from Quails, 412,774 from vaccine birds, 22,251 from Ducks, 1935 from turkeys, 6,110 from Guinea fowls. 1,791 from Black Bantam, 3,462 Naked Neck and 173 from Geese

Also a total of 203,978 embryonated chicken eggs were issued to laboratories from January to December, 2009 for viral vaccine production and research. The Division was optimistic of increasing production to meet the needs of the production laboratories and research officers in the coming year.

The Division organized in-house seminar to enhance knowledge and skills of the Divisional staff. Table 11 shows the seminar topics, presenters and dates of presentation. The staff strength stood at 40, consisting of 9 senior officers, 10 intermediate officers and 21 junior officers.

Table 10: **Poultry stock balances and monetary values of birds and eggs by the end of 2009.**

S/N	ITEM	NUMBER	UNIT PRICE (N)	TOTAL (N)
<b>1. QUAIL</b>				
	Quail Chicks	5,529	15/chick	82,935
	Growers	6,078	45/grower	273,510
	Adults	10,907	60/adult	654,420
<b>2. Vaccine Birds</b>				
	Parent Stock Chicks	2,441	3,000/chick	7,323,000
	Parent Stock Cockerels	1,728	500/cockerel	864,000
	Growers	4,206	500/grower	2,103,000
	Breeders	2,821	1000/breeder	2,821,000
<b>3. Guinea Fowls</b>				
	Keets	26	120/keet	3,120
	Adults	302	350/bird	105,700
<b>4. Ducks</b>				
	Ducklings	614	100/duckling	6,1400
	Growers	108	200/bird	21,600
	Adults	520	350/bird	182,000
<b>5. Turkeys</b>				
	Poults	17	200/poult	3,400
	Adults	33	2000/bird	66,000
<b>6. Naked Neck</b>				
	Chicks	121	180/bird	21,780
	Adult	56	500/bird	28,000
<b>7. Black Bantam</b>				
	Chicks	157	100/chick	15,700
	Growers	67	150/chick	10,050
	Adults	53	200/chick	10,600
<b>8. Geese</b>				
	Goslings	12	5,000/goslings	60,000
	adults	19	15,000/bird	285,000
<b>9. Vaccine Eggs</b>				
	Eggs in the Incubator	5,700	90/egg	513,000
	Eggs on ground	336	60/egg	20,160
<b>10. Other egg in the incubator</b>				
	Quail eggs	Nil	Nil	Nil
	Ducks eggs	2029	30/egg	60,870
	Guinea Fowls eggs	34	30/egg	1,020
	Turkeys eggs	148	50/egg	7,400
	Naked neck eggs	319	50/egg	15,950



	Black bantam eggs	179	20/egg	3,580
	Geese eggs	41	500/egg	20,500
<b>11.</b>	<b>Eggs on ground</b>			
	Quail eggs	Nil	Nil	Nil
	Ducks eggs	72eggs	20/egg	1,440
	Guinea Fowls eggs	5eggs	30/egg	150
	Turkey eggs	5eggs	50/egg	250
	Naked neck eggs	22eggs	50/egg	1100
	Black bantam eggs	25eggs	20/egg	500
	Geese eggs	2eggs	500/egg	1000
<b>Total Value(N)</b> Fifteen million Six hundred and Forty Three Thousand One Hundred and Thirty Five naira only				<b>15,643,135.00</b>

Table 11: **In-House Seminar Presentations in the Poultry Division for 2009**

S/N	SEMINAR TOPICS	PRESENTER	DATE
1.	Egg transmitted diseases in poultry and implications for hatchery production	Prof. D. F Adene	21/4/2009
2.	Methods, Merits and possible problems in Hatching egg cleaning practices	Mrs. L. R. Njam	5/5/2009
3.	Minimal pathogen-free (MPF) flocks: Possibilities.	Dr. Musa. U	19/5/2009
4.	Successes and challenges in a functional integrated farm: the Songhai example	Mr. N. A. Dachin	2/6/2009
5.	Quality assessment of eggs meant for Vaccine production	Mr. O. Nwankiti	16/6/2009
6.	Quail Health Management Practices: Loopholes and achievements	Dr. P. E. Emenna	7/7/2009
7.	Sourcing, Procurement and Storage of feed-producing Ingredients.	Mr. M. A. Adeleke	21/7/2009

## PRINTING AND PUBLICATION

The Division was established to meet printing and publication needs of the Institute. The official jobs handled by the Division in the year under review were

- i. 7, 150 copies of various vaccine labels
- ii. 100 copies of Guest House dockets
- iii. 80 copies of NVRI STR booklets
- iv. 270 copies of NVRI Delivery notes
- v. 1000 copies of Quail Production Books
- vi. 300 copies of Vom Journal. (Volume 5)
- vii. 200 – 300 copies of Posters NVRI Quarterly Statement A3
- viii. 100 copies of Servicom Chatter Books

Others were

- |  |             |
|--|-------------|
| a. Letter-headed papers for Committee of Directors of Research Institute       | 1000 copies |
| b. NVRI Programme booklets   | 150 copies  |
| c. Attendance Register FCAH and PT   | 200 copies  |
| d. NVRI Book of Programme on safe-guarding the Poultry Industry on the Plateau | 300 copies  |
| e. NVRI 2007 Seminar Series  | 500 copies  |
| f. NVRI File Jackets   | 8000 copies |
| g. NVRI Secret File Jackets  | 2000 copies |
| h. FCAH and PT Admission Forms – Pre ND, ND, HND                               | 4000 copies |
| i. NVRI Impact Assessment Form   | 3000 copies |
| j. NVRI Brochure   | 3000 copies |
| k. African Education Initiative Memo   | 300 copies  |
| l. 2007 Annual Report Reprints   | 300 copies  |
| m. 2008 Annual Report  | 300 copies  |
| n. NVRI Board Members Compliment Cards   | 400 copies  |
| o. EDVR Compliment Cards   | 200 copies  |
| p. Board Chairman's letter headed papers                                       | 500 copies  |
| q. NVRI Vehicle log books  | 100 copies  |
| r. NVRI Official Receipts  | 200 copies  |

The anticipated revenue from all the official jobs enumerated above was one million and eighty eight thousand seven hundred Naira (N1, 088, 700.00). In contrast, the Division was able to generate revenue of eight hundred and twenty five thousand, nine hundred and sixty Naira (~~N~~825, 960.00). However,

the Division was unable to generate revenue as expected because the Kord 64 offset machine which is the principal equipment in the Division was grounded for most part of the year. In 2009, staff of this Division could not participate in any conference, seminar or workshop relevant to the Division. The Division still requires the service of a Computer Graphic Artist and an offset machine operator.

## QUALITY CONTROL

The Quality Control Division is responsible for ensuring good laboratory practice (GLP) in the Institute. It also ensures compliance with good manufacturing practice (GMP) in the production of vaccines and other veterinary biologicals. The Division is also responsible for quality control and assurance of vaccines produced in the Institute which involves testing of these vaccines before release for sale. Monitoring of the production laboratories is aimed at ensuring the use of standard and approved laboratory equipment and procedures in accordance with international standards. These tests on vaccines and standard laboratory procedures were carried out with supplementary efforts of Bacterial, Viral, Diagnostic and Biochemistry Divisions of the Institute.

### Activities:

**2.1 Preparation of documents for Site Master File (S.M.F):** The Division supervised and guided all other Divisions in preparing the Staff Nominal Roll, Job Description and Training for inclusion in the SMF.

**2.2 Re-training on writing of Standard Operating Procedures (SOPs):** The Division organized a 1-day follow up Training Seminar on SOP writing for Heads of Divisions or representatives on the 21<sup>st</sup> of January, 2009. It has also started the process of collating Standard Operating Procedures from various Divisions of the Institute.

**2.3 Log Forms:** The Division designed and distributed Log Forms (Equipment Usage Log, Reagent Log and Lab Equipment Log) to appropriate Divisions for the purpose of documentation and creating records.

### 2.4 Quality Control Testing on Vaccines:

Reference samples of vaccines were received from the Production Divisions for Quality Tests (purity, viability, sterility, consistency, pH, packaging and labeling) before release for sale. A total of 106 batches of various bacterial vaccines and a total 39 batches of different viral vaccines were received and tested. These included batches of Fowl Cholera Vaccine (24), Fowl Typhoid Vaccine (9), Haemorrhagic Septicaemia Vaccine (23), Anthrax Spore Vaccine (18), Hantavac Vaccine (10), Black Quarter Vaccine (7), CBPPV (15), Fowl Pox Vaccine (4), Newcastle Disease Lasota Vaccine (12), Newcastle Disease Komarov Vaccine (3), Newcastle Disease i/o Vaccine (2), Infectious Bursal Disease Vaccine (9), PPR Vaccine (7), and Anti-Rabies Vaccine (2). The results of the tests were within acceptable levels, and passed for sale and use in the field.

## 2.5 Re-Evaluation of Vaccines/Products:

A number of vaccines and other products were received from outside the Institute for quality assessment. These were

- **NVRI CBPP Vaccine:** Two batches (Batch 02/2008, Batch 02/2009) of Vaccines produced by NVRI were submitted by the Yobe State Pilot Livestock Development Project, Damaturu, for re-evaluation. Batch 02/2008 was not viable and therefore not recommended for use, while Batch 02/2009 was passed as fit for field use.
- **Efficacy of Disinfectant Sample (SURGISAF®):** This was submitted to the Institute for assessment by Hexo International Ltd on the 30<sup>th</sup> of January, 2009. The disinfectant was found to be effective against most common laboratory contaminants.
- **NDV I<sub>2</sub> Vaccine:** This vaccine was produced by the Institute for the FAO but was not cleared and therefore kept in storage. It was then decided that quality tests be carried out before being consigned for rural vaccination. The result of the re-evaluation showed that the vaccine was still viable for field use.
- **Immugal® Lasota:** A private practicing veterinarian in Jos submitted 6 vials of this vaccine for viability test. The analysis showed that the vaccine was inadequate for use.
- **Infectious Bursal Disease Vaccine® (Fort Dodge):** This vaccine was submitted by the Institute Laboratory in Kaduna. The vaccine was tested, and found to be fit for use.

### **Vaccine Sampling for Registration by NAFDAC:**

Samples of seven bacterial and eight viral vaccines were submitted to NAFDAC for the purpose of registration of the products. The result of the tests for registration is being awaited.

## 2.6 Submission of Expired Vaccines to the Stores Division for Storage:

A total of 260 bottles and 276 vials of reference bacterial vaccines samples which were tested and had expired were sent to the Stores Division for storage pending authorization for destruction by the EDVR. These included 142 bottles of Haemorrhagic Septicemia vaccine, Hantavac vaccine (69), Black Quarter Vaccine (11) Anthrax Spore vaccine (38), and 276 vials of Fowl Cholera vaccine.

## 2.7 Staff Training:

Dr R. A. Ocholi, Dr S. Leo and Dr. A. T. Oladokun attended the ISO 17025 Laboratory Accreditation Auditors Course organized by the Standard Organization of Nigeria (SON) at the International Institute for Tropical Agriculture (IITA), Ibadan from 25<sup>th</sup> – 29<sup>th</sup> October, 2009.

## 2.8 Attendance at conference/Workshop:

Staff of the Division attended the following meetings:-

- A workshop organized jointly by FAO-ECTAD, STOP-AI, and USDA/APHIS on Quality Assurance in Veterinary Diagnostic Laboratories held from 9<sup>th</sup> – 13<sup>th</sup> November, 2009 at the Crystal Palm Hotel, Accra, Ghana.
- A joint FAO-USDA/APHIS in the framework of the RAHC of Bamako RESOLAB Annual Coordination Meeting held in Bamako, Mali from 30<sup>th</sup> November to 4<sup>th</sup> December 2009.
- The 46<sup>th</sup> Annual Congress of the Nigerian Veterinary Medical Association (NVMA) held at Emmaus House, Awka, Anambra State from 19<sup>th</sup> -23<sup>rd</sup> October, 2009.
- The 45<sup>th</sup> Annual Scientific Conference and Workshop of the Association of Medical Laboratory Scientists held at Emmaus House, Awka Anambra State from the 10<sup>th</sup>– 15<sup>th</sup> August, 2009

## 2.9 Standard Organisation of Nigeria (SON) Nominations:

- The Quality Control, Diagnostic and Biochemistry Divisions of the Institute were officially nominated to serve under the **MANCAP** scheme.
- Mr. Sati Lokason represented the Division as the Institute's representative on the Technical Committee on Draft Code for Good Manufacturing Practices (GMP) in Honey Production in Nigeria.
- Dr Leo Shedua was nominated from the Division to serve as the Institute's representative on the Technical Committee Meeting on draft standard for ruminant animal feed in Nigeria.

The Division relocated to the newly built ultra-modern facility in the Institute.

## **STORES**

The Division continued its duties of ensuring that there is an uninterrupted flow of working materials to the production research and services departments of the Institute thereby contributing to the attainment of the objectives of the Institute.

The Division under took an in-house training through paper presentations by the staff. This was intended to update staff's knowledge and skills in all aspects of procurement & inventory management. The Division had the following sections and units.

### **Vaccine Dispatch Section**

The Dispatch section received and dispatched vaccines through the Vaccine Sales unit to the teaming customers during the year under review. The section received a total of 92,489,656 doses of Viral Vaccines and 32,509,040 doses of Bacterial Vaccines. From these, a total of 88,978,529 and 30,645,240 doses of Viral and Bacterial Vaccine respectively were issued out for distribution across the country. This showed an increase of 32% in the quantity of Vaccines received from production Division and 36% increase in quantity of vaccines issued out by the section compared to 2008

### **Receiving Section**

Consignments comprising furniture, packaging, electrical and plumbing materials, fixtures & fittings, feeds and concentrates, stationeries, diesel, Drugs/Chemicals, Equipments, Plants and other Machineries etc, worth N855,578,141.30 were received and processed for payments during the period under review.

### **Maintenance Section**

Materials for maintenance costing a total sum of N60,881,737.50 were received in this section in 2009. The materials were bags of cement, plumbing and electrical materials.

### **Fuel Pump Unit**

In the year under review, a total of 647001 liters of diesel worth N72,459,797.00 was procured, out of which N45,797,950 was paid by the Institute, while a balance of N26,661,847.00 was paid by the two Colleges in the Institute.

### **Ledger/Verification and Reconciliation Section**

This section is charged with the responsibility of posting of receipts and issues, costing of materials using FIFO (first in first out) material valuation. The section also received and issued out equipment, furniture, plants, and marking them with official identification numbers as the materials were issued and carried out. This section also updated all inventory records in the Divisions/Units of the Institute.

### **Security Document Unit**

This unit is charged with the handling of all documents and issuance to user Departments

### **Main Stores Section**

The section is classified as:

- Expendable & non Expendable
- Glassware & Consumables
- Drugs, Chemicals and reagents

The section carried out the following tasks.

- Received and kept incoming material supplies to the Institute
- Issued materials for use to all Divisions and units concerned.
- Reconciled all records of stockable items in shelves, bins, fridges, cupboards etc.
- Ensured that all releases were backed up by approved STR (store transfer vouchers)

Other notable activities included:

- Recommendation for bulk purchase of feed in season of plenty for approval and this had helped in the production of animal feeds on regular basis.
- Eight sets of Computers were acquired for the Division of which they all have been networked
- Work has reached an advance stage regarding a software package for the Division



### **Constraints**

- The present storage capacity requires further expansion
- The present operating system could not allow the main Stores Section to capture all orders or material inflows before they were paid for.
- Lack of adequate manpower as staff strength of 14 at present could not cope with the work load.
- Need for renovation of the store house to make room for improved ventilation and more storage space for materials.

### **2010 Work plan**

- Completion of automation of store operations
- Staff development through training and re-training on or off the job
- Inventory coding/indexing.

## VIRAL RESEARCH

### A. Avian Viruses Section

1. This Section has the mandate to conduct research into all aspects of livestock and avian diseases, their treatment and control.
2. It also engaged in international networking with other laboratories in Africa and beyond.

### Activities of the Section

The section was involved in routine investigation and diagnosis of poultry viral diseases of economic importance in Nigeria. A total of 327 samples were received for routine diagnosis during the period under review and the result is summarized below.

Table 12: **Showing the monthly number of samples and results of avian viral disease diagnosis.**

Month	No of Samples Received	No. Positive			No. Negative
		AIV	NDV	IBDV	
January	26	-	4	4	18
February	27	-	6	1	20
March	20	-	3	2	15
April	35	-	2	5	28
May	27	-	2	3	22
June	41	-	3	2	36
July	40	-	-	2	38
August	29	-	-	1	28
September	33	-	3	-	30
October	13	-	-	4	9
November	17	-	2	1	14
December	19	-	4	-	15
<b>TOTAL</b>	<b>327</b>	-	<b>29 (8.9%)</b>	<b>25 (7.6%)</b>	

### Work Done:

- Virus transport medium was produced for sample collection.
- Samples received from the field were processed for the isolation of avian influenza virus and other viruses in chicken embryonated eggs.

### Results

Of the 327 samples received, twenty nine 29 (8.9%) were positive for Newcastle Disease, twenty five, 25 (7.6%) samples were positive for IBD antigen by Agar

Gel Immuno Diffusion and no sample was positive for Avian Influenza (Table 12). This result further indicates that Newcastle disease and Infectious Bursal Disease are still prevalent in Nigeria while Avian influenza was disappearing.

### **Challenges**

Lack of molecular biology reagents to handle large volume of samples coming from the field results in depending solely on egg culture. This is hardly the method of choice for analyzing surveillance samples in the developed world.

### **Future Direction**

1. Continuous surveillance and monitoring of avian influenza in Nigeria by sample collection, isolation and characterization of causative Highly Pathogenic Avian Influenza (HPAI) virus.
2. Availability of molecular biology reagents to handle samples from the field.

### **B. African Swine Fever (ASF) Unit**

The samples submitted and worked on as part of the diagnostic activities of the Unit. Using I-Elisa test, 215 (48.5%) out of 443 serum samples were positive for ASF. Below is the table showing the results of serological tests conducted for the diagnosis of African Swine Fever (ASF) using I-Elisa test. The study further confirmed that ASF is still prevalent in the country.

### **C. African Horse Sickness (AHS) Unit**

All the 8 samples from the field were all positive for African Horse Sickness. While the ASF continued to infect pigs, AHS affected horses as sporadic infections especially following Polo tournaments.

### **Challenges**

The Unit still awaits ELISA diagnostic kits for FMD and AHS diagnosis as well as PCR (Polymerase Chain Reaction) kits for AHS, ASF and FMD diagnosis. Apart from the ongoing activities of the ASF project, the Unit has already commenced work on FMD surveillance with a view to obtaining vaccine candidates in the near future.

Table 13: **The results of the I-Elisa tests for the diagnosis of African Swine Fever.**

<b>Location</b>	<b>Sample</b>	<b>Test used</b>	<b>No. Positive</b>	<b>No. Negative</b>
Ibadan, Oyo State	129 sera	I-ELISA	4	125
Jos, Plateau State	31 sera	I-ELISA	31	0
Ughelli, Delta State	9 sera	I-ELISA	8	1
Bauchi, Bauchi State	5 sera	I-ELISA	2	3
Billiri&Kaltungo, Gombe State	107 sera	I-ELISA	63	44
Jeema'a LGA, Kaduna State	136 sera	I-ELISA	83	53
Okuku-Yala LGA, Cross-River State	1 tissue	PCR	0	1
Jalingo, Taraba State	25 sera	I-ELISA	24	1
Total	443		215 (48.5%)	228

### **Challenges**

The section still awaits ELISA and PCR reagents for FMD and AHS diagnosis as well as FMD diagnostic kits. Apart from the on-going activities of the ASF project, the section has already commenced an FMD surveillance with a view to producing vaccine against the disease in the near future.

## **D. Peste des Petits Ruminants (PPR)**

### **i. Diagnosis of Peste des Petits Ruminants (PPR)**

A total of 222 sera and 20 tissue samples were received from Abuja (FCT), Edo, Kebbi and Plateau States of Nigeria and analyzed by counter-immuno-electrophoresis (CIE), competitive enzyme linked immunosorbent assay (cELISA) and reverse transcription polymerase chain reaction (RT-PCR)

Table 14: **The results of PPR diagnosis from field samples**

	No. of Sera	No. of Tissues	No. Positive		% Positive	
			Sera	Tissue	Sera	Tissues
Goat	123	18	46	2	37.40	11.11
Sheep	99	2	24	0	24.24	0
<b>States of Origin</b>						
Abuja	-	1	-	-	-	-
Edo	142	-	47	-	33.10	-
Kaduna		-	-	-	-	-
Kebbi	68	-	17	-	25	-
Plateau	12	19	6	2	50.00	10.52

**ii. Serological and Molecular Epidemiology of Peste des Petits Ruminants (PPR) in Sheep, Goats and Camels in Nigeria.**

**Serology**

Four hundred and eighty (480) serum samples from sheep and goats of unknown vaccination status were tested using the N-protein C-ELISA kit from CIRAD-EMVT Montpellier, France. One hundred and fifty one samples (31.45%) were positive for PPR antibody. Also, one hundred and nineteen sera samples from camels were tested with the same kit and only seven (5.88%) were positive for PPR antibody.

**Molecular Virology**

Nineteen tissue samples from sheep and goats received for PPR diagnosis through the Central Diagnostic Laboratory were analyzed by the one-step RT-PCR and two (10.5%) were positive. The same technique was also used to test one hundred lacrimal secretions from PPR suspected cases collected on filter paper and two (2%) were positive. One hundred lacrimal secretions collected from PPR suspected cases were tested using the two-step RT-PCR and none (0%) was positive.

**Viral Isolation**

Attempts to isolate PPR virus from RT-PCR positive samples using the genetically engineered Vero. DogSLAM tag cells were unsuccessful. However work is still on-going.

### **C. Research Plans for 2010**

1. The Division intends to undergo more field investigations on the efficacy of the developed PPR vaccine through seromonitoring of vaccinated flocks. Two hundred pre-vaccination and two hundred post-vaccination sera will be tested using the N-protein C-ELISA kit from CIRAD-EMVT Montpellier, France.
2. The LAMP PCR technique will be used to test suspected PPR, FMD and CBPP samples when the kit becomes available.
3. The implementation of the Real-Time PCR for PPR will also be carried out when the machine is available.
4. Virus isolation attempts will be conducted using a combination of Vero, Vero. DogSLAM and lamb kidney cell cultures.

## VIRAL VACCINES PRODUCTION

In the year under review, viral vaccines produced were Newcastle Disease Vaccine (NDV) Lasota, NDV Komorov, NDV (i/o), NDV I<sub>2</sub>, Infectious Bursal Disease Vaccine (IBDV), Fowl Pox Vaccine (FPV), Peste des Petits Ruminants Vaccine (PPRV) and Antirabies Vaccines for dogs (ARVD).

A total of five hundred and sixty thousand, two hundred and four (560,204) vials of viral vaccines representing 92, 489, 656 doses were issued for distribution as compared to 390, 048 vials produced in 2008. This shows an increase of 170,156 vials of viral vaccine and represents more than 30% increase in production in 2009. Table 15 shows the summary of viral vaccines (figures in vials) issued and released for distribution and sales across the country on monthly basis.

Similarly, total revenue generated from viral vaccine distribution across the country was N121,226,150.00 in 2009. Table 16 shows details of revenue generated on monthly basis from January to December, 2009, vaccines produced, vials issued for sale and corresponding dose figures.

Table 15: **Summary of viral vaccines (in vials) issued in 2009**

Month	NDV-L	NDV-K	NDV-i/o	NDV-I <sub>2</sub>	IBDV	FPV	PPRV	ARV'D'	Grand Total Vials
January	28,965	8,513	4,338	-	20,539	-	5,640	-	
February	-	20,549	-	-	9,903	-	5,266	-	
March	7,000	7,974	-	-	-	-	-	-	
April	7,800	-	-	-	-	5,049	-	-	
May	7,630	-	-	-	-	-	-	-	
June	49,964	-	3,708	-	20,267	9,461	33,782	9,167	
July	8,382	-	-	-	20,702	-	-	7,670	
August	-	26,562	-	-	-	5,475	-	19,619	
September	12,144	-	-	-	18,007	6,867	-	-	
October	36,447	-	8,773	-	21,041	4,698	7,309	-	
November	16,273	-	-	-	18,245	-	10,851	-	
December	-	9,492	-	3,894	9,041	6,665	16,532	-	
<b>GRAND TOTAL</b>	<b>174,605</b>	<b>73,090</b>	<b>16,819</b>	<b>3,894</b>	<b>137,745</b>	<b>38,215</b>	<b>79,380</b>	<b>36,456</b>	<b>560,204</b>

Table 16: **Revenue generated from viral vaccines on monthly basis for the year 2009**

<b>MONTH</b>	<b>VACCINE</b>	<b>VIALS ISSUED</b>	<b>DOSES</b>	<b>REVENUE GENERATED (N)</b>
January	PPR	5,640	282,000	1,692,000
	NDV-L	28,965	5,793,000	5,793,000
	NDV-K	8,513	1,702,600	2,128,000
	NDV-i/o	4,338	867,600	867,600
	IBDV	20,539	4,107,800	4,107,800
	<b>TOTAL</b>	<b>67,995</b>	<b>12,753,000</b>	<b>14,588,400</b>
February	PPR	5,266	263,300	1,579,800
	NDV-K	20,549	4,109,800	5,137,250
	IBDV	9,903	1,980,600	1,980,600
	<b>TOTAL</b>	<b>35,718</b>	<b>6,353,700</b>	<b>8,697,650</b>
March	NDV-L	7,000	1,400,000	1,400,000
	NDV-K	7,974	1,594,800	1,993,500
	<b>TOTAL</b>	<b>14,974</b>	<b>2,994,800</b>	<b>3,393,500</b>
April	Fowl Pox	5,049	1,009,800	1,009,800
	NDV-L	7,800	1,560,000	1,560,000
	<b>TOTAL</b>	<b>12,849</b>	<b>2,569,800</b>	<b>2,569,800</b>
May	NDV-L	7,630	1,526,000	1,526,000
	<b>TOTAL</b>	<b>7,630</b>	<b>1,526,000</b>	<b>1,526,000</b>
June	IBDV	20,267	4,053,400	4,053,400
	PPR	33,782	1,689,100	10,134,600
	ARV	9,167	9,167	1,375,050
	FPV	9,461	1,892,200	1,892,200
	NDV-L	49,964	9,992,800	9,992,800
	NDV-i/o	3,708	741,600	741,600
	<b>TOTAL</b>	<b>126,349</b>	<b>18,378,267</b>	<b>28,189,650</b>
July	IBDV	20,702	4,140,400	4,140,400
	NDV-L	8,383	1,676,400	1,676,400
	ARV'D'	7,670	7,670	1,150,500
	<b>TOTAL</b>	<b>36,754</b>	<b>5,824,470</b>	<b>6,967,300</b>
August	NDV-K	26,562	5,312,400	6,640,500
	FPV	5,475	1,095,000	1,095,000
	ARV'D'	19,619	19,619	2,942,850
	<b>TOTAL</b>	<b>51,656</b>	<b>6,427,019</b>	<b>10,678,350</b>



September	IBDV	18,007	3,601,400	3,601,400
	NDV-L	12,144	2,428,800	2,428,800
	FPV	6,867	1,373,400	1,373,400
	<b>TOTAL</b>	<b>37,018</b>	<b>7,403,600</b>	<b>7,403,600</b>
October	IBDV	21,041	4,208,200	4,208,200
	NDV-L	36,447	7,289,400	7,289,400
	PPR	7,309	365,450	2,192,700
	NDV- <sup>i</sup> / <sub>o</sub>	8,773	1,754,600	1,754,600
	FPV	4,698	939,600	939,600
	<b>TOTAL</b>	<b>78,268</b>	<b>14,557,250</b>	<b>16,384,500</b>
November	PPR	10,851	542,550	3,255,300
	IBDV	18,245	3,649,000	3,649,000
	NDV-L	16,273	3,254,600	3,254,600
	<b>TOTAL</b>	<b>45,369</b>	<b>7,446,150</b>	<b>10,158,900</b>
December	PPR	16,532	826,600	4,959,600
	NDV-K	9,492	1,898,400	2,373,000
	IBDV	9,041	1,808,200	1,808,200
	FPV	6,665	1,333,000	1,333,000
	NDV-I <sub>2</sub>	3,894	3,894	194,700
	<b>TOTAL</b>	<b>45,624</b>	<b>6,255,600</b>	<b>10,668,500</b>

## WORKSHOP

In the year under review, the Workshop as usual carried out the function of maintaining the existing structures and machineries in the Institute. It also carried out some new constructions, renovations and installations where necessary.

The Division consists of Electrical, Plumbing, Carpentry, Welding and Plant Maintenance sections. Others are Masonry, Mechanical, Drivers, Painting and Environmental Maintenance sections.

Some of the works done by the Division in the year under review included the renovation of five(5) staff Quarters, several minor repairs in terms of Electrical, Plumbing, Welding, Masonry, Carpentry and Painting services to several staff Quarters, Offices , Laboratories, Staff Schools and Farms.

Other activities included Laying Armored Cables from the PTF Transformer to Virology Building Switch Room and from the Switch Room to the Quality Control Laboratories by the Electricians. Others are: Laying of new pipelines at the Staff School, installation of bore holes behind Afri-Bank and the Poultry Division, back-wash and washing of water beds at the water treatment reservoir by the plumbers. The carpenters repaired 117 Primary/Nursery school seats and also constructed 100 filing boxes for the Registry.

The Environmental Maintenance section carried out several works on the newly constructed Institute's stadium and took care of the general cleaning and maintenance of the entire Institute.

## STAFF PROMOTION

A total of one hundred and fourteen (114) senior and a total of one hundred and forty three (143) junior Staff were promoted in the year under review. The detail are shown in the table below

Table 17: **Data on Senior and Junior Staff Promoted in 2009**

### Senior Staff

STAFF PROMOTED (CONTISS)			
S/NO	FROM	TO	NO. OF STAFF
1	11	12	23
2	9	11	28
3	8	9	18
4	7	8	34
5	6	8	11
TOTAL			114

### Junior Staff

STAFF PROMOTED (CONTISS)			
S/NO	FROM	TO	NO. OF STAFF
1	5	6	6
2	4	5	38
3	3	4	27
4	2	3	40
5	1	2	32
TOTAL			143

## JOURNAL PUBLICATIONS BY STAFF

- Antiabong J.F., Yakubu, B., Owolodun O.A., Bertu, W and Ocholi,R.A (2009). **Molecular detection of *Brucella* spp from broth culture of clinical samples in Nigeria: Its role in vaccine quality control.** African Journal of Biotechnology, 8(21)5661-5665
- Bala, A., Daneji, A.I., Luther, N.J., Chafe,U., Fasina, F.O., Ifende, V.I., Emenna, P., Bolajoko,M.B., Ubandawaki, S(2009). **Survey of antibodies to African Swine Fever Virus (ASFV) in free range domestic pigs in Zuru, Kebbi State.** Vom Journal of Veterinary Science 6,58-60.
- Biu A.A, I.Bintu and E.T.Agbadu (2009). **Prevalence of giardiasis among out-patients of the University of Maiduguri Teaching Hospital, Nigeria.** International Journal of Biomedical and Health Sciences Vol 4. No. 4. 171-174.
- Biu A.A., A. Maimunatu, A.F. Salamatu and E.T.Agbadu (2009). **A faecal survey of gastrointestinal parasites of ruminants on the University of Maiduguri Research Farm.** International Journal of Biomedical and Health Sciences Vol 4. No. 4. 175-179.
- Biu A.A., H.B. Kolo and E.T.Agbadu (2009). **Prevalence of *Schistosoma haematobium* infection in school age children in Konduga Local Government area, Northeastern Nigeria.** International Journal of Biomedical and Health Sciences Vol 4. No. 4, 181-184.
- Bolajoko, M.B., Babalobi, O.O., Davou, G.D (2009). **Problems affecting the animal disease reporting system in Oyo State, Nigeria, 1995-2005.** Vom Journal of Veterinary Science Vol 6, 82-84.
- Brisibe F; S.E Idachaba and Aliyu, T. B. (2009). **A five year retrospective study on the hospital prevalence of Pulmonary Tuberculosis in Niger, Taraba and Kogi States between 1990 and 1994.** The Sahel Veterinary Journal, 8: 35-42.
- Bwala D G, Abolnik C, van Wyk A, Cornelius E, Bisschop S P R. (2009). **Efficacy of a genotype 2 Newcastle disease vaccine (Avinew®) against challenge with highly virulent genotypes 5d and 3d.** Journal of the South African Veterinary Association 80(3): 174-178.
- Bwala, D.G. (2009). **Challenge studies in chickens to evaluate the efficacy of commercial Newcastle Disease Vaccines against the strains of Newcastle Disease virus prevalent in South Africa since 2002.** MSc Thesis, 2009, E-copy at: <http://upetd.up.ac.za/UPeTD.htm>
- Dashe, Y.G., Kazeem,H.M., Abdu, P.A., Bello, M., Dalis, S.J., Kumbish, P.R., Ighodalo, E(2009). **Probable complication of Avian Influenza (H5N1) with *Proteus vulgaris* in Poultry in Nigeria.** Vom Journal of Veterinary Science Vol 6, 61-63.

Ehizibolo, D. O; Nwosuh, C. I.; Ehizibolo, E.E; Kia, G. S. N. (2009). **Comparison of the Fluorescent Antibody Test and Direct Microscopic Examination for Rabies Diagnosis at the National Veterinary Research Institute, Vom, Nigeria.** Nigeria J. Biomed. Res. 12; 73-76.

Fusaro,A., Joannis, T., Monne,I., Salviato,A.,Yakubu, B.,Meseko, C., Oladokun, T., Fassina, S., Capua, I and Cattoli, G (2009). **Introduction into Nigeria of a distinct genotype of Avian influenza virus (H5N1).** Emerging Infectious Diseases. 15(3):445-447

Ibu, O.J., Salihu, E.A., Abechi, S.A., Okewu, M (2009). **Activity of Bovine Parainfluenza Type 3 virus in cattle in north eastern Nigeria.** Vom Journal of Veterinary Science 6, 71-73.

Idachaba, S. E; Nwosuh, C.I., Aba-Adulugba, E. P, and Fasina, F.O. (2009). **Precipitation of Clinical Infections in chickens by Infectious Bursal disease virus preserved under different storage temperatures.** International Journal of Poultry Science, 8: 1058-1061,

Idachaba, S. E; Nwosuh, C.I.; Haruna, E. S., Aba-Adulugba, E.P., and Fasina, F.O (2009). **Antibody Response of Chickens and Rabbits against challenge by wild and virulent strains of Infectious Bursal Disease Virus.** Vom Journal of Veterinary Science, 6, 78-81.

Idachaba, S.E. (2009). **Status of canine vaccination and the Prevalence of Rabies in humans and dogs in Plateau State, Nigeria 1998-2007.** MSc. Thesis. E-Copy at <http://upetd.up.ac.za/UPeTD.htm>

Ikani, E.I., Fakai, S., Salami, J.O., Muhammad, L.U (2009). **Effect of Avian Influenza Outbreak on poultry product marketing in Sabon Gari Local Government Area of Kaduna State.** Vom Journal of Veterinary Science Vol 6,25-30.

Itodo,E.E, Umoh, J.U., Adekeye, J.O.,Odugbo, M.O., Haruna, G., and Sugun M. Y. (2009). **Field Trial of Sodium Alginate-Adsorbed Clostridium perfringes Type C and D Toxoid against Clostridial Enterotoxemia in Sheep.** Israel Journal of Veterinary Medicine 64, (1) 2-5

Joan, P., J. Kamani, P.N.Okam and R.Y. Arin (2009).**Evaluation of the control of Onchocerciasis through community directed treatment with Ivermectin (CDTI) in selected villages of Jos south Local Government Area, Plateau State.** Global Journal of Pure and Applied Sciences. Vol 15 No3&4, 267-269

Kaikabo A A, Samuel BB, Eloff JN (2009). **Isolation and activity of two antibacterial biflavonoids from leaf extracts of Garcinia livingstoei (Clusiaceae).** Natural Products Communications 4(10):1363-1366

- Kamani, J., A.U. Mani, H.A kumshe and G.O.Egwu. (2009). **Seroprevalence of human infection with *Toxoplasma gondii* and the associated risk factors, in Maiduguri, Borno State, Nigeria.** Annals of Tropical Medicine & Parasitology, 103, No. 4, 317-321
- Kamani, J., A. Tijjani, J.P. Yidawi, A.L. Gana, O.K. Egwu and A.M. Gusi (2009).**Subcutaneous Emphysema (Windpuff) in a 13 Week-old Pullet: Case Report.** International Journal of Poultry Science 8 (11): 1121-1122.
- Meseko, A.C (2009). **In Search of FMD Virus.** Vom Journal of Veterinary Science Vol 6, 85-86.
- Muhammad M, Muhammad LU, Mani AU, Ambali AG (2009).**Survey of chick mortality at hatching in three selected hatcheries in Jos, Central Nigeria.** International Journal of Poultry Science 8(7):656-659
- Muraina I, Picard J, Eloff J (2009). **Development of a reproducible method to determine minimum inhibitory concentration (MIC) of plant extract against a slow growing Mycoplasmas organism.** *Phytomedicine* Volume 16, Issue 2, 262-264
- Muraina I, Suleiman M, Eloff J (2009). **Can MTT be used to quantify the antioxidant activity of plant extracts?** *Phytomedicine*, Volume 16, Issue 6, 665-668
- Musa, U., Bwala, D.G., Abdu, P.A., Mera, U.M., Emennaa, P.E., Karshin, P.D., and Nwosuh C.I(2009).**Thermostability and efficacy of Newcastle Disease Vaccine Strain I<sub>2</sub>(NDV I<sub>2</sub>).** Vom Journal of Veterinary Science Vol 6, 31-35.
- Musa,U., Abdu, P.A., Dafwang,I.I., Katsayal,U.A., Edache, J.A., Karshin P.D (2009).**Ethnoveterinary remedies used for the management of Newcastle disease in some selected Local Government Areas of Plateau State, Nigeria.** Nigerian Journal of Pharmaceutical Sciences, Vol.17,No.1,126-130.
- Musa,U., Abdu, P.A., Dafwang,I.I., Saidu, L., Edache, J.A., Ahmed M.A., Karshin P.D (2009). **Cost implications and benefits of intraocular vaccination of rural chickens with Newcastle disease vaccine strain I<sub>2</sub>.** Livestock Research for Rural Development 21(7).
- Musa,U., Abdu, P.A., Dafwang,I.I., Umoh, J.U., Saidu, L.,Mera, U.M.,Edache, J (2009). **Seroprevalence, seasonal occurrence and clinical manifestations of Newcastle disease in rural household chickens in Plateau State, Nigeria.** International Journal of Poultry Science 8, (2):200-204.
- Mwankon ES, Odugbo MO, Jwander LD, Ekundayo SO, Musa U, Spencer TH, Suleiman I, Kaikabo A and Boss S (2009). **Investigations on the carrier rate of *Pasteurella multocida* in black rats (*Rattus rattus*) in a commercial quail farm.** African Journal of Clinical and Experimental Microbiology 10(1), 1-9.
- Ngulukun SS, Oboegbulem SI, Okewole PA, Muhammad MJ, Chukwu O O.C, Bertu W.J, Sugun M, Moses G.D, Gusi A.M (2009). **Occurrence of *Campylobacter* species from apparently healthy cattle in Vom, Nigeria.** Vom Journal of Veterinary Science 6:74-77
- Obinna, O. Nwankiti, James, A. Ndako; Georgebest, O. N. Echeonwu; Atanda, O. Olabode; Chika, I. Nwosuh; Ema, M. Onovoh; Lilian, A. Okeke; Jumoke, O.

Akinola; Boniface, N. Duru; Ijeoma, O. Nwagbo; Godwin, O. Agada and Anthony, A. Chwukwuedo. (2009). **Hepatitis C virus infection in apparently healthy individuals with family history of diabetes in Vom, Plateau State Nigeria.** Virology Journal 6:1-10.

Odugbo MO, Ogunjumo SO, Chukwukere SC, Kumbish PR, Musa A, Ekundayo SO, Okewole PA, Nwankpa ND, Itodo AE, and Haruna G (2009). **The first report of *Histophilus somni* pneumonia in Nigerian dairy cattle.** The Veterinary Journal, 181:340-342.

Okpara, J.O., Mamman, M and Ayo, J.O (2009). **Antidiarrhoeal and Antiinflammatory effects of ethanolic extracts of *Psidium Guajava* leaf.** Vom Journal of Veterinary Science Vol 6, 41-47.

Okpara, J.O., Mamman, M and Ayo, J.O. (2009). **Preliminary phytochemical screening of the ethanolic leaves extracts of *Psidium Guajava* and *Dishrostachys glomerata*.** Vom Journal of Veterinary Science Vol 6, 64-70.

Salami-Shinaba J.O (2009). **Current Advances in Avian Mycoplasmosis.** Vom Journal of Veterinary Science Vol 6,1-15.

Woma T.Y, Van Vuuren M, Quan M, Bosman A-M, M Quan and M Oosthuizen (2009). **Phylogenetic analysis of the haemagglutinin gene of current wild-type canine distemper viruses from South Africa: lineage Africa.** Veterinary Microbiology doi: 10.1066/j.vet-mic.2009.11.013.

Yakubu, B., Owolodun A. O., Antiabong F.J., Ogedengbe M.E., Adefalujo, O., Obishakin T.E., Tyem A.D., Meseko, C.A., Oladokun, A.T Ularamu H.G., Ebuji, A.N., Solomon P., Luka P (2009). **Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) as a diagnostic tool for the Highly Pathogenic Avian Influenza H5N1 in Nigeria.** Vom Journal of Veterinary Science 6:16-24.

## MONTHLY CLINICAL CONFERENCE OF VETERINARY DOCTORS

1. **JAN 09: Presenters Group 1:** Drs. Dogo, G., Ta'ama, L., Kujul, N., Masdooq, A., Ularamu, G., Lazarus, D., Abechi, A., Ocholi, R.,  
**TOPIC: "Pendulus crop in a 9- week old broiler chicken".**
2. **FEB 09: Presenters Group 2:** Drs. Oyetunde, I., Shuaibu, S., Jwander, I., Bwala, D., Egbuji, A., Tanko, J., Ikpa, L.  
**TOPIC: "A Case of Marek's Disease in a Commercial Poultry Farm in Jos".**
3. **MARCH 09: Presenters Group 3:** Ibu, J., Danjuma, D., Kumbish, P., Sugun, M., Ogo, I., Suleiman, I., Rapu, V., Adamu.  
**TOPIC: "A Case of Uterine Prolapse in a Primiparous Yankasa Ewe"**
4. **APRIL 09: Presenters GROUP 4:** Drs. Ngulukun, S., Abdullahi, S., Egwu, K., Waziri, N., Gusi, A. M., Luka, P., Oladipo, Itodo, A, E.  
**Topic: "A Suspected Case of Snake bite in a 7-year Old Argentine Stallion".**
5. **MAY 09: Presenters GROUP 5:** Drs. Muhammad, M., Banyigyi, S. A., Tafarki, E. A., Ighodalo, E. T., Benshak, J., Asala, O., Rimfa, A. G.  
**Topic: "A Case of Trichobezoar in a West African Dwarf Goat".**
6. **JUNE 09: Presenters GROUP 6:** Drs. Akalusi, Y., Meseko, C., Idachaba, S., Akanbi, B., Adeyinka, A., Fagbamila, I., Zwandor, N., Okewole, P.A  
**Topic: "Bovine Papillomatosis: Management with Autogenous Vaccine ".**
7. **JULY 09: Presenters GROUP 7:** Drs. Nwankpa, N, Ankeli, P., Fashina, F., Leo, S., Kamani, J., Ekong, P., Bolajoko, M., Durbi, I  
**Topic: "Clinical Studies to Determine the Variability and Management of *Mycoplasma mycoides mycoides* Small Colony Isolates in Bovine"**
8. **AUGUST 09: Presenters GROUP 8:** Drs. Gisilambe, M, Dashe, Y., Bala, A., Obishakin, E., Habu, A., Odita, C., Makoshi, M., Joannis T.  
**Topic: "A Case of Bilateral Orchitis in 4-Year-Old Uda Ram"**
9. **SEPT 09: Presenters GROUP 9:** Drs. Ogunsan, E, Okpara, J., Bertu, W., Gyang, M., Tekki S., Adamu, K., Emenna, P., Mantip, S.  
**Topic: "Infectious Sinusitis in a Flock of Breeder Turkeys"**



Table 18: **SEMINAR PRESENTATIONS BY STAFF**

S/No	TOPIC	PRESENTER	DATE	DIVISION
1.	Making a Seminar Presentation	Dr. (Mrs.) M. Mohd	05/02/09	Bact Research
2.	The Potential use of wild <i>Ganoderma lucidum</i> to enhance immunity to IBD and resistance to <i>Eimeria tenella</i> in chickens	Dr. A.O. Ogbe	19/02/09	Vet Clinic
3.	Awareness about FCMB Packages	FCMB	26/02/09	
4.	Sero-epidemiology of African Swine Fever In Nigeria, 2006-2008	ASF Project Team	05/03/09	Viral Research
5.	National Health Insurance Scheme	Integrated Health Care Ltd	11/03/09	
6.	Rabies in South Africa: An Overview	Dr. C. Sabeta	12/03/09	UP South Africa
7.	Field Outbreaks of PPR in Sheep & Goats and Molecular Characterization of some Strains in Nigeria	Dr H.M. Kazeem	02/04/09	Visiting Reader
8.	Historical and Basic Concepts in Diagnostic Practices with Particular Reference to Veterinary Poultry Practice	Prof. D.F. Adene	15/04/09	Visiting Professor
9.	Livestock Technology Development, Packaging and Dissemination: The Challenges and Way Forward	Dr. E.I. Ikani	16/04/09	Visiting Research Fellow
10.	A vision for diagnostic and experimental pathology at the National Veterinary Research Institute, Vom	Prof B.O. Ikede	21/04/09	Visiting Professor
11.	User Satisfaction with Nigerian Agricultural Research Institute Libraries' Resources and Services	Lily Oluebube Ezeala	07/05/09	Library and Documentation
12.	Current Management Strategies against Ticks: A Contribution to Knowledge	Prof. RIS Agbede fnsp, fcvsn	14/05/09	Visiting Professor
13.	Preliminary Investigation of HPAI and ND viruses in Live Bird Market in Ibadan	I.A. Shittu	21/05/09	Viral Research
14.	Phenotypic and Genotypic Characterization of <i>Listeria</i> spp isolated in parts of Plateau State	Dr. Chukwu O. O. Chukwu	11/06/09	FCVMLT
15.	Preliminary Studies on Antiviral Properties of Three Local Plants	Dr. L.K. Sulaiman	18/06/09	Viral Research
16.	The Haematology of Trypanosomiasis: A Summary	Prof V.O. Anosa	26/06/09	Visiting Professor
17.	Adopted Village Concept and Livestock Technology Dissemination	Dr. E.I. Ikani	02/07/09	Visiting Research Fellow
18.	e-Payment	Office of Acct. Gen. of the Federation	15/07/09	FCAH&PT

19.	Serological and Molecular Studies of <i>Mycoplasma mycoides mycoides</i> small colony in Northern Nigeria	Dr. N.D. Nwankpa	16/07/09	Bacterial Research
20.	Procedure and Documentation for Accessing Retirement and Death Benefits by Government Employees Under the Contributory Pension Scheme	Mal M.N. Ambursa	29/07/09	FCAH&PT
21.	Vaccination and Comparison of Potency of Newcastle Disease Vaccine Strains I <sub>2</sub> and Lasota in Rural Chickens in Plateau State	Dr. Musa Usman	30/07/09	Poultry
22.	Sero-epidemiology of Brucellosis in small ruminants in Plateau State	Dr. Wilson James Bertu	13/08/09	Bacterial Research
23.	Evaluation of the Efficacy of Aqueous Extract of <i>Senna occidentalis</i> in the amelioration of Tetracycline-induced hepatotoxicity and nephrotoxicity in Rabbits	NEF Interns	19/08/09	
24.	Ameliorative Effects of <i>Phyllanthus niruri</i> Aqueous Extract on hepatorenal changes following sub-acute exposure to Acetaminophen in Rabbits	NEF Interns	19/08/09	
25.	Assessment and Control of Moulds in Houses with Moisture Problem	Dr Aleruchi Chuku	27/08/09	Bacterial Research
26.	Molecular Epidemiology of Dog Rabies in Nigeria: Phylogeny Based on N and G Genes Sequences	Dr. (Mrs.) M.F. Ogo <a href="mailto:fjmariam@yahoo.com">fjmariam@yahoo.com</a>	10/09/09	Viral Research
27.	Distribution of <i>Campylobacter jejuni</i> in Abbatoir Specimens from some Animal Sources in Jos and Its Environs	Dr. Thompson. H.I. Spencer	08/10/09	Bacterial Vaccine Production Division
28.	Evaluation of the Contributions of the Major T-Cell Sub populations to Interferon-gamma (IFN - $\gamma$ ) Production in TB Infection by ELISPOT	Mr. M. D. Lugos 08034869343	15/10/09	FCVMLT
29.	Thematic and Diagnostic Surveys for Animal Health Research and Development	Dr. E.I. Ikani	29/10/09	Visiting Research Fellow
30.	Screening for Antimicrobials and Tetracycline in Commercial Chicken Eggs in Plateau State	Dr. I.O.Fagbamila	12/11/09	Bacterial Research Division

Table 19: **MAJOR ACTIVITIES HELD IN THE INSTITUTE**

<b>PERIOD</b>	<b>ACTIVITY</b>	<b>FOCUS/OUTCOME</b>
23-27/02/2009	A 3-day workshop on “The Role of Geographic Information System (GIS) and Remote Sensing Technologies in Animal Disease Surveillance” in collaboration with Federal Department of Livestock (FDL)	Enhancing animal disease surveillance and control.
23-27/03/2009	Focused group meeting on “Standardization of Agricultural Research Operations in NARIs” organized by ARCN, hosted by the Institute.	Providing a bench mark for harmonization of general operational procedures and developing operational standards for research practice and management.
31/03/2009	Hosting of Zonal REFILS Technical Committee (ZTC) meeting of the Middle Belt Zone	Technical sessions and discussions in bridging gap between NARIs and farmers through technology delivery.
22-25/06/2009	Africa Education Initiative, formerly Nduaka Education Foundation Conference on “Pharmaceutical Drug Discovery and Development in Africa” held in NVRI, Vom.	Enhancing capacity building and bridging the gap between human and livestock drug development and enhancing the advancement of Science and Engineering.
23/09/2009	Rabbit Health Management Workshop for Women in Agriculture	Refreshing and encouraging rabbit farming among women farmers.
12-23/10/2009	Course on “Zoonotic Outbreak Surveillance and Management (ZOSM) organized by the Nigeria Field Epid. and Laboratory Training Programme (NFELTD) in conjunction with Africa Field Epid. Network (AFENET) and the Centre for Disease Control & Prevention (CDC) hosted by NVRI, Vom	Improving public health, developing a self-sustaining capacity to train public health leaders and provision of epidemiological services to the public health systems.
02-05/11/2009	EU-FLUTRAIN Workshop on Avian Influenza.	For diagnosis and control of Avian Influenza
09-20/11/2009	Two – week International Refresher Course on Dairy Husbandry and Milk processing in Vom.	Promoting dairy husbandry practices in the country.

Table 20: **LIST OF STAFF APPROVED FOR TRAINING**

S/ NO	NAME	RANK	DIVISION	COURSE OF STUDY	INSTITUTION	DURATION	DATE OF COMMENCEMENT	DATE OF COMPLETION
1.	Dr. Muraina Issa Atanda	VRO II	Bacterial Research	PhD Nutritional/ Molecular Toxicology	King's College University of London	3yrs	Jan. 2009	Jan. 2012
2.	Dr. Hussaini Gulak Ularamu	VRO II	Viral Research	M.Sc in Vet. Tropical Diseases	University of Pretoria South Africa	2yrs	Jan. 2009	Jan. 2011
3.	Dr. Barde J. Israel	VRO	Diagnostic	M.Sc Vet. Pathology	ABU Zaria	2yrs	April 2009	Jan. 2011
4.	Miss Clementina Nyam	Secretarial Assistant II	VVPD	Secretarial Studies (OND)	Plateau Polytechnic B/Ladi	2yrs	Jan. 2009	Jan. 2011
5.	Gylek Godfrey	Med. lab. Assistant	Bacterial Research	MLT	FCVMLT, Vom	3yrs	Nov. 2009	Nov. 2012

Table 21: **LIST OF RETIRED STAFF**

S/No	NAME	DATE OF RETIREMENT
1.	Mr. Nassara Attah	15-1-2009
2.	Mr. Dado Adamu	5-2-2009
3.	Mr. Alex B. Davou	5-3-2009
4.	Mr. Johnson Umezurike	1-6-2009
5.	Mr. F. Michael Opata	6-2-2009
6.	Mr. Choji B. Luka	24-7-2009
7.	Mrs. Rose Esilonu	28-8-2009
8.	Mr. Gombo Hassaini	8-10-2009
9.	Mrs. M. P. Abiliu	1-11-2009
10.	Mr. Timothy O. Ogunwola	1-11-2009
11.	Mr. Mr. John Ameh	1-11-2009
12.	Mrs. Florence Adeola	11-11-2009
13.	Mr. Sampson Ekpola	19-12-2009
14.	Mr. Davou Boyi	19-12-2009

**LIST OF UNIVERSITY DONS ON SABBATICAL LEAVE IN THE INSTITUTE**

1. Prof. D. F. Adene
2. Prof. J. P. Kwaga
3. Prof. B. O. Anosa
4. Dr E. I. Ikani
5. Prof. R. I. S. Agbede

Table 22: **LIST OF DECEASED STAFF**

<b>S/No</b>	<b>NAME</b>	<b>RANK</b>	<b>DATE DECEASED</b>
<b>1.</b>	Dr. Bello Mohammed Kabir	Chief Vet. Research Officer	12-1-2009
<b>2.</b>	Mrs. Monilola A. Adelabu	Education Officer	14-1-2009
<b>3.</b>	Mr. Francis Nban	Security Guard	20-4-2009
<b>4.</b>	Miss. Saratu A. Abubakar	Med. Lab. Scientist	25-4-2009
<b>5.</b>	Mrs. Comfort Okiyi	Data Processing Officer	28-4-2009
<b>6.</b>	Mr. Ezekiel Chollom	Gardener	20-7-2009

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