



## National Animal and Plant Health Laboratory

### Continuing to make significant and positive contributions

The National Animal and Plant Health Laboratory (NAPHL), part of the Ministry of Agriculture (MoA), is one of the oldest veterinary laboratory institutes in East Africa. Established during the Italian period in 1903, it is located in the southwest part of Asmara (referred to as “Villagio”). For a long period after its establishment, it was known as the Central Veterinary Laboratory (CVL).

During the structural reorganization of the MoA in 2003, the CVL extended its structure, scope, and activities to include functions of Plant Health Laboratory, and was eventually renamed as the National Animal and Plant Health Laboratory.

Since 1992, the NAPHL has been expanding its services and introducing new units. Currently, The NAPHL works under the Office of the Minister

through a Board of Management, while technical and operational activities are coordinated and managed by its Director. At this time, the NAPHL has a total of 137 staff out of which 50 percent are females.

The NAPHL has regularly broadened its functions to provide required services to the technical departments of the MoA, regional laboratories, and other relevant stakeholders.

The NAPHL has a vision of providing reliable and efficient laboratory diagnosis for animal and plant diseases /pest identification, supporting safety and ensuring quality tests of agricultural products and inputs, and producing safe and quality veterinary vaccines and biologics. Moreover, the NAPHL follows and adheres to the norms, guidelines, and standards of the World Organization for Animal



Mr. Efreem Ghebremeskel

Health (OIE) and the International Plant Protection Convention (IPPC).

According to Mr. Efreem Ghebremeskel, Director of the NAPHL, after independence the Government of Eritrea and the MoA have exerted tremendous effort and mobilized considerable resources to rehabilitate the infrastructure and improve services. This has included domestic resources and involved cooperation with different



development partners. Notably, the NAPHL has established partnerships with the African Union Vaccine Production (AU-PANVAC), as well as laboratories in Sudan, Egypt, and Italy.

Currently, the NAPHL is equipped with modest technology and lab facilities. According to Mr. Efrem, "Human resource development is one of the notable achievements of the laboratory. Agriculture graduates, along with graduates from other fields, assigned to the laboratory are playing a great role in advancing laboratory techniques. Training programs and workshops for employees and graduates, which have been offered both inside and outside the country, are also helping to raise the quality of the services of the lab."

Furthermore, Mr. Efrem explained that the NAPHL has introduced and adapted various laboratory testing techniques and supporting units.

Broadly, the NAPHL is divided into five major sub-divisions. The first is Animal Disease Diagnosis, which comprises the Pathology, Bacteriology, Virology, Parasitology, Serology and Molecular Biology laboratories. The second is the Plant Health laboratory, which includes plant pathology, entomology, and seed quality control units. The third is the Food/Feed quality and Safety testing laboratory, while the Vaccine Production and Quality Control laboratory is the fourth. The fifth sub-division includes the Laboratory Equipment Maintenance, Engineering, and Support units.

Finally, Mr. Efrem concluded by saying that the NAPHL is trying to improve its quality and standards, while providing effective and reliable laboratory services. To this end, it is also implementing the Iso17025 standard lab quality management system.

## NAPHL Services

### Animal Health Laboratories

**Virology laboratory:** one of the most important diagnostic sections, the virology laboratory was established and remodelled within the existing



Mr. Tsige Kifleyesus

animal disease diagnostic building in 2006. The laboratory seeks to provide efficient, accurate, and reliable animal viral disease diagnostic services. According to Mr. Tsige Kifleyesus, head of the unit and acting director of NAPHL, the laboratory has been active in the diagnosis of various viral diseases. Presently, the laboratory is equipped with modest facilities required for cell culture, viral isolation, and identification techniques. To date, the laboratory unit has processed 1048 samples.

**Animal Pathology Unit:** according to Mr. Fitsum Neguse, unit head of the veterinary pathology laboratory,



Mr. Fitsum Neguse

the unit receives suspected samples (live sick animals or animals that recently died). The prime diagnostic techniques include ante-mortem and post-mortem examinations, as well as pathological interpretation. It also collects samples and carries out distribution to various laboratory sections. To date, it has processed 2377 samples.

**Bacteriology Laboratory Unit:** this unit aims to provide reliable and efficient bacterial, fungal, *mycoplasma*, *chlamydial*, *rikettisial* diseases diagnosis and food safety test services. According to Ms. Yirgalem Mehari, head of the unit, the laboratory performs a range of techniques, ranging from simple staining to the complex processes of isolation and identification of the causative agent of the disease. Moreover, it conducts



Ms. Yirgalem Mehari

food and feed safety tests for animal and plant products. The unit plays a crucial role in meeting one of the most important goals of the MoA: providing safe food and feed products. The laboratory has processed a total of 1215 animal origin samples over the years.

**Molecular Biology Unit:** this unit was established in 2007 and has been providing rapid confirmative diagnostic services in viral and bacterial disease diagnosis. According to Ms. Yodahi Petros, head of the unit, this laboratory is working with conventional PCR and



Ms. Yodahi Petros

LAMP techniques. Moreover, she explained that the laboratory works in the identification of viruses and bacteria at molecular level and gives detailed information on the lineages, serotypes, and related features. To date, the laboratory has processed 1462 samples.

**Serology Laboratory Unit:** the serology laboratory was established in 1992. It focuses on viral and bacterial animal disease diagnosis using serological and antigenic techniques. According to Mr. Tekeste Oqbamichael, head of the unit, the laboratory utilizes a range of techniques, from the simplest screening to complex confirmation tests. The serology laboratory plays an important role in national surveillance, sero-monitoring, and disease-eradication programs, while from 2011-2019 it was actively engaged in human brucellosis diagnosis services. Notably, over the past 30 years, more than 195,000 samples have been processed by the laboratory.



Mr. Tekeste Oqbamichael

**Parasitology Laboratory Unit:** the parasitology laboratory helps in the identification of animal parasites. In order to expand and improve services, as well as ensure safety, a new parasitology laboratory was recently constructed within the NAPHL premises. The parasitology laboratory functions in three major areas: ectoparasitology, endo-parasitology, and haematology techniques. As of this year, the laboratory has processed 62,636 samples.

### Vaccine Production and Quality Control

**Vaccine Production Unit:** the vaccine production laboratory was established in 1903 during the Italian period. It had a record of producing an array of bacterial and virus vaccines. However, after 1975, due to war



Mr. Dawit Bisrat

and a lack of attention, its activities were deteriorated; and eventually stopped. Mr. Dawit Bisrat, head of the unit, pointed out that following independence, the MoA, considering its vital contribution in disease control and prevention program, re-established the vaccine production unit within the NAPHL premises. Of note, the laboratory is in the

final trial and preparatory stages of producing vaccines for New Castle Disease (NCD) and Pest des Petites of Ruminants (PPR).

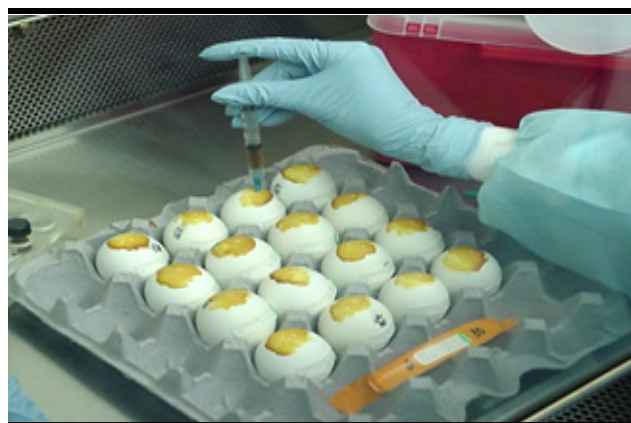
**Vaccine Quality Control Unit:** This laboratory is established with the aim of performing quality control tests



Ms. Ghirmawit Habtom

of imported and locally produced vaccines. According to Ms. Ghirmawit Habtom, head of the unit, the laboratory is currently conducting trials and quality control tests on raw materials required for vaccine production, intermediate and final products.

**Laboratory Animal Facilities:** laboratory animals are highly needed for disease diagnosis, diagnostic supporting experiments, and vaccine production. The NAPHL has reasonably well established facilities for lab animals. These are designed for cattle, sheep, goat, rabbits, mice, guinea pigs, and chicken.



**Safety and Quality Laboratory Unit:** this segment of the NAPHL was established to test and verify the compositional quality of food and feed. Currently, the laboratory performs proximity tests on the agricultural input and output commodities. To date, food and feed safety tests are being carried out under the bacteriology laboratory unit. Overall, the unit has tested 3478 food/feed samples for safety and 3223 samples for quality verification.



Mr. Mussie Yemane

**Plant Health Laboratories:** this unit was established in 2003 during the organizational restructuring of the MoA. The laboratory focuses diagnosing plant pests and disease-causing microorganisms, such as bacteria, fungus, virus, nematodes, and insects. It is also active in

the collection, identification, and preservation of insects. Mr. Mussie Yemane, unit head of the plant health laboratory, explained that even though the development of the Plant Health Laboratory is still in its initial stages, considerable efforts are being made to strengthen its capacity and increase its scope of functions. Currently, the

laboratory has advanced its diagnostic techniques to identify viruses and bacteria, as well as to test the safety and quality of seeds. To date, the laboratory processed 1002 samples.

### Regional Laboratories

Currently, the NAPHL is extending its scope and functions by strengthening regional laboratories through provision of technical support and supply of required basic laboratory equipment, materials, and consumables. It also delivers training programs and workshops for staff. As a result, regional laboratories are expected to perform basic disease diagnosis techniques and related laboratory activities as soon as the beginning of next year.

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