

CASE STUDY:

The Irish Department of Agriculture Gains Improved Efficiencies and Strategic Information Management with Thermo Scientific Nautilus LIMS™

The agrifood sector remains one of Ireland's most important indigenous industries, accounting directly for over 8% of both GDP and employment, and exports of over €8.1 billion. The dispersed spread and composition of the agriculture sector, along with its use of local raw materials and services, ensures that it continues to play an integral part in the viability of rural areas and the national economy. The Veterinary Laboratory Services that support the Irish Department of Agriculture are geographically spread throughout the country and, as such, require timely and accurate flow of information and research results across all locations to fulfill the directives of the Department.

Profile

The Irish Department of Agriculture, Fisheries and Food, Veterinary Laboratory Service (VLS) comprises the Central Veterinary Research Laboratory (CVRL) and the Meat Control Laboratory at Backweston in Kildare; The Brucellosis Laboratory in Cork and six stand-alone multidisciplinary Regional Veterinary Laboratories located in Athlone, Cork, Dublin, Kilkenny, Limerick and Sligo. The objectives of the VLS are to implement the Department's policy with respect to animal health, welfare, and veterinary public health through the following activities:

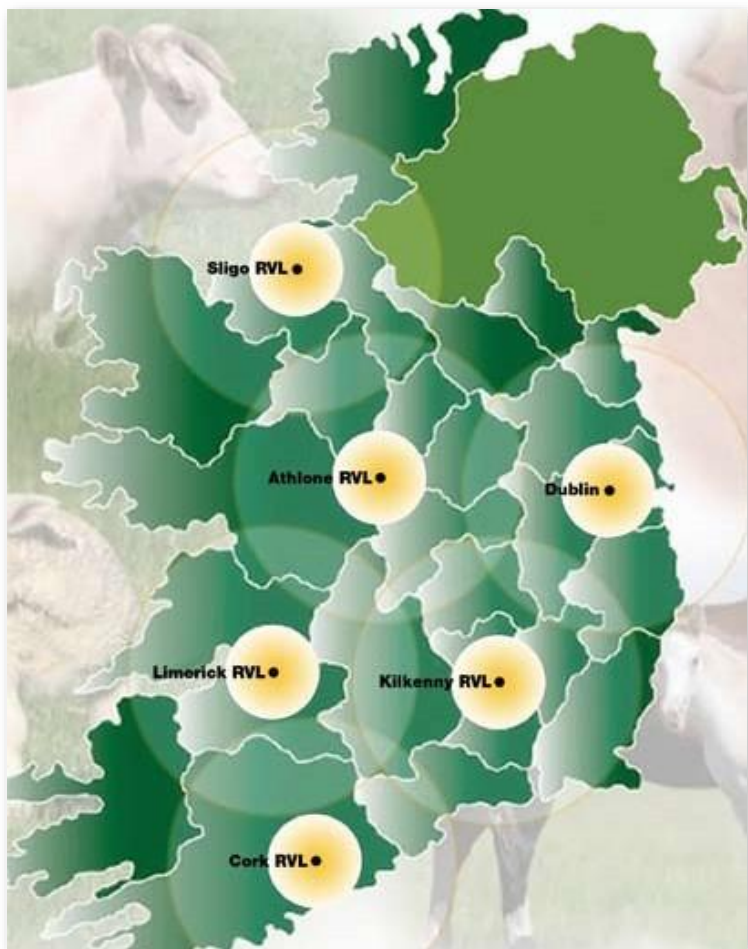
- Provide the state veterinary service with technical support and diagnostic capability with respect to statutory and regulatory animal disease eradication and control programs
- Design an efficient laboratory diagnostic service for the livestock industry through practicing veterinary surgeons
- Monitor and collate information on diseases at the national level
- Identify diseases with zoonotic implications and collaborate with public health specialists and the Food Safety Authority
- Conduct research and development programs



Requirements

The Department of Agriculture and Food selected Thermo Scientific Nautilus LIMS™ for its laboratory services, covering pathology, histopathology, biochemistry, virology (general and poultry), bacteriology, mycobacteriology, and parasitology. The LIMS business requirements were:

1. Improve the quality of information.
2. Increase efficiency in lab operations as a consequence of the LIMS.
3. Foster communication between the departments.
4. Generate epidemiology and disease surveillance information.
5. Deliver more strategic information to management.
6. Provide timely electronic reporting for veterinary practitioners, farmers, statutory agencies, and the Department of Agriculture, Fisheries and Food.



Solutions

Thermo Scientific Nautilus LIMS was selected for its ease of use and because it could be easily configured and managed by the laboratory staff, without the need for specialist training or additional work provided by either the vendor or VLS IT personnel. The Nautilus LIMS solution provided the Department of Agriculture and Food's Central Veterinary Laboratory Services with a full laboratory data recording, management, retrieval, and reporting system.

Nautilus LIMS is hosted on a central server located in Dublin and accessed by all of the laboratories through Citrix. It supports 98 concurrent users and is integrated with a wide variety of instruments, SAP, and an Animal Health Tracking system. The instruments include Plate Readers, Spectrometers, Clinical Instruments, Hematology Analyzers, Image Analyzers and Gene Sequencers.

The first phase of the project covered eight laboratories in the CVRL and one regional laboratory. A second phase realized a rollout of the system to the remaining four regional laboratories.

The LIMS was designed through intensive workshops that focused on sample login, test assignment, result entry, approval, and reporting. Instrument integration was done as a parallel systems task.

Recently, the installed Nautilus LIMS at the Department of Agriculture has been extended to cover a number of new animal disease surveillance programs under national and EU guidelines. These include Bovine Tuberculosis, Sheep Scrapie, Wild Birds Epidemiology, and Class A Animal Diseases.

Benefits

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Probably the greatest benefit arising from the LIMS has been the large reduction in the amount of information transcription in individual laboratories, the sharing of information between sections, and the traceability of samples this has provided.

Nautilus LIMS has made a great impact on standardizing the information recorded. This has facilitated both section-specific and system-wide searches for information, streamlined sample login procedures, and facilitated cross-training because the system is very similar between laboratories. The LIMS has also been integrated with SAP, removing a large burden from the laboratory and administration staff in generating monthly invoices.

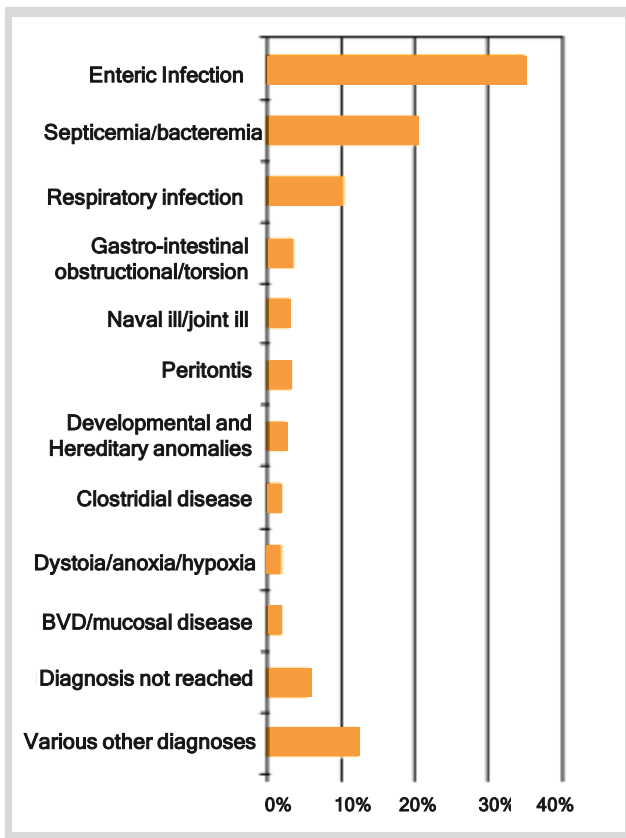
	Number tested	Number positive	Percent positive
Rotavirus	2969	768	25.9%
<i>Cryptosporidium</i>	2973	771	25.9%
Coronavirus	2941	74	2.5%
<i>Escherichia coli</i> K99	2241	27	1.2%
<i>Salmonella</i> species	2983	109	3.7%

Pathogenic agents detected during the study in samples submitted to the six RVLs for calf enteritis tests.



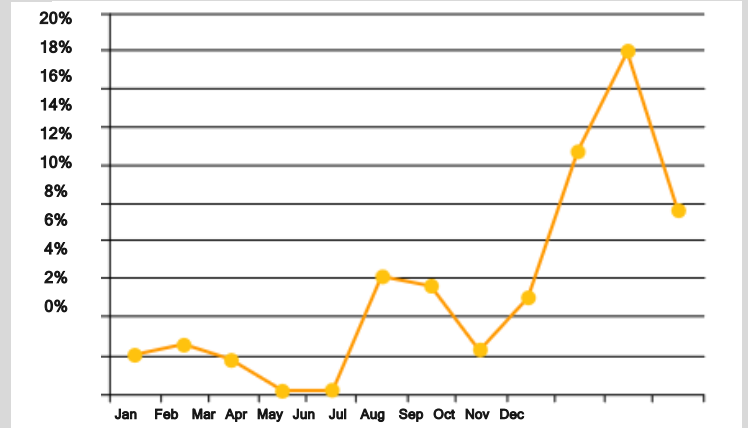
The specific benefits of Thermo Scientific Nautilus LIMS to the Department of Agriculture VLS are:

- A very large reduction in the amount of information transcription in individual laboratories and associated paperwork. It is estimated at an 80% reduction.
- Sharing of information between sections and the tracking of samples/tests both internally and those sent between sections.



Most commonly diagnosed causes of mortality in calves from birth to one month of age (n=764).

- Easy generation of reports by end-users.
- Standardization of information recorded has enabled querying of the database of national trends and characteristics in animal diseases – these are published annually. On a monthly basis, recent findings in each of the RVLs are consolidated in a single report that may be downloaded from the Department's website.



Salmonella Dublin positive abortion cases as a percentage of all abortion cases submitted for each month.

- Nautilus LIMS is integrated into the Animal Health Tracking System (AHCS), a database maintaining the records of all farm animals. Veterinary practitioners use pre-labeled test tubes for blood tests, recording the animal's identification tag against each tube on the tracking system in instances of disease surveillance, such as Tuberculosis and Bovine Brucellosis. The interface is equipped to handle large volumes of data during potential epidemics, employing web services to align sample receipts with lab processing.
- Instrument integration includes Tecan Plate Readers and qPCR to facilitate efficient testing for diseases such as ELISA, Bovine Viral Diarrhea (BVD), Schmallenberg virus, and Johne's disease.
- Integration of Nautilus to SAP has automated and centralized monthly invoicing of tests to practitioners, a previously cumbersome and time-consuming task that involved admin input from each of the sections.



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