

Analyzing Agricultural Data at Field Service Laboratory

Raya Vulkan, Ph.D., Director,
GILAT Extension Services
Laboratory and Research Center



Negev region, began as part of the Ministry of Agriculture's Extension Service, and is in fact named after the founder and first director of the service, Moshe Boaz. Since its humble beginnings, GILAT has undergone many changes and it is now at the forefront of agricultural innovation and professionalism, equipped with some of the most advanced instruments in the country and staffed with highly skilled professionals.

The laboratory provides services to farmers throughout southern Israel, giving invaluable professional support to the Agricultural Ministry's specialist advisors, agronomists and farmers on soil-plant-water systems. Series of tests are conducted during a crop's entire growing season to enable accurate decisions to be made regarding suitable growing conditions. Soil surveys are also conducted to assess crops and growing methods viable for specific fields. GILAT performs specialized projects in conjunction with the Agricultural Research Organization and various universities, and conducts

research related to environmental protection. Soil, water, wastewater and effluents, fertilizers, manures, composts and sludge, growing beds, feed solutions and plant material are all tested by the laboratory. All of GILAT's eight members of staff are women, from its director through to the technical assistants preparing the samples. Managed by the local authority for the past fifteen years, the laboratory is fully independent and receives no public subsidies. It is one of the busiest field service laboratories in the country, analyzing some 15,000 samples a year on which over 80,000 different tests are conducted to determine the following

- Matching soil to crops.
- Assessing soil salinity and preventing and/or reducing damage.
- Determining soil fertility to aid fertilization programs.
- Preventing soil and water pollution.
- Testing irrigation-water quality to prevent damage to

soil, crops and the environment.

- Testing detached growing beds.
- Testing plant matter to adapt fertilizers and improve quality.
- Testing fertilizer, manure, compost and wastewater sludge compositions.
- Determining irrigation and fertilization in greenhouses.
- Organic-farming tests - compost, organic-fertilizer solutions, soil and water.
- Adapting soil and adjusting irrigation and fertilization methods for public gardens.
- Testing polluted soil.

Farmers who use GILAT's services on a regular basis can make significant savings on resources such as water, fertilizer and pesticides, thus reducing costs. The rural environment also benefits from elimination of waste and prevention of water and soil pollution.

Two instruments purchased recently with assistance from the ICA have significantly upgraded the laboratory's capabilities. The first is an ICP (Inductively Coupled Plasma) instrument, which enables forty basic elements in a wide range of concentrations to be tested, modified for local agricultural needs and used mainly to analyze micro-elements and heavy metals. The second is a special Ion analyzer adapted for agriculture, enabling eight compounds to be tested simultaneously in different aqueous extracts from plant and soil matter.

GILAT also now provides agricultural and environmental testing for pesticide and herbicide residues, which are of particular importance for agricultural exporters. These tests provide invaluable support to farmers exporting

abroad who are required to produce accredited laboratory tests complying with stringent standards. GILAT provides the full range of necessary tests, including checks for pesticide and herbicide residues and bacteriological tests.

As the main center of farming is moving gradually from Israel's north and the center to the Negev, and with increasing sophistication and investment in modern precision farming, the need for laboratory services capable of supporting advisory services and optimizing the use of production resources: water, fertilizers and manures has increased. GILAT's services are supporting a nationwide survey of fields irrigated with effluent water, including Negev fields linked to the national treated-water grid (Shafdan), and irrigated with effluents that have undergone secondary treatment. Orderly monitoring is being carried out, enabling processes that may be damaging to soil and crops to be identified ahead of time. The laboratory also supports crop-irrigation and fertilization trials and trials with sludge and domestic waste garbage. GILAT's high professional capabilities are enabling innovative research methods, such as means of testing soil resistance to herbicides, to be applied in advanced Israeli farming in a way that is compatible with environmental protection, at prices that are affordable to the farming community.

Certification is provided by the Israeli Laboratory Accreditation Authority and complies with international ISO 17025 water-testing and soil testing standards

gilatlab@bns.org.il

www.israelagri.com

ITS ALL ABOUT AGRICULTURE

