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CASE STUDY

Simplicity achieved for testing honey in a South African contract laboratory

Labserve Analytical Services, an innovative contract laboratory, continually seeks new challenges and market sectors to serve. Located in Nelspruit, the capital of Mpumalanga province in northeastern South Africa about 330 kilometers from Johannesburg and near the Crocodile River, the lab was established in 1978. They are current members of two organizations overseeing accreditation and standardization: the National Laboratory Association (NLA) and the Agri Laboratory Association of Southern Africa (ALASA). Labserve began as an oil and lubricants testing facility, then progressed to agricultural analysis, water (inorganic analysis), and recently organic analysis. Offering a variety of test panels, they have the capability to analyze a wide range of matrices including soil, plants, fertilizers, environmental and process chemistry samples, water (potable, effluent, ground), and pharmaceuticals. Further, they can tailor the tests performed to the individual needs of their clients and also specialize in testing for Global GAP water, irrigation, and drinking water.

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Laboratory profile

In addition to established regulations, the lab follows the guidelines established by the International Standards Organization (ISO) 17025 which specifies general requirements for competence in performing tests or calibrations. This directive encompasses sampling, testing, and calibrations performed using standard methods, non-standard methods, and laboratory developed methods and is recommended for use by laboratories following good practices in quality and technical management.

The laboratory tests approximately 15,000 samples per year primarily for water and fertilizers. About four years ago, a Thermo Scientific™ Gallery™ discrete analyzer was purchased to automate their test procedures. Samples for water testing arrive two times per week and are measured for pH, conductivity, nitrites, urea, ammonium, fluoride, and chloride. Laboratory owner Larne Auerswald may add a phosphate test for the occasional measurement request he receives because his current analysis method is too expensive for one test at a time.

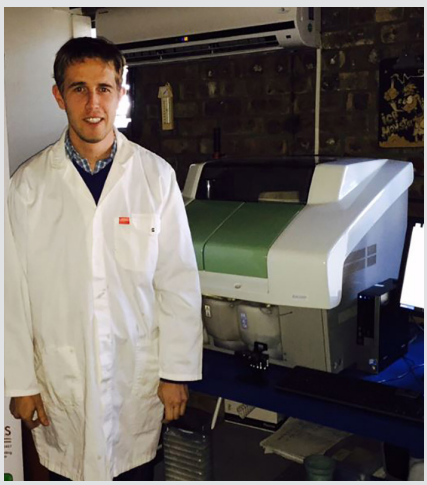
Global GAP

Water scarcity is a problem for over 700 million people in 43 countries. This number is projected to rise to four billion people by the year 2030. Since the global water supply is inextricably linked to food production and Good Agricultural Practice (GAP), a stakeholder committee was established to discuss and address these issues and propose viable solutions. More information can be found at: www.globalgap.org.

Labserve utilizes Gallery analyzer's efficiency

"The Gallery analyzer is much more time efficient and makes life easier so we will consider using any reagent kit that is available. Once we have enough samples coming in, it makes sense to use the Gallery system," said Auerswald.

In an effort to serve a more diverse client base, Labserve is exploring honey analysis procedures for both import and export purposes. Samples from Mauritius as well as South Africa will be tested. Validation is a tedious process as it can sometimes take up to eight weeks to obtain standards. In order to validate for a major supermarket, Labserve would like to offer a complete test



Larne Auerswald, Technical Manager and Owner of Labserve, has run the company since 1999 when he replaced his father.

> "Once we have enough samples coming in, it makes sense to use the Gallery system."
>
> —Larne Auerswald,
> Technical Manager and Owner of Labserve

package for honey analysis that includes determination of sugars, pesticides, and antibiotics. Tests for glucose, fructose, and sucrose have been validated on the Gallery system to ensure quality control and compliance with international standards. In the future, the lab will also add measurements for hydroxymethylfurfural (HMF), acidity, and alpha-amylase.

The Gallery discrete analyzer offers simple to use technology and provides speedy results. In the past, Labserve personnel used a manual spectrophotometer to measure these parameters. Tests they used to complete in one week can be accomplished in one day using the Gallery discrete analyzer.

Auerswald said, “Repeatability is brilliant!”

To date there have been no challenges with the equipment which is desirable since the cost of servicing instruments in South Africa is very high. At the moment, two people regularly use the system and two others have been trained as back-up.

Labserve sought a simple but effective system to examine the variety of matrices they evaluate. Recently they expanded the services offered to include the determination of sugars in honey for both import and export purposes. With the new Gallery system, analysis is simplified, tests can be completed in a fraction of the former test time, and repeatability has been excellent.

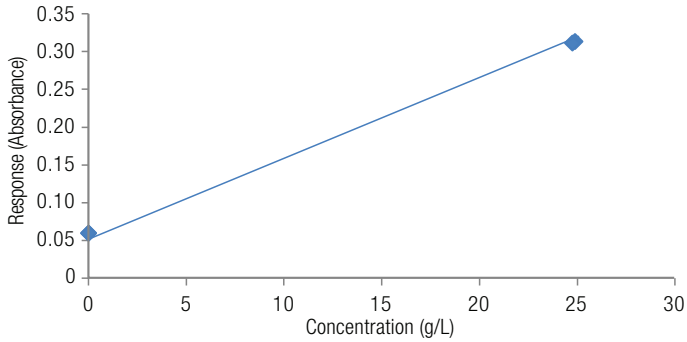


Figure 1. D-fructose in honey.

Measuring sugars in honey

About 80% of honey is composed of the sugars, glucose, and fructose. Both of these sugars are measured to ensure authenticity. The ratio of glucose/fructose also provides information about the origin of the honey and its potential for crystallization during storage. Adding glucose would alter this ratio. In most honey, fructose predominates and results in a taste that is slightly sweeter than sugar. Glucose is less sweet. Sucrose is naturally present at a level of less than 2% and its presence in a higher quantity would indicate an inappropriate ratio. The ability of honey to retain moisture, have an extended shelf life, and good color and flavor development are related to the composition of its sugars.

Find out more at **thermofisher.com/discreteanalysis**

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