The Central Laboratory of the Sugar Industry Research Institute in Mandeville is now officially regarded internationally as among the best in the World for carrying out sugar analyses. This stamp of approval came with the achievement of “ISO/IEC 17025” accreditation on May 28, 2013.

The process of accreditation is of necessity long, painstaking and extremely thorough since it involves “the independent evaluation of an organization to carry out specific activities against recognized standards to ensure their impartiality and competence”. For the laboratory, the assessment process began with a pre-assessment visit by JANAAC in February 2012 and a full assessment in January 2013. Once the non-conformances cited by JANAAC were satisfactorily addressed, the Laboratory was awarded ISO/IEC 17025 accreditation and the award was presented on World Accreditation Day, June 11, 2013. Phases involved a documentation process and setting up a quality management system. After implementation this system had to be maintained for several years prior to applying for accreditation.

Continued on page 9
Top quality nutrients for top quality yields.

Newport-Fersan (Jamaica) Ltd.
Lot 2A/2B Wherry Wharf Complex, Newport East,
Kingston 15, Kingston Jamaica, W.I.
Tel: (876) 967-5815; 967-5561; 984-9759; 984-9559 | Fax: (876) 948-3772
Email: newportfersan@cwjamaica.com
The term “dead heart” may sound like a description reserved for an unresponsive partner. Sugar cane growers however understand the term to mean that condition when the spindle or heart leaf of the cane withers and dies.

Death of the heart leaf is only the outward appearance of something gone wrong. The real location of damage is the growing point of the cane stalk, killed by some invader, resulting in the withering of leaves at the top of the cane.

CAUSES

Dead hearts may be the result of a number of causes. Any insect that bores into the stalk can produce a dead heart. However, two borers, namely jumping borer and the stalk borer, are the main causes in Jamaica. Generally, dead hearts occurring in the first six weeks of cane growth are caused primarily by the jumping borer (Elasmopalpus lignosellus). There is then a transition period when both jumping borer and the cane stalk borer (Diatraea saccharalis) may simultaneously occupy the field and do damage to sprouts. As the jumping borer field infestation declines, the stalk borer increasingly becomes responsible for dead hearts. Other insects such as the shot hole borer, weevil borer, wireworms, subterranean termites and even white grubs may occasionally cause damage to the growing point leading to the appearance of dead hearts.

JUMPING BORER

Jumping borer moths typically are attracted to fields by the smell of burning cane. By the time the cane is cut and loaded jumping borer eggs are already

Continued on page 10
Krismat™
Stand alone post emergence weed control herbicide.

- Active on sedges, broadleaf and grass weed species
- Low toxicity, environmentally friendly
- Can be applied over a longer period of the growing season

Available from...
AGROGRACE
Your Complete Farm & Garden Centre

...and their dealers islandwide.

Especially made for Sugarcane (newly planted and ratoon).
## Variety Recommendations for Harvesting Periods & Soil Types

<table>
<thead>
<tr>
<th>Cane Growing Area</th>
<th>Harvesting Period</th>
<th>Light Soils</th>
<th>Clay Loams</th>
<th>Clays</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Early</td>
<td>BJ7465</td>
<td>BJ7465</td>
<td>BJ7465</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ7015</td>
<td>BJ7015</td>
<td>BJ7015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CR892023</td>
<td>CR892023</td>
<td>CR892023</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ7314</td>
<td>BJ7314</td>
<td>BJ7452</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ8783</td>
<td>BJ8783</td>
<td>BJ8783</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ82105</td>
<td>BJ82105</td>
<td>BJ82105</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ7938</td>
<td>BJ7938</td>
<td>BJ7938</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ7452</td>
<td>BJ7452</td>
<td>BJ7452</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ78100</td>
<td>BJ78100</td>
<td>BJ78100</td>
</tr>
<tr>
<td>Westmoreland &amp; Hanover</td>
<td>Early</td>
<td>BJ7504</td>
<td>BJ7504</td>
<td>BJ7504</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ7015</td>
<td>BJ7015</td>
<td>BJ7015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ7938</td>
<td>BJ7938</td>
<td>BJ7938</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ82119</td>
<td>BJ82119</td>
<td>BJ82119</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ7452</td>
<td>BJ7452</td>
<td>BJ7452</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ8783</td>
<td>BJ8783</td>
<td>BJ8783</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ82105</td>
<td>BJ82105</td>
<td>BJ82105</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ78100</td>
<td>BJ78100</td>
<td>BJ78100</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>BJ7627</td>
<td>BJ7627</td>
<td>BJ7627</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ82119</td>
<td>BJ82119</td>
<td>BJ82119</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ78100</td>
<td>BJ78100</td>
<td>BJ78100</td>
</tr>
<tr>
<td></td>
<td>Late</td>
<td>BJ7627</td>
<td>BJ7627</td>
<td>BJ7627</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ82119</td>
<td>BJ82119</td>
<td>BJ82119</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ8783</td>
<td>BJ8783</td>
<td>BJ8783</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ8783</td>
<td>BJ8783</td>
<td>BJ8783</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ78100</td>
<td>BJ78100</td>
<td>BJ78100</td>
</tr>
<tr>
<td>Irrigated Clarendon &amp; St. Catherine Plain</td>
<td>Early</td>
<td>BJ7465</td>
<td>BJ7465</td>
<td>BJ7465</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ7015</td>
<td>BJ7015</td>
<td>BJ7015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ7938</td>
<td>BJ7938</td>
<td>BJ7938</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ82119</td>
<td>BJ82119</td>
<td>BJ82119</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ82102</td>
<td>BJ82102</td>
<td>BJ82102</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ82105</td>
<td>BJ82105</td>
<td>BJ82105</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BT80311</td>
<td>BT80311</td>
<td>BT80311</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CR892023</td>
<td>CR892023</td>
<td>CR892023</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ82119</td>
<td>BJ82119</td>
<td>BJ82119</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ7504</td>
<td>BJ7504</td>
<td>BJ7504</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ78100</td>
<td>BJ78100</td>
<td>BJ78100</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>BJ7548</td>
<td>BJ7548</td>
<td>BJ7548</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ748</td>
<td>BJ748</td>
<td>BJ748</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ82102</td>
<td>BJ82102</td>
<td>BJ82102</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ8783</td>
<td>BJ8783</td>
<td>BJ8783</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ8783</td>
<td>BJ8783</td>
<td>BJ8783</td>
</tr>
<tr>
<td></td>
<td>Late</td>
<td>BJ7627</td>
<td>BJ7627</td>
<td>BJ7627</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ78100</td>
<td>BJ78100</td>
<td>BJ78100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ82119</td>
<td>BJ82119</td>
<td>BJ82119</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ7548</td>
<td>BJ7548</td>
<td>BJ7548</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ8783</td>
<td>BJ8783</td>
<td>BJ8783</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ82119</td>
<td>BJ82119</td>
<td>BJ82119</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BJ8783</td>
<td>BJ8783</td>
<td>BJ8783</td>
</tr>
</tbody>
</table>

Continued on page 12
WHY APPLY SECONDARY AND MICRO-NUTRIENTS?

by Clarence Fearon

SECONDARY NUTRIENTS

Another three elements are regarded as secondary nutrients:

» Calcium (Ca)
» Magnesium (Mg) and
» Sulphur (S)

These are nutrients used by the plant in smaller quantities than the major nutrients. Local soils are well supplied with calcium except for pockets of acidic soils which may be “limed” (that is calcium is applied to make the soil less acid). Calcium deficiency in Jamaican sugarcane is very rare because so many of our soils have a limestone base (and limestone is a source of calcium). Magnesium also tends to be adequate in most local soils except for pockets of acid soils which may be marginal in this nutrient. Sulphur is not found to be lacking as supplies are frequently replenished by our use of NPK mixtures or in applying sulphate of ammonia. Some sulphur also enters the soil in the form of sulphur dioxide in rainfall.

MICRONUTRIENTS

There are seven micronutrients (sometimes called trace elements) which the plant uses in very small quantities:

» Zinc (Zn)
» Copper (Cu)
» Boron (B)
» Molybdenum (Mo)
» Manganese (Mn) and
» Iron (Fe)
» Chlorine (Cl)

Although required in only small quantities, these nutrients play important roles in plant growth and development. They may also easily become toxic to the plant if present in too high concentrations. Plants usually show some form of symptom, such as an odd leaf colouration, distorted leaf or stunting where a micronutrient is deficient or is in excess of a certain critical level in the soil.

Finally, three elements are obtained from water and air. Absence of these brings the most dramatic results for, as the saying goes, “water is life.” Water and air are the sources of

» Carbon (C)
» Oxygen (O) and
» Hydrogen (H)

We know that all living things require oxygen. Plants breathe in oxygen through stomata on the leaves and even roots require an oxygen supply for healthy growth. This is assisted through tillage which increases air supply around the roots. Take away water, as occurs during a drought, and suddenly we are faced with a disastrous crop.

ARE JAMAICAN SOILS LACKING IN SECONDARY AND MICRONUTRIENTS?

This question has been investigated over many years. In the early 1950s when the local sugar industry was setting up field experiment to find the correct quantities and balance of nitrogen, phosphorus and potassium for growing canes, attention was also given to secondary and micro nutrients. These investigations have revealed pockets of secondary and micronutrient deficiencies based on foliar analyses. However, when followed by numerous formal field experiments in which these elements were applied as foliar sprays or as soil dressings no consistent meaningful yield increases have been obtained.

RECENT INVESTIGATIONS

More recent investigations with secondary and micronutrients conducted in the 1990s on the major clays in the Wet West gave no statistically significant yield increases. Furthermore, the occasional readings of 3-5 tc/ha “increase” would
never have been sufficient to cover the added cost associated with applying the secondary and micronutrients.

**With Efficient Irrigation**

It has always been argued however that perhaps significant yield increases may not have been achieved because some other critical factor such as water supply may have been lacking. So with the introduction of the relatively efficient drip and centre pivot irrigation systems in recent years further attempts were made to seek yield increases through addition of secondary and micronutrients. Within the period 1980 to 2012 a total of 15 such experiments with added micronutrients were conducted.

Statistically significant yield increases were obtained in only two of those 15 experiments. Those two experiments however were on sites markedly deficient in micronutrients. These were peculiar light textured soils found only in certain areas of Trelawny. Magnesium, zinc and copper were applied via drip irrigation.

Micronutrient applications via centre pivot irrigation systems have so far given only disappointing results. Some treatments produced more lush looking foliage without any substantial yield increase.

**Conclusions**

The main soils planted to sugarcane in Jamaica are heavy clays. Based on experiments conducted, these soils are unlikely to produce significant yield increases with addition of secondary and micronutrients. A grower would be making an unwise decision in applying costly nutrients which contribute nothing to yields and profits.

Given the findings of SIRI experiments over the years, it would be totally unjustified to engage in the practice of routine application of secondary and micro-nutrients unless they are provided at no additional cost. SIRI's fertilizer recommendations to the industry, based on the results of numerous experiments, have never been for routine application of secondary or micronutrients (apart from the use of lime to correct soil acidity where required).

Timely application of adequate and balanced nitrogen, phosphorus and potassium (NPK) mixtures along with proper attention to other agronomic practices (weed control, irrigation and drainage in particular) will guarantee good yields. The addition of secondary and micronutrients is likely to make no difference. When a balance in major nutrients is achieved the canes are better able to extract micronutrients already present in small quantities in the soil. There are also residues of micronutrients in regular NPK mixtures which are available to the crop.

The interactions of nitrogen, phosphorus and potassium in fertilizer dressings support high yields as one nutrient enhances the role of the other. Growers should therefore never eliminate one element from his recommendation (using 17-0-17 instead of 16-9-18, for instance) just in order to cut costs. In the present climate of high costs, any additional input which does not contribute to yield must be viewed as wasted money. Growers are therefore urged to collaborate with SIRI to have new products tested for economic returns before committing to extra expenses.
Agricultural Chemicals Plant

Product Offerings

- 2, 4 D Amine
- Ametryn 50 SC
- Amine 6D
- Asulam 40
- Diuron 800SC
- Flurostar (Fluroxypyr)
- Glyphos AG 41
- Nabu-S
- Paraquat Super
- Pendimethalin 330g/L EC
- Terbutryn 50SC
- Velzone (Hexazinone)
- Sumithion
- Spreader Sticker

Available in 230ml - 200lt sizes

Agricultural Chemicals Plant
2 East Ashenheim Road, P.O. Box 208, Kingston 11
Tel: (876) 764-7173, 901-0905, 923-7236/8
Fax: (876) 901-3854
website: www.lascelles.jm.com
email: agchem@lascelles.com
WHAT IS ISO?

» Sugar interests automatically associate “ISO” with the International Sugar Organisation. In this context ISO refers to the International Organisation for Standardisation, a global federation of national standard bodies, headquartered in Geneva, Switzerland. This multinational grouping formed in 1947 chose to use “ISO” as their symbol (instead of IOS).

» The ISO develops standards in response to sectors and stakeholders that express a clearly established global need for them.

WHAT IS IEC?

» The International Electrotechnical Commission, or IEC, is a non-governmental organisation that prepares and publishes international standards for all electrical, electronic and related technologies.

» International Standards are used in technical regulation of products, processes and services. They ensure that the purchaser of a product in global trade can be relatively confident about its safety, quality and technical compatibility regardless of origin.

The ISO/IEC 17025 therefore, is the standard for testing and calibrating laboratories. A laboratory must demonstrate that it operates a Quality System, is technically competent, and is able to generate technically valid results. The standards specify the general requirements for competence to carry out tests and/or calibrations including sampling.

Management Requirements cover: organization of the lab’s activities, the management system in operation, its document control system, its review method for tenders and contracts, subcontracting of test and calibration, purchasing services and supplies, service to customers, complaints, control of non-conforming work, improvements, corrective actions, preventive actions, control of records, internal audits and management reviews.

Technical Requirements cover: personnel matters, accommodation and environmental conditions, test methods and method validation, equipment, measurement traceability, sampling, handling of test items quality assurance and results reporting.

The accreditation specifies the tests, the methods of analysis to be used and the operating range associated with the method.

WHAT ARE THE BENEFITS OF ACCREDITATION?

» Being accredited means that the competence of the testing laboratory is recognised internationally

» Accreditation signals that the laboratory has achieved certain benchmarks for performance

» Accreditation brings marketing advantages and international recognition to a laboratory

The SIRI laboratory routinely samples sugar produced by the six raw sugar factories currently operating in the local sugar industry as well as it samples on request raw sugar imported into the island from the world market. The analyses include tests for pol, moisture, reducing sugars, colour – whole raw and affinity, dextran, ash, insoluble solids, starch and grain size.

Accreditation means that the results of sugar analyses obtained by the SIRI Laboratory should now be accepted worldwide. SIRI now therefore belongs to that group of global laboratories covered by the slogan “tested once, accepted everywhere.” More importantly, accreditation helps to remove trade barriers and increase market access. For example, in the case of sugar, if it is manufactured to certain agreed specifications and thus achieves a measurable level of quality which can be maintained routinely, it cannot be barred by an importing country or entity on the basis that it does not satisfy the prescribed quality standard.

Accreditation is not granted on a permanent basis. Thus the Central Laboratory will be subject to yearly surveillance visits by JANAAC to ensure continuing compliance and conformance with the requirements of the accredited standard. After a period of four years, a complete reassessment of the laboratory’s performance will be undertaken if accreditation is to be maintained.

The next stage in the continuing effort of the Laboratory’s staff to upgrade their skills and enhance their competence is to seek accreditation for the soil and leaf analyses they undertake for the cane growing sector of the industry 🌾

Left to right: Dr. Cliff Riley Ch. Accreditation Council (JANAAC) Mrs. Althea Lawson of SIRI Lab, The Hon. Sharon Ffolkes-Abrahams, Minister of State in the Ministry of Industry, Investment & Commerce, Sharon Mae Shirley (Environmental Solutions which lab was also accredited), and Dr Peter Unger from ILAC (International Laboratory Accreditation Cooperation)
Dead Hearts...

In the case of the stalk borer, damage first becomes evident in that 6-8 week period after harvest but is hardly noticed as it may be found mainly in the shorter sprouts formed beneath the developing canopy. The stalk borer may occasionally cause dead hearts even in maturing cane. This is sometimes seen in heavy outbreaks when there may be several borers in a single stalk. At this stage lateral buds may grow out and the stalk is kept alive. With the stalk borer however, the main concern is the extent of internal stalk damage and the effect this will have on juice quality. The fact that the growing point happens to be killed in the mature stalk is often neither here nor there.

**STALK BORER**

In a series of artificial damage experiments conducted by SIRI in the 1970s young sprouts were cut creating from zero to 100% in various field plots three weeks are harvest. After two months of re-growth, the highest number of tillers was actually in plots subjected to 100% sprout damage. That there could be more sprouts generated in damaged plots than in the relatively undamaged controls points to the effect of breaking “apical dominance” exerted by the primary sprout. Primary sprouts left undisturbed produce plant hormones that suppress the growth of secondary sprouts. By removing primary sprouts therefore this suppression is lifted releasing a flush of secondary tillers. Early stalk death could therefore be said to stimulate tillering.

**SUBTERRANEAN TERMITES**

Subterranean termites, particularly *Heterotermes* spp., typically feed on dried rotting cane found in abundance as debris from a previous crop in cane fields. From their underground tunnels termites sometimes migrate into decaying cane stumps after harvest. Occasionally they also attack the base of the emerging sprout and do enough damage

*Continued from page 3*

where there is trash blanketing or where efficient irrigation is carried out, damage tends to be lower.

Continued on page 12
Carib Agro Distributors

Your source for
Bayer CropScience’s Products for Sugar Cane
For Unsurpassed Quality & Consistent
Performance in the Field

Actril DS
Asulox 40
Etherel 480
Finale 16 SL
Merlin 75 WDG
Sencor 75 DF

Your technical support team in Jamaica
• Reg Burgess • Everett Hyatt • Harold Morgan

Contact us at:
Carib Agro Distributors
226c Spanish Town Road
Kingston 11, Tel: 901-8067/Fax: 937-3200
and Bayer’s Distributors in the Caribbean
Carter & Company/Barbados
Carlsen Chemicals & Tracmac Engineering/Trinidad
AINLIM/Guyana
### Variety Recommendations...

**Cane Growing Area** | **Harvesting Period** | **Light Soils** | **Clay Loams** | **Clays** | **Cane Growing Area** | **Harvesting Period** | **Light Soils** | **Clay Loams** | **Clays**
--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
 | | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311 | BT80311

### Dead Hearts...

Dead hearts occur among early sprouts when they are small (often no more than 5 meters or so in diameter) in which cane foliage assumes a bright yellowish orange colour. Eventually dead hearts appear accompanied by lateral bud outgrowth along the stalks. In extreme cases canes may be actually uprooted, leaves might be shredded and leaf sheaths appear purplish in colour.

**DISEASES**

Certain diseases such as top rot and pokkah boeng may also cause dead hearts. With pokkah boeng the tip of the heart leaf is often trapped forming a loop at the top of the leaf whorl. While smut also kills stalks, it does so by transforming the growing point into the familiar smut whip (or fruiting body of the fungus) which is distinctly different from a dead heart.

**LIGHTNING**

Sometimes a spot or spots in a field may be hit by lightning. The result is initially a small area (often no more than 5 meters or so in diameter) in which cane foliage assumes a bright yellowish orange colour. Eventually dead hearts appear accompanied by lateral bud outgrowth along the stalks. In extreme cases canes may be actually uprooted, leaves might be shredded and leaf sheaths appear purplish in colour.

**EFFECT**

Dead hearts occurring among early sprouts play an important part in the natural thinning out of stalks in a cane field and may actually be beneficial as otherwise there could be overcrowding of stalks. Under good growing conditions in Jamaica stalk population tends to peak at somewhere around 120,000 per hectare at about three months (depending on cane variety) in the ratoon crop. By the time of harvest it is unlikely that the field would support more than approximately 80,000 stalks. Had there not been some thinning out, stalks would be relatively spindly and there would be a higher ratio of fibre to juice.

Put in its proper perspective, a few dead hearts in an otherwise healthy stand of cane is nothing to be alarmed about. Excessive numbers of dead hearts may however point to deeper underlying problems which the grower may be able to correct perhaps by stepping up irrigation frequency to stimulate faster sprout regeneration from say a heavy jumping borer attack. Or it could be a sign that a particular variety may be unusually prone to pokkah boeng and should therefore not be extended to occupy too large a part of the farm.

---

**The Editor**
Sugar Industry Research Institute
Kendal Road, Mandeville

---

Page 12