Diagnose Foliar em cana-de-açúcar

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□ arac□er□s□icas da □ lan□a □ elacionadas com a □ □□riç□o e □ d□□ aç□o da □ ana-de-açúcar

- Trata-se de uma gramínea de ciclo semi-perene;
- Grande produção de biomassa (> remoção nutrientes);
- Propagação feita através de gemas (reservas nos toletes);
- Espaçamento entre linhas de plantas de 1,40 a 1,50m (concentração do adubo);
- Valor econômico baseado no teor de açúcar;
- Apresenta sistema radicular fasciculado e grande (grande exploração do solo em profundidade);

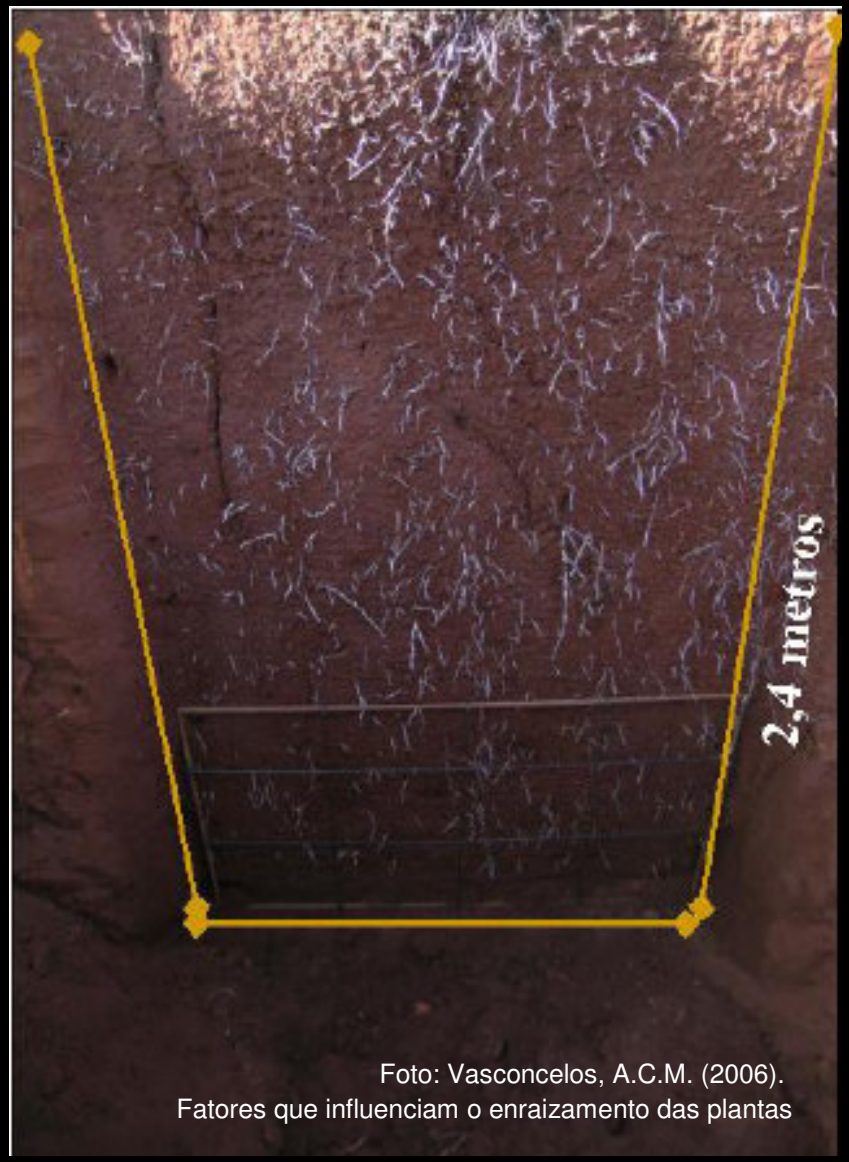

Foto: Vasconcelos, A.C.M. (2006).
Fatores que influenciam o enraizamento das plantas

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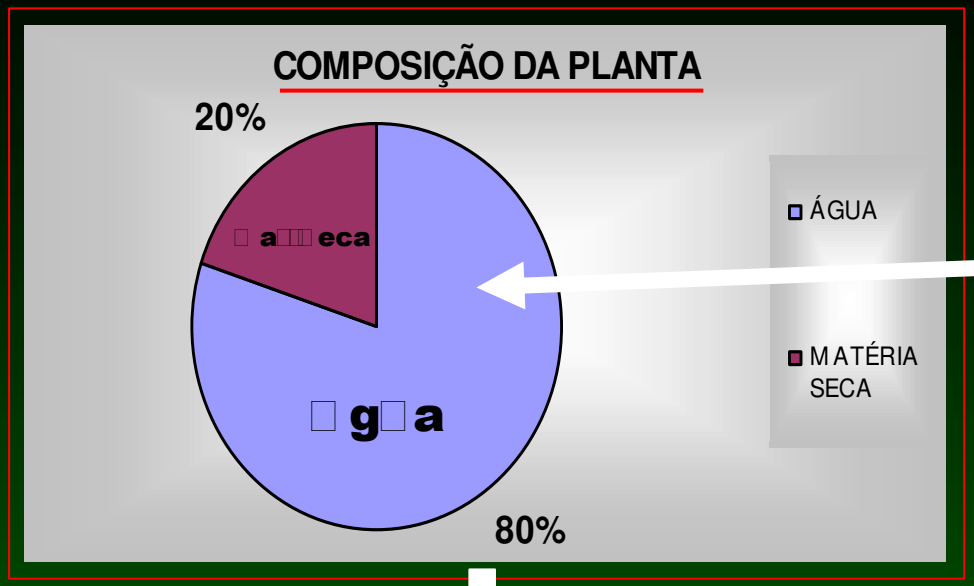

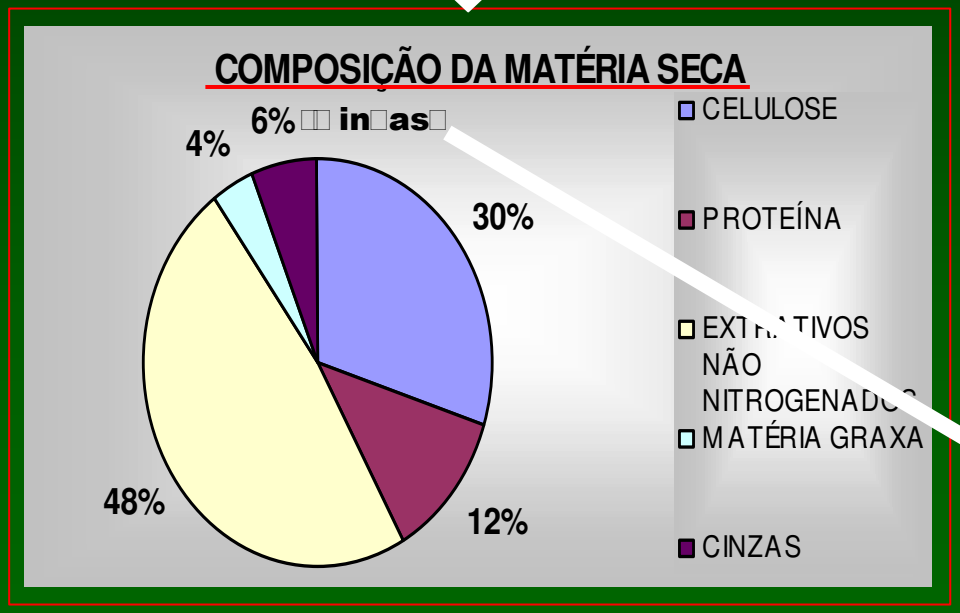

Diagnose Foliar

Elementos nutrientes para as plantas

- **Essenciais**: Essenciais são aqueles elementos minerais da planta, sem os quais ela não vive, (C, H, e O tidos como nutrientes orgânicos e + os minerais – N, P, K, Ca, Mg, S, Fe, Cu, Zn, Mn, Co, Cl, Mo, Ni);

- **Benéficos ou Funcionais**: Não são essenciais, entretanto sua presença é capaz de contribuir para o crescimento, produção, ou resistência à fatores bióticos e abióticos (estresse hídrico, pragas e doenças). Ex.: Al - para a cultura do chá; Si - para as gramíneas principalmente;

- **Tóxicos**: Quando são prejudiciais às plantas e não se enquadram nas classes anteriores.

Diagnose Foliar da cana

Limitações

a) Depende muito da época de amostragem;
b) A coleta deve ser feita antes de pelo menos 3 semanas de intenso crescimento (sem estresse);
c) No caso do N e também de outros elementos, os níveis de suficiência são diferentes de acordo com a idade da planta e manejo (irrigação);
d) Níveis de suficiência podem variar de acordo com a cultivar;
e) Dificuldade em se estabelecer o balanço adequado entre os nutrientes (DRIS);
f) Os resultados da diagnose foliar raramente conseguem corrigir os problemas durante a mesma safra;

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Levar em consideração os seguintes aspectos:

a) Uniformidade da área quanto ao tipo de solo, variedade, idade e tratos culturais;

b) Tipo de folha – coletar a folha +3, ou seja, a primeira folha com "colarinho ou lígula" visível.

c) Parte da folha – utilizar os 20cm centrais, desprezando-se a nervura central;

d) Quantidade de folhas - coletar no mínimo 20 folhas/amostra

e) Época – coletar a folha na fase de maior desenvolvimento vegetativo.

- Cana-planta = 6,0 meses após a germinação

- Cana-soca = 4,0 meses após o corte

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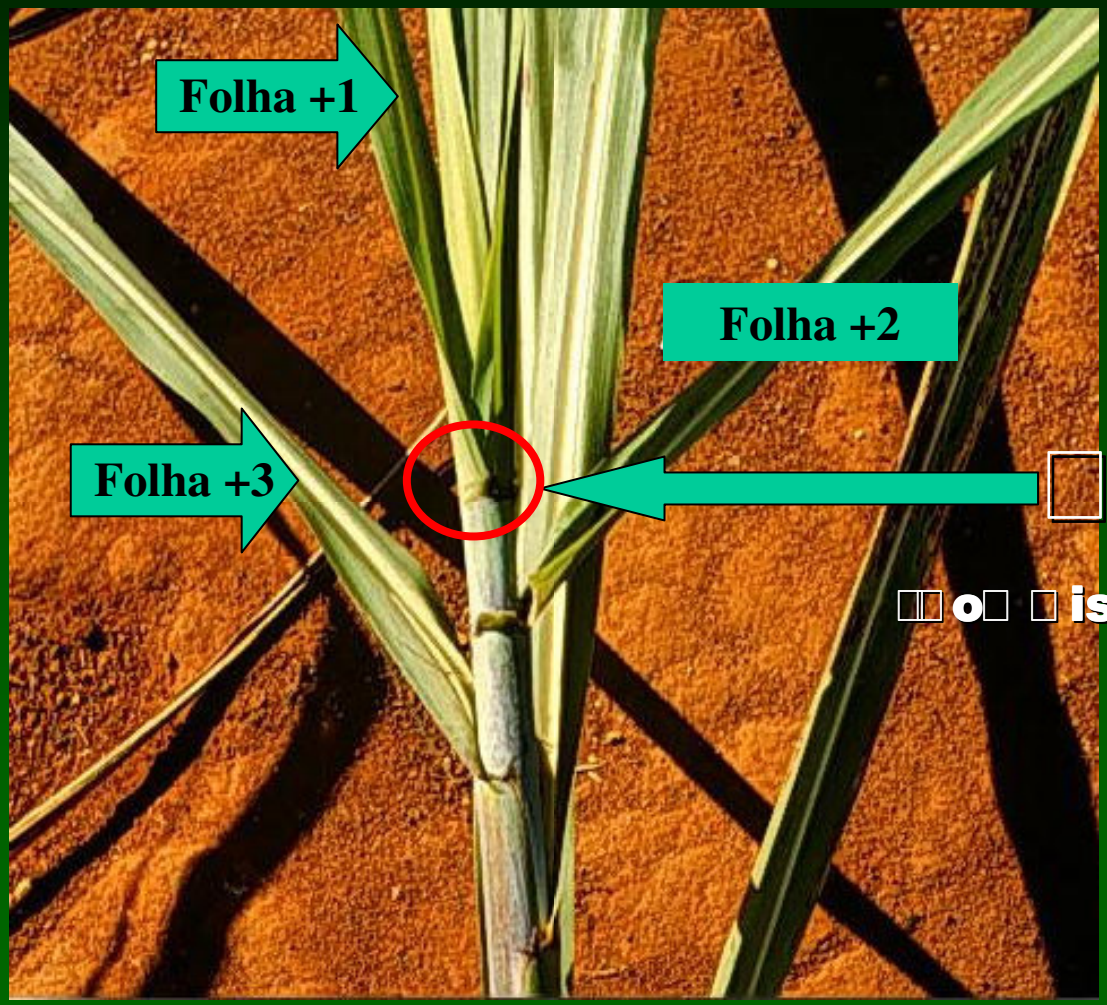

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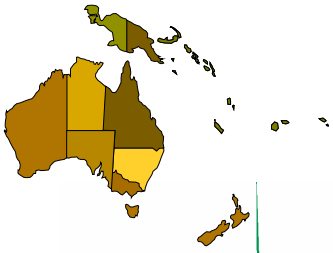

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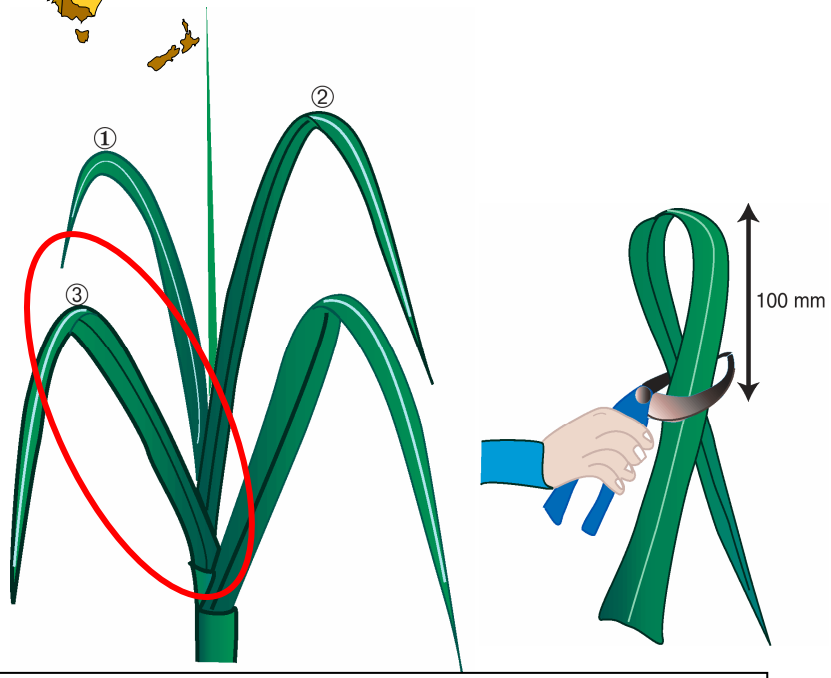
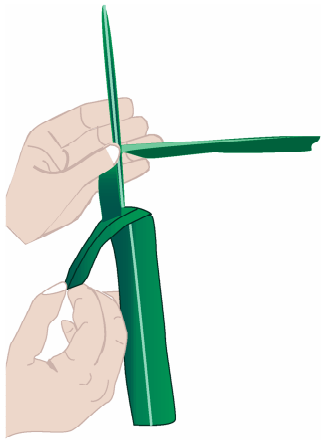
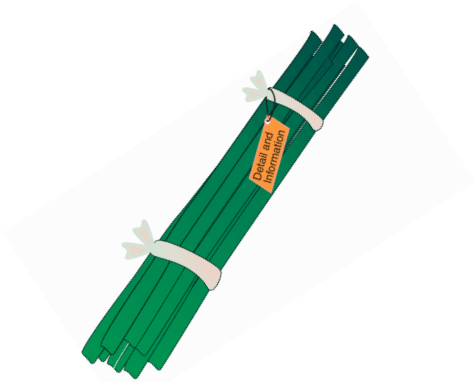


Step 1: Select leaves from stalks of average height.

Sample the **third leaf** from the top of the stalk (as shown on the diagram). Counting from the top of the plant, the first leaf is the one that is more than half-unrolled. The third leaf usually **corresponds to the top visible dewlap**. Collect 30 - 40 leaves at random from across the entire block of sugarcane being sampled.

Step 2: Fold the leaves in half (top to base) and cut a 100-200mm length from these folded leaves (giving a total 200-300mm section of each leaf). Retain these middle 200-300mm sections of the leaf blades and discard the remaining top and bottom sections. Strip out & discard the midrib from each 200-300mm section.





Step 3: Bundle the leaf strips together and attach a completed BSES Leaf Analysis label (as shown overleaf). Place the sample in a cool environment (polystyrene cooler) until it can be dried in an oven (at about 60^0C) or in a dry well-ventilated area. Once the sample is dry, place it in a clean paper bag or envelope, and send it to an appropriate laboratory.

NB To ensure meaningful interpretation of the analysis results, make sure that the following guidelines are adhered to:
Cane is sampled during the prescribed leaf-sampling season (December to April). Sampling in the Burdekin can commence in October of each year. Cane is the correct age (3-7 months) at the time of sampling. Cane has been growing vigorously during the month prior to sampling. Cane is not affected by moisture stress at the time of sampling. Cane is also unaffected by any other factors, such as disease, insect damage, etc. Six weeks has passed since fertiliser applications.

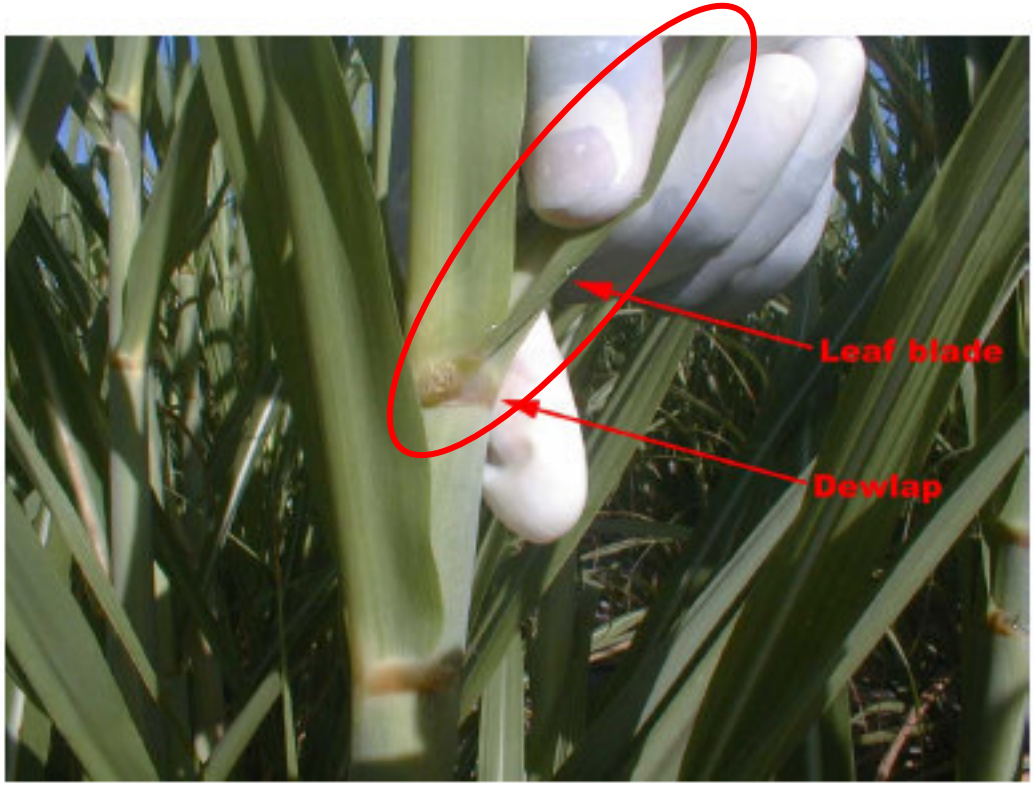


Figure 1. Top Visible Dewlap leaf blade is the preferred tissue for foliar analysis.

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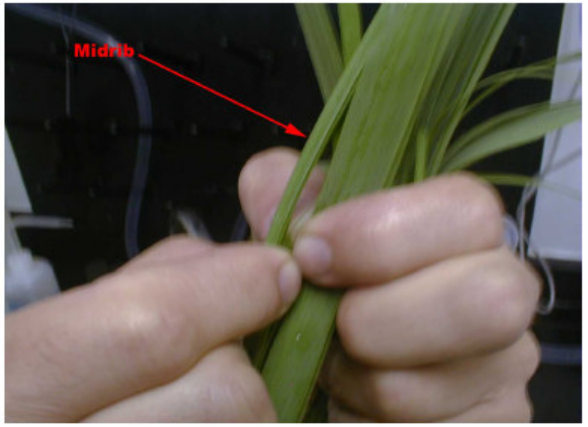

Figure 3. Removing the midrib from the leaf blade is a standard practice for sugarcane foliar analysis.

Figure 4. Rinsing leaf blades to remove soil and dust particles.

Figure 5. Place rinsed leaf blade samples in sample bags and put in a drying oven.

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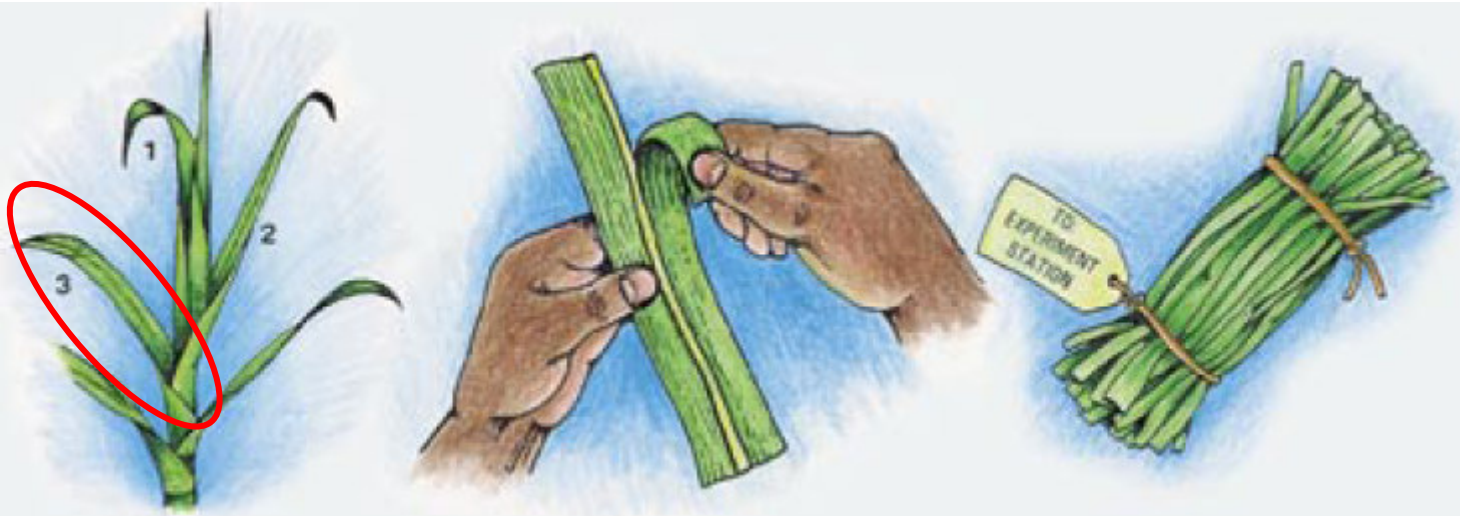
How should the samples be collected?

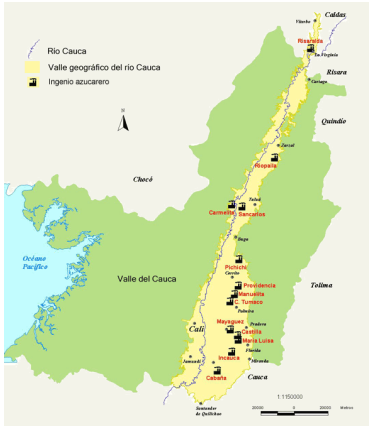
1. Select leaves from stalks of average height, but not from young shoots.
2. The leaf taken for sampling should be the third down **(top visible dewlap leaf)**, the first being the leaf which is at least half unrolled.
3. Collect about 40 such leaves at random from various spots throughout the field.
4. If the field consists of areas of good and poor growth, a separate sample should be taken from each portion, even if the field has been fertilised as one unit.

What are the requirements for leaf sampling?

1. Vigorous crop growth must have occurred during the three weeks prior to taking the leaf samples.
2. The age of cane and month of sampling must fall within the prescribed limits for your area (see table).
3. The crop must have received enough well distributed rainfall/irrigation to preclude any moisture stress prior to sampling.
4. Four weeks must have elapsed since the last fertiliser top-dressing.



Jan Meyer: Leaf sampling position is an important point and confusion can arise in leaf numbering if we do not standardise the procedure. In South Africa we take the third leaf from the top (called the top visible dewlap) with the first leaf being more than 50% unfolded.



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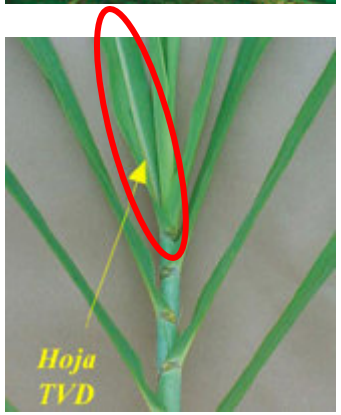

Cómo tomar las muestras

1. Para entrar al campo se recomienda utilizar una de las dos formas señaladas en la Figura 1, siguiendo las líneas demarcadas con color rojo.
2. En una suerte o tablón no mayor de 10 hectáreas seleccione 25 hojas que correspondan a **la primera con cuello visible**, también conocidas como hojas TVD (Figura 2).
3. Una vez recolectadas, elimine de cada hoja los tercios superior e inferior dejando para envío sólo el tercio medio (aproximadamente 40 cm) (Figura 3). Inmediatamente elimine la vena central de cada muestra, la cual se desprende con facilidad si empieza a rasgar de abajo hacia arriba.
4. Conforme un paquete con las láminas foliares y utilice un cordón con etiqueta para amarrarlas en los extremos. Marque la etiqueta con la siguiente información: suerte, serie de suelo, hacienda, variedad de caña, edad, número de corte, fertilización realizada, nombre del propietario, nombre y dirección para remisión de resultados.
5. La muestra se lleva al Laboratorio de Química de **Cenicaña** en el menor tiempo posible.

Para analizar elementos químicos en tejido foliar de caña de azúcar el muestreo de hojas se debe realizar en cultivos con edades de 3.0, 4.5 ó 6.0 meses, preferiblemente antes de las 9 de la mañana.

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