FIELD DAY
CPAL IV 2023

TRANSFORMANDO EL ENTORNO

FEBRUARY 28, 2024 | FINCA SANTA ROSA, S.A
TIQUISATE, ESCUINTLA, GUATEMALA

INDUSTRIAL, AGRICULTURAL AGENDA | STATIONS

WELCOME TO
FIELD DAY
CPAL IV

Santa Rosa, S.A. has been selected once more for the Guatemalan Palm Congress field visit. Agricultural and industrial-theme station visits were suggested for this edition of the Congress, to showcase the application of best production practices aligned with the sustainable palm production criteria set forth by Grupo HAME in its Sustainability Policy.

Grupo HAME commitment to remaining a benchmark in operational efficiency and sustainability has involved a continuous evaluation process to identify best practices that improve the business' productivity, as well as maintaining balance in social and environmental considerations.

We always associate productivity with more production by area unit, based on operation cost controls. To increase productivity, it is important to consider new technologies for clean energy, special inputs that improve nutrition balance and plant health in agricultural and industrial production, without neglecting oil concentration in fruit bunches.

Water is an essential input in agricultural production. However, with increasingly intense weather phenomena, such as El Niño, and rainfall fluctuations due to climate variability, increasing efficiency in water resource management to maintain water level production in the plantation and avoid conflict by prioritizing its rational use, remain challenges to be reckoned with.

In the industrial area it is essential to maintain increasingly tight quality controls to measure fruit bunch mass balance, as well as efficient extraction process lines to reduce oil concentration losses by maintaining or even improving oil extraction rates.

Our commitment with sustainability is evident in the use of clean energy in the extraction process and by turning effluent management into a by-product with the highest efficiency level possible to reduce organic loads and to take advantage of the largest quantity of organic degradation to produce methane gas which, with combustion in the generator area, produces clean energy to operate irrigation engines.

INDUSTRIAL
AREA

STATION ONE

FFB oil potential

The palm oil processing plant, known in Guatemala as the extraction plant, is key for obtaining crude palm oil, the main focus of our business. For this reason, reinforcing extraction plant laboratories to continuously evaluate fresh fruit bunches in reception yards is strategically important.

This continuous monitoring of oil potential in FFB is the initial part to determine the operational efficiency of the extraction plant and of oil concentration levels per MT of FFB in the field.

Asset maintenance control

It is important to establish all the necessary processes to recover the greatest amount of oil contained in the FFB, an outcome of best field practices. Extractor plant equipment can be similar in process capacity per hour. However, the difference in extraction rate efficiency can come from a maintenance program with effective operation and wear control.

The maintenance area is key in maintaining extraction plant rate through the efficient application of the periodic preventive maintenance program, which can translate into fewer hours of downtime due to corrective repairs in operating days, as well as the ability to reduce oil loss due to wear in parts and hydraulic system leaks. A preventive maintenance plan is not complete without adequate equipment risk assessment as well as supervision by the extraction plant’s occupational health and safety personnel.

Clean energy

The environmental assessment of wastewater from extraction plant effluents led to the establishment of an anaerobic treatment to reduce organic load in the effluent. Capture of the methane gas generated by the microbial activity in the effluent was proposed. It is widespread practice to cover treatment lagoons to capture methane and subsequently use methane gas as fuel to generate clean energy, which also helps to reduce the carbon footprint of crude oil produced.

The main challenge of a biogas project is maintaining or even improving the operational efficiency of microbial activity, starting with maintaining strict control of microbial concentration in carp lagoons and proper operation of effluent cooling systems to avoid reducing bacteria populations. This efficiency is essential for the energy service that the biogas project provides to the irrigation engine operation that requires flow stability. This is another initiative that has made it possible to reduce the carbon footprint of crude palm oil production and is a strategic control and monitoring consideration in operations.

Today, the energy generated is used in field irrigation systems (approximately 10,000 hectares).

STATION TWO

Use of naphthaleneacetic acid to reduce the effects of low pollination in oil palm bunches

Palm growth regulators have been used for several years in some countries such as Colombia and Ecuador as an alternative due to the low pollination of the O&G hybrid (Elaeis oleifera x Elaeis guineensis), and because of higher oil extraction rates (OER) from 3 to 5 points. Grupo HAME has experienced low pollination, especially in CIRAD materials on the southern coast of Guatemala, where bunch weight stabilization was evident. Until then, entomophilous pollination was the only resource used.

As the group has grown, pollen-insect banks have decreased considerably, causing a decrease in OER percentage. Starting in 2019, the first trials were done with the use of Naphthaleneacetic Acid (NAA) to reduce existing low pollination, using different concentrations of NAA, frequencies and post-anthesis dose applications up to 1-month-old bunches. Results in the Guineensis material show an increase in the OER% of 2.7 points compared to the control. It is important that the application coverage be above 90% to ensure adequate cluster formation and homogeneous fruit development in the apical, middle and basal parts, as well as in its internal part.

Currently the Group has applied NAA in over 11,000 hectares as part of its agronomic strategy using a mixture of NAA and an inert vehicle that favors bunch coverage, reducing the % of white parthenocarpic fruit and improving OER %, in addition improving average bunch weight.

AGRICULTURAL
AREA

STATION THREE

Beneficios del uso del silicio

La literatura reporta que se llevan durante más de 150 años, investigaciones en plantas relacionadas al Silicio (Si) para mejorar la resistencia y/o la tolerancia de las plantas a diversos estreses bióticos y abióticos. Sin duda alguna, ha llegado a concluir que el silicio -Si-, es el único elemento mineral que se sabe que mitigan eficazmente múltiples estreses abióticos, incluidos la salinidad, la sequía, inundaciones, las heladas, etc. Por lo qué, en los últimos años, el silicio -Si- se ha vuelto más aceptado globalmente como una adición importante desde el punto de vista agrícola. (Liang, 2015)

El silicio es uno de los elementos que paso a ser considerado esencial, por ello mismo fue integrado al programa de fertilización, como un elemento que busca mantener la sostenibilidad el cultivo, reduciendo los consumos de fertilizante mediante la disponibilidad de elementos que se encuentre en el suelo formando antagonismos con otros elementos, como por ejemplo el Fósforo, aunado a ello, beneficios intrínsecos en cuanto a la sanidad del cultivo.

Hoy tenemos evidencia de cómo la aplicación de ácido salicílico en plantaciones de palma aporta a mejorar las condiciones de sanidad de la planta, incrementa la producción y se tiene mejor capacidad de recuperación por factores abióticos.

Referencias

Liang, Y. (2015). Silicio en la Agricultura “de la teoría a la práctica”. New York London: Springer Dordrecht Heidelberg.

STATION FOUR

Efficient irrigation

Water, as an essential input for agricultural production in the southern coast of Guatemala, becomes a challenge due to the climate conditions in the area. Managing permanent crops with a well-marked dry season results in the need to establish irrigation systems to replace evapotranspiration losses in oil palm plantations. Although there are ranges of humidity loss in palm growing areas of southern Guatemala, the rational use of water is essential for effective crop growth and to avoid conflict over water access and use.

Investment to update irrigation systems with increasingly efficient technologies has been important in improving homogeneous irrigation sheet application, technical decision-making using meteorological stations and key humidity level instruments, key for timely adjustment, times for irrigation system operation intensity. Excess soil moisture, in addition to plant health risks, can also cause palm physiological activity reduction due to the absence of oxygen in the root system. We also see it directly linked to cost management, since poorly applied irrigation becomes an expense with zero returns for the company's productivity.

The evaluation of irrigation efficiency has involved calculating water footprint to water balance in the territory. These results have allowed us to identify water vulnerable farms and define investment plans to improve water access by building water storage infrastructure (reservoirs) to cover crop demand. This provides 47% coverage of the local the operation’s irrigation need. Likewise, mechanical wells are also built that contribute 10% to our operation. This strategy supports us and ensures that despite various climate events, we can be prepared to face them and not have a crop deficit.

Other strategies include constant records of irrigation information, field monitoring, uniformity coefficient measurements, deep irrigation, flow monitoring, equipment maintenance, compliance with national laws, technologies applied to irrigation information, and finally, water harvesting with which we can ensure a volume of 3,450,000 m3 in one of the largest structures. In total we can supply irrigation to up to 1,000 hectares.

These methodologies mean that the operation can be performed in an updated, sustainable and correct manner (at least 5.6 mm per day of irrigation sheet). As a result, the influence of water intake on sexual differentiation impact times on this relevant factor is described. And with this factor that becomes positive, it is possible to improve general weight between 11 to 25%, mt/has/year.

This is also demonstrated by our leaf and soil analyses, nutrient behavior in the plant, and the movement of these nutrients in the soil. Another parameter that we use to validate if the effect of efficient irrigation is impacting the plant is leaf growth in the plant.

We constantly run tests to compare the difference between continuous and seasonal irrigation. We have experienced an increase between 3.26 and 4.2 mt/ha/year with the continuous irrigation modality.

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CONGRESO PALMERO
GUATEMALA
2023

Transformando EL ENTORNO

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