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markyancey@neatechllc.com; wlr@tamu.edu
Subject: (no subject)
Date: Tuesday, November 03, 2009 2:50:21 PM
Attachments: [Merauke visit.doc](#)

All

Here's a draft of a trip report for Merauke. Please review

Bob

Merauke Visit and Initial Agricultural Recommendations for Sweet Sorghum to Ethanol Project

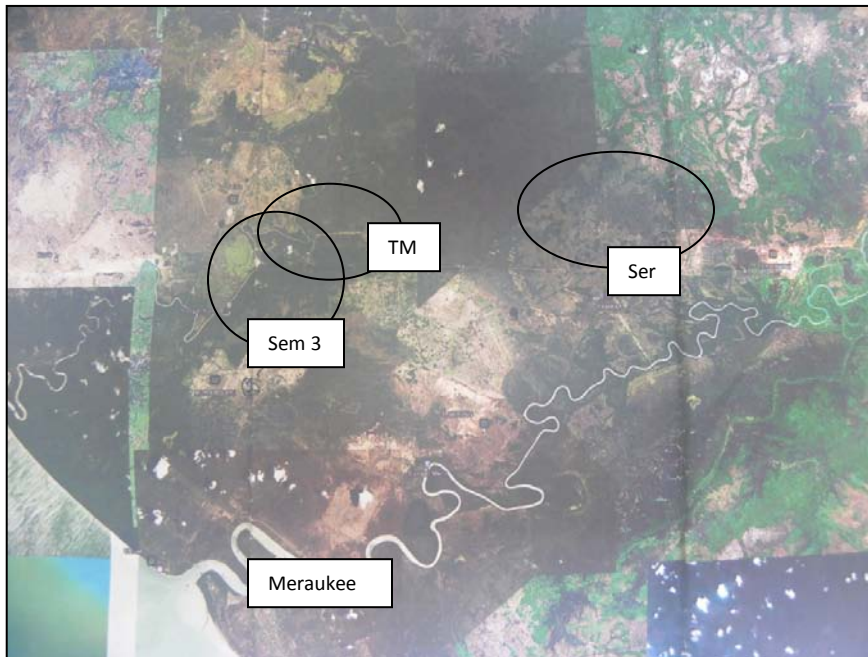
DRAFT

R. V. Osgood

Summary

The Neatech team and Medco staff visited the Merauke District Medco demonstration farm and three sites: Semangga 3, Tanah Miring and Sermayam designated for possible large-scale sorghum farming. The visits occurred on October 22-24, 2009. Neatech team members participating were Brian Duff (Project Manager and Process Engineer), Bill Rooney (Sorghum Specialist) Areg Gharabegian (Environmental Specialist), and Robert Osgood (Tropical Farming Specialist). Representing Medco were Adri Soebiyakto (Nursery Coordinator) and Adrisman Tahar (Project Leader). **Need to add additional Medco staff in Merauke.**

Described in this report are the Merauke District sites visited. Preliminary recommendations for sweet sorghum growing assuming rainfed, mechanical operations using minimum agricultural labor. The Merauke sites pictured (Google Earth®) are Semangga 3 (left circle), Tenga Miring (middle circle), and



Sermayam (right circle). None of the sites visited had a pristine, diversified native forest. In all sites the forest had been burned, grazed and likely farmed in shifting agricultural operations by the indigenous people.

Soil samples were taken at Semangga 3, Tanah Miring and Sermayam. About 60,000 ha are being considered for large scale agriculture in the sites visited.

Roads and drainage infrastructure need improvement for initiation of large-scale, mechanical sweet sorghum farming.

Recommendations were made for small plot variety trials and large-scale demonstration plantings (nurseries) in the sites visited.

Sites Visited:

Semangga 3 8°20'30" 6 m elevation



Semangga 3 is a transmigration farming site currently being developed for rice. At the site visited about 100 ha is cleared for rice culture and of this only a small area is currently cultivated. A large drainage canal was located at the parcel, but there were no side ditches draining the land into the larger canal. The side ditches present were stagnant and the land was waterlogged. Some of the rice was growing well and other plots were growing poorly.

The uncleared land at the site was in a mixed forest of *Eucalyptus sp.* and *Acacia sp.* with occasional *Livistonia* palms. The forest was degraded (low level of diversity) and was utilized for grazing following burning.

The Land requires an extensive drainage system with drains possibly as close as 30 m. Drains must flow into a larger main drain. Drains must be maintained to achieve a water table depth suitable for sweet sorghum

This is not a recommended site for sweet sorghum farming owing to water logging even in the dry season. Development of this land for sorghum farming would be very expensive and in the end may not be successful. This site is better suited for rice growing.



Soil profile at Semangga 3. Note the dark upper organic layer and the lower heavy clay sub layer. This soil was highly waterlogged and not suitable for sorghum in the present state. Extensive drainage is required. The clay pan is problematic.



Soil sampling at Semangga 3. Organic fertile upper layer and dense poorly drained clay subsoil layer.

Tanah Miring 8° 16' 47" 13 m elevation

Tanah Miring is a slightly higher elevation parcel that is in a mixed degraded Eucalyptus and Acacia forest. The forest was being grazed and was recently intentionally burned to remove underbrush to make suitable grazing land. The soil was similar to Semangga 3 but less wet at the surface and there was less heavy clay in the lower profile. The site was serviced by a drainage canal.

Soil samples were taken.

This is a better sweet sorghum farming site than Semangga 3 but will still require extensive drainage infra structure.



Soil sampling at Tanah Miring. The site was characterized by a degraded forest which had been burned and grazed. This is a better site compared to Semangga 3 but will still require extensive drainage

Sermayam 8° 16' 21" 20 m elevation

The Sermayam site was the best of the three sites visited with regard to soil texture suitable for large scale sweet sorghum farming, but soil analysis is needed to determine if the pH is too low or if the aluminum and manganese levels are too high for sorghum farming. The site was infested with colonies of ants. The site was secondary or remnant forest having *Eucalyptus sp.* and *Acacia sp.* There was evidence of burning and previous farming, indicated by remnant bed structures. The site had some

variation in elevation which will provide better drainage and possibly eliminate the requirement for an extensive drainage system although bed culture is recommended in anticipation of heavy spring and summer rains.

Soil samples were taken



Bill Rooney inspects the Sermayam site. Note the green grass at the end of the dry season (winter) indicating adequate soil moisture for sowing sorghum

Summary for three Merauke District sites

Of the three sites visited, the Semayam site was the best for large scale, mechanized sweet sorghum agriculture owing to better soil texture and composition but need soil analysis to determine suitability for farming . There is concern regarding possible low pH and aluminum content. Aluminum is toxic to sorghum at low pH and the only correction is liming the soil

All three sites will likely require liming and possibly gypsum as soil amendments but at an undetermined level.

Medco demonstration site

The Medco demonstration site at Merauke included soybean, corn and sorghum. All were growing well. The site was planted about three months previous and had received irrigation and manual weeding. Several varieties of sorghum were planted and there was a large variation in growth and stature of the plants according to the variety planted. The cultivars appeared to be India types and none were sweet sorghums. Sorghum was hilled up by hand, in fact all operations were by manual labor.

Soil analysis is available for the site and will be provided by Medco. It also needs to be determined if the site was limed.



Neatech team with Medco PM at Merauke demonstration site. Sorghum in background

Recommendations

Establish sorghum demonstrations in sites (nurseries) where commercial operations are planned. The demonstrations should include replicated variety tests and a large block test (10 ha or more) where operations are entirely mechanical including land clearing and trash removal, ripping, plowing, bed formation, weed control and planting. Harvest can be by hand initially but plans need to be made to lease or purchase a billet harvester which is suitable for both sugarcane and sweet sorghum.

For the late spring planting (just ahead of the rainy season) we recommend a day length sensitive sorghum variety such as MN 1500 or a hybrid. For fall (early dry season planting) we recommend a day length insensitive sweet sorghum variety or possibly a hybrid (to be determined).

It is recommended that planting beds be formed as pictured below.



A bed suitable for planting sweet sorghum in Louisiana, USA. Courtesy of Ben Legendre, LSU Ag. Science

The smaller variety demonstrations can be planted with a hand operated seeder as shown below.



Planting a sorghum variety test with a hand planter. Two to three rows of sorghum are planted on the bed. Note sugarcane in background. LSU Ag. Science. Harvest can initially be by hand but at some point a billet harvester as pictured below will be



needed.

Mechanical harvest of sweet sorghum in Louisiana, USA. LSU Ag Science

Designs for the variety and large-scale demonstrations will be provided in a later report.

Need are soil analysis data for the demonstration farm and for the three sites visited

From: [Bill Rooney](#)
To: cs-scsc642600-fall2009@groups.tamu.edu
Subject: [Fall '09 SCSC642600] class on Tuesday, Nov 3
Date: Monday, November 02, 2009 9:50:04 AM
Attachments: [message-footer.txt](#)

Students:

The schedule indicates that we will not have class on Tuesday, November 3. However that is INCORRECT. WE WILL HAVE CLASS ON TUESDAY NOVEMBER 3.

I'll see you there.

Regards,

Bill

Dr. William L. Rooney
Professor, Sorghum Breeding and Genetics
Chair, Plant Release Committee
Texas A&M University
College Station, Texas 77843-2474
979 845 2151

From: [McCutchen, Bill](#)
To: [Schuerman, Peter L.](#); [Brummett, Robert G.](#); [Hurley, Janie C.](#)
Cc: [Petty, Blake D.](#); [Avant, Bob](#); ahelms@tamu.edu; wlr@tamu.edu; [Baltensperger, David](#); [Dugas, William](#)
Subject: "Black" Sorghum
Date: Thursday, September 24, 2009 4:53:46 PM

Peter and all,

I can't remember all of the details of term sheet with SP, but we want to specify that these "black" sorghums and products are for whole grain / food products, e.g. cereals, snacks, etc. ONLY

On the other hand...

We just met with David Wesson (recently at top of Aggie 100) and David Palmer of Premark Health Sciences. Bottom-line is that they appear to be very interested in the supplement/nutraceutical angle (powder drinks, capsule, etc) for black sorghum phytochemical components (i.e. extraction). Blake can fill you in.

Please give me a call when you have a chance.

Thanks,
Bill

From: [Rene Clara](#)
To: [Gebisa Ejeta](#)
Cc: [John Yohe](#); [Bill Rooney](#); [Joan Frederick](#)
Subject: "bmr" germplam
Date: Sunday, September 27, 2009 7:01:47 PM

Dear Dr. Gebisa,

I am glad inform you that the germoplasma "bmr" of sorghum that you sent to me has been profitable for this region. We already incorporate these genes into the forage commercially varieties and also we have new varieties "bmr" to be evaluated. In whole we have 76 new experimental varieties split into three groups: height, medium and dwarf plant. We are already gliding to send them to the countries of Central America and Caribe countries, for his respective evaluation and commercial liberation.

We think that it is a new future for the cattle of this region.

Thanks for your support and we hope to continue in this cooperation.

Regards,

René Clará V.

INTSORMIL

Host Regional Coordinator

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