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JATROPHA CURCAS PRODUCT PLACEMENT TRIALS (PPTS) HAITI FOLLOW-UP

AGRONOMY SPECIALIST SECOND TRIP REPORT

November 2011

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Contract No. EPP-I-04-04-0020

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CONTENTS

INTRODUCTION

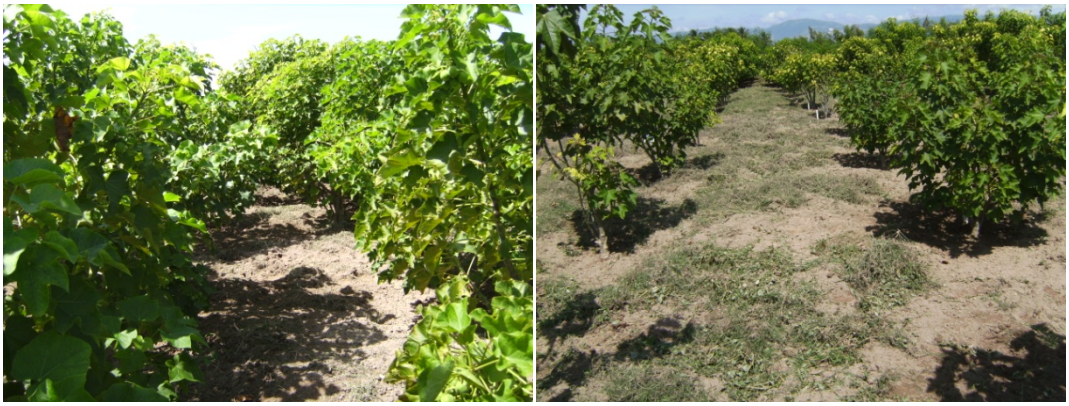
As stipulated in subcontract EPP-I-00-04-00020-00-04-SUBK-FFP-QUIN-1 under the Haiti Watershed Initiative for National Natural Environmental Resources (Haiti WINNER),), subcontractor Quinvita conducted two trips to Haiti to oversee the implementation of *Jatropha* trials. Per the subcontract terms, this report synthesizes the information gathered during the second trip in October 2011. This report includes:

- An assessment of the ongoing trial at Bas Boen
- An assessment of the ongoing trial at La Branle

CENTRE RURAL DU DEVELOPPEMENT DURABLE (CRDD) BAS BOEN

Current Status and Observations

The general trial status from a phytosanitary point of view is good. Clearly diseases and pests are under control (except for some minor mite infestations) and weeding was currently in progress.



General view of the trial

However a large percentage of the plants show a chlorosis effect (yellowing of leaves) which is probably mainly caused by the soil conditions. I was informed by Freud Euler Lucas that the pH of the soil is very high (not seen in the soil analysis) and if this is the case, then this can of course limit the availability of nutrients for the Jatropha plants. When certain nutrients are lacking or can't be absorbed by the roots of the plants, then you will see these symptoms on the leaves.

Chlorosis in the field at CRDD Bas Boen

Chlorosis is a condition in which leaves produce insufficient chlorophyll. This is typically caused when leaves do not have enough nutrients to synthesize all the chlorophyll they need. It can be brought about by a combination of factors including:

- A specific mineral deficiency in the soil, such as iron or magnesium
- Deficient nitrogen and/or proteins

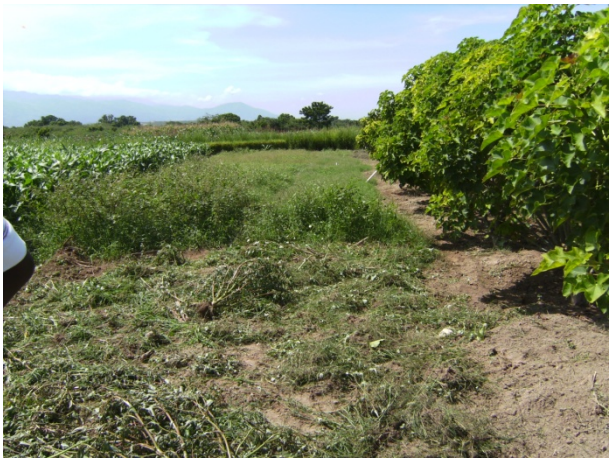
- A soil pH at which minerals become unavailable for absorption by the roots
- Poor drainage (waterlogged roots)

Since the trial was fertilized, we do not expect the amount of nutrients to be deficient, but rather the soil pH together with the poor drainage of the soil to be the cause of the unavailability of nutrients for absorption by the roots. It could also still be case that the plants have some limitation in nitrogen because of the strong growth.

The weeds are under control. In fact, the weeding was ongoing when visiting the trial. A circle around the stem of the tree was completely weed-free and the weeds in the rows between the trees were in the process of being under control.

Weeding in progress

Also the weed clearing around the field was ongoing but was not finished yet at the moment of the visit. Herbicides are currently not used and only manual weeding is the standard practice.



Ongoing weeding around the trial plot

There has been an application in June with Actara. Actara was mainly used against mites while this product cannot be considered a real miticide. Therefore the plan is to move from Actara to Dipel which is also a WINNER approved pesticide with miticide characteristics.

A rain gauge has been installed at the CRDD in May 2011 and the recorded rainfall data has been given to QUINVITA at the moment of the visit. The table only showed the rainfall for the months June, July, August and September. The October data was still missing.

Drainage channels were dug as suggested and said to be helpful to get the water out of the trial in case of heavy rain.

Plots were clearly labeled and filler plants are marked with sticks. These filler plants are plants on which no observations are carried out anymore.

The last harvest happened on Oct 24th 2011 and the harvest of individual plants were kept separate and stored in stored in separate envelops.

The envelops were clearly labeled with the necessary information but it was observed that the collected grains were stored in wet conditions. The Jatropha grain must be dried before storage. There are a couple of drying baskets available for the drying of the harvest but were not used at the moment. (Only 11 baskets are available). Because of storage of wet grain we could clearly see some mold developing.

Harvest stored in envelopes, with drying basket (pictured left)

The plants were currently still flowering and fruiting. Harvestable grain was harvested the day before the visit. However we could observe a couple of young Jatropha plants that were removed during the weeding (see picture). This would indicate that previous harvesting was incomplete or not done in time so that some of the grains dropped on the soil and were allowed to germinate.

Young plants removed from trial

Recommendations

- Make sure that harvests are done in time to avoid grain losses. Missing harvests will disturb the scientific analysis of the trial results and
- Immediately after harvesting the grains need to be dried before weighing and storage. Only dried grains are allowed to be weighing and data recorded. There are not enough drying baskets to dry all the seeds from the different trees at the same time. If no more plastic baskets can be bought, then other solutions need to be implemented to dry the grain in open air. Measures need to be taken to do this without mixing the lots and losing some grains.
- Pesticides that are currently in use are Mancozeb (dithane) and Actara. The intention is to replace Actara by Dipel, which is a WINNER approved pesticide that also has some acaricide properties.
- Currently, harvested grains are being stored in a room together with all kind of stuff (chairs, grains, fertilizers…). QUINVITA strongly advises to store the harvested grains in a dry and clean room. The current room has fertilizers that were hygroscopic which made the storage conditions rather humid.
- Keep sending rainfall data on regular basis to QUINVITA.
- Keep on removing remaining weeds alongside the border row plants.
- Regular maintenance of the drainage channels is an absolute need in order to get the water out of the trial asap after raining. The rainfall data shows that the location sometimes receives heavy rains. E.g. on July 31st there was 60mm of rain during that day. Such heavy downpours can have an effect on flowering and fruiting by limiting the fertilization possibilities of the flowers which can result in lower yields.

Data

In the past already some problems were encountered with the post-harvest processing. Due to some mistakes, monthly yield figures were not kept separate and only total yield data are therefore available. This time the seeds from each harvested plant are kept separate but they still need to be dried before weighing and data collection. During the visit it was agreed that the drying would start immediately even without the availability of sufficient baskets to do so properly.

At the end of each month and after approval of the monthly data by QUINVITA, harvested grains can be bulked per plot (e.g. in well-sealed bags or envelopes).

At the end of each season, Thousand Grain Weight should be determined and grain samples should be analyzed for oil content and fatty acid analysis.

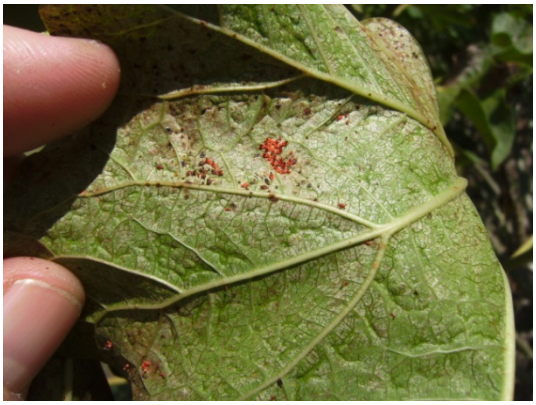
CRDD LA BRANLE

Current Status and Observations

General View of the trial

Data collection for this trial has unfortunately been inconsistent, with the last field observations carried out in May 2011 and the last pesticide application done in June 2011.

The trial is under a strong red spidermite infestation (see picture below). We clearly observe a difference of tolerance to Red spidermite between the accessions. The strongest infestation can be observed in the WINNER entry no. 5. That accession was also used as border row around the trial which was also visible from the mite infestation.



Red spidermites

Mite attack symptoms on leaves

Strong red spidermite infestation in border row (local accession)

The agronomy register was not further completed since May 2011. It was said that the missing data will be added to complete the agronomy register

All the plot labels were either unreadable because the markings have faded away or the labels were missing.

The filler plants are no longer labeled. We could find the sticks that are normally indicating the gap-up plants. The field maintenance manager insisted that he still knew which plants were filler plants but there were no sticks found that could confirm this.

It was noted last time that plot numbers 17 and 18 both have a plant of a different accession as compared to the other 8 plants on those plots (plant no. 2 on plot 17 and plant no. 1 on plot 18). From then onwards it was requested that for both plants no observations should be done anymore and "-9" should be filled out in the data files. Unfortunately, it appears that the the wrongly placed plants were instead counted with the other block. So plant no. 2 of plot 17 is counted together with plot 18 and plant no. 1 of plot 18 is counted together with the rest of plot 17.

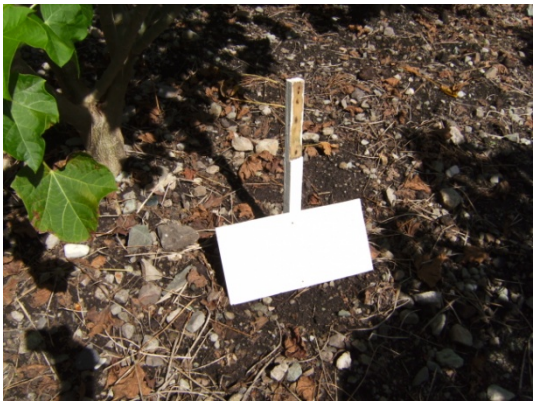
Pest and disease status is good, except for the mites infections that is present at the moment. Mites and mealy bugs were observed on a few plants however, therefore advice was given to spray the whole trial.

The weed status is very good, as most plants are big enough to close the rows and to suppress weeds

Weed status in the trial is good

Recommendations

- Fill out "-9" for both wrong plants on plots 17 and 18 and do not count them with the corresponding plots.
- Spray the whole trial again against mites. Although Actara was used in the past against mites, other products should be tested for better efficacy.
- Redo plot signs, double-check plot sign locations, and adapt according to field plan.



Plot signs unreadable

- Install proper fencing.
- If available, send rainfall data on a regular basis to Quinvita
- Harvest grain on a monthly basis during harvesting period and weigh. If no proper weighing scale can be obtained at the trial site, use the scale from Bas Boen.

Data

Unfortunately, as data collection was inconsistent after May 2011, there was not enough data to conduct a full analysis at the time this report was prepared. However, the development of the trial has showed that the area is a suitable area to grow Jatropha. Visual evaluation also showed that the 2 x 3m spacing is not wide enough for such good development of the plants in this region of the country and that a minimum spacing of 4 x 4m should be recommended for any future planting.