

Analysis of Yield Data, April to August 2009

The data, site description and analysis is done in the spreadsheet [Site_and_Plot_descriptions.xls](#).

Provenance Trial

Data

EPF Bilibiza		April	May	Jun	Jul	Aug
	Harvesting date:	06/05/2009	06/06/2009	05/07/09	06/08/09	06/09/09
	Harvested by:	lancubo	lancubo	lancubo	lancubo	lancubo
Bilibiza	Treatment 1	655	44	29	0	0
Gueatemala	Treatment 2	675	73	38	0	0
Bilibiza	Treatment 3	305	104	52	0	0
Tanzania	Treatment 4	339	54	43	0	0

Muaguide		April	May	Jun	Jul	Aug
	Harvesting date:		13/06/09	13/07/09	13/08/09	13/09/09
	Harvested by:		Augusto	lancubo	lancubo	lancubo
Tanzania	Treatment 1		22	0	0	50
Bilibiza	Treatment 2		30	0	0	22
Guatemala	Treatment 3		0	0	0	5
Tanzania	Treatment 4		0	0	0	25

At Ngeue and Primeiro de Maio no plants produced yielded within the analysed period.

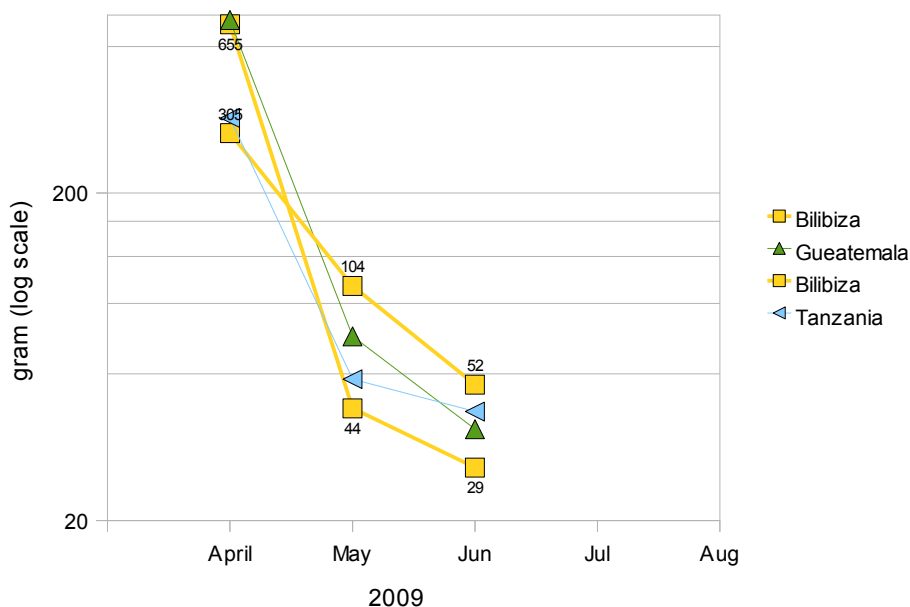
Issues

The harvesting is for logistical reasons done at different times at different locations but still allocated to a specific month. For instance seeds harvested at EPF Bilibiza on 6 June is presented as the yield from May. But so are seeds from Muaguide harvested on 13 June although about half of those seeds are actually produced in June. With the limited data currently available nothing is gained in precision by compensating for different harvest time so the simple direct allocation by month is used.

The trial at EPF Bilibiza has two treatments with seeds from Bilibiza. The two treatments perform very different. The same issue is observed at Muaguide with the Tanzania provenance. It may just reflect the inherent variability in *Jatropha* and the short data series but it is important to check when more data is available and be carefull not to draw firm conclusion based on the currently available data.

Below is the data from the trial at EPF Bilibiza.

Yield per Jatropha plant Provenance trial, EPF Bilibiza



In cases where yield was observed at the beginning of the covered period the first harvest captures fruits produced over an unknown period and is therefore unreliable. In most cases the bias will be positive because plants that have fruits in April/May usually have fruits a few months earlier too.

Time to first harvest

At EPF Bilibiza all provenances had seeds when the measurement started.

At Muaguide the Bilibiza and Tanzania provenances had fruits in May. The Guatemala provenance started bearing fruits in September. The Guatemala provenance therefore appears to fruit later but it appears to be high yielding.

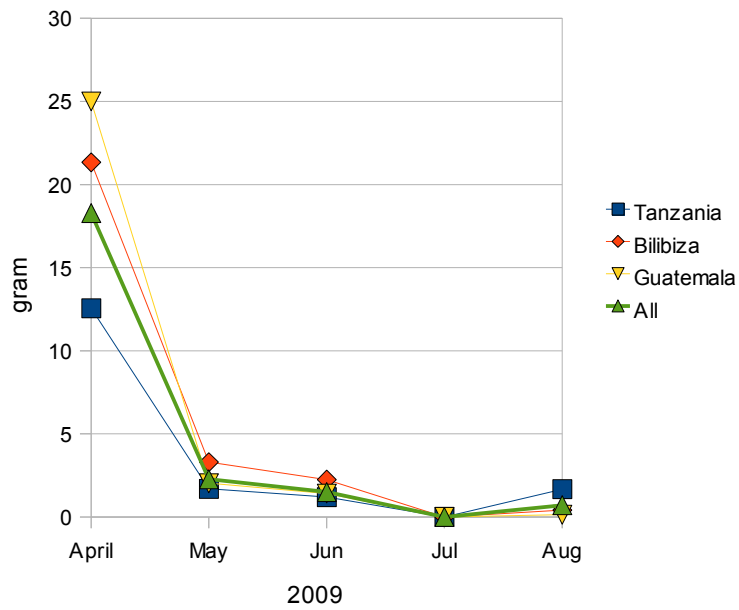
Seasonality

It is too early to conclude on seasonality but interviews have indicated that at some locations there are two fruiting periods: The main one at the end of the rains and the second small one before the start of the rains. The data from Muaguide fit this pattern.

At EPF Bilibiza there are only seeds produced at the beginning of the data collection period and it therefore appears to fit with the one season pattern only. However, observations of plants at EPF Bilibiza that are not included in the trial showed that they produced seeds in small quantities throughout the dry season and in September in increasing number. The difference may be related to water availability. The provenance trial is located on top of a hill with shallow soil and therefore limited water. Trees with fruits are located mid-slope on thicker soils.

Yield per Jatropha plant

All provenance trial established Nov. 2008

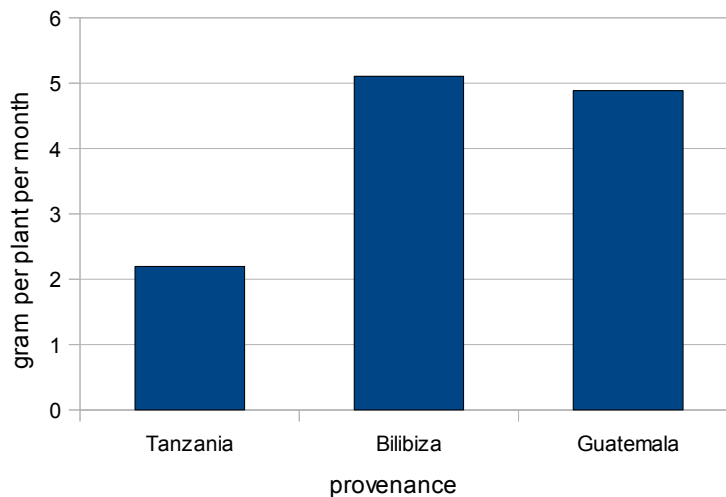


Performance of Provenances

Local seeds perform on average the best closely followed by Guatemala provenance. Notice the issue mentioned above with the

Provenance Trial

Average of all plants (n=144)



Hedgerow Improvement Trial

Data

EPF Bilibiza block 1

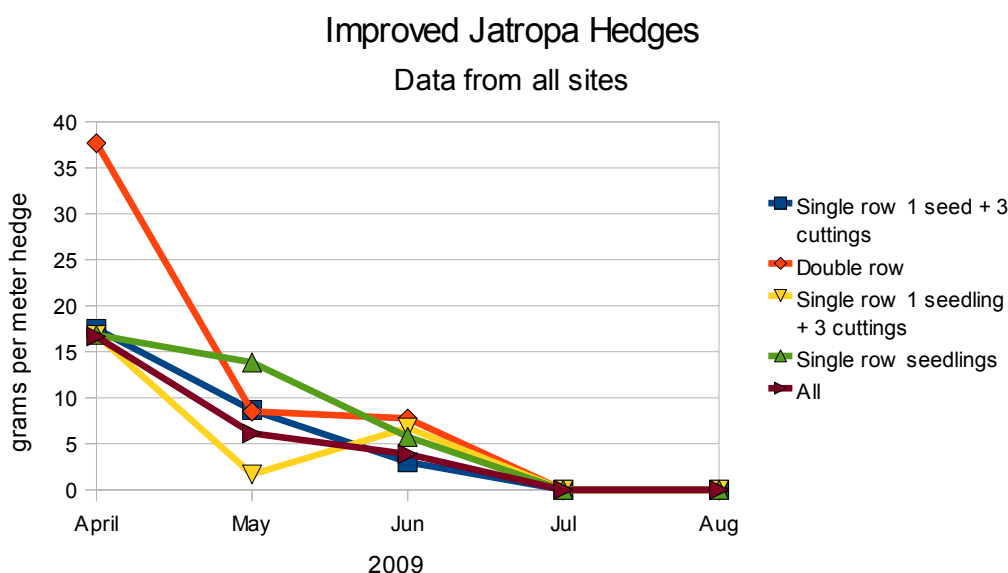
	April	May	Jun	Jul	Aug
Harvesting date:	06/05/2009	06/06/09	06/07/09	06/08/09	06/09/09
Harvested by:	Augusto	Augusto	lancubo	lancubo	lancubo
Single row 1 seed + 3 cuttings	Treatment 1	0	41	0	0
Double row	Treatment 2	0	46	19	0
Single row 1 seedling + 3 cuttings	Treatment 3	75	4	0	0
Single row seedlings	Treatment 4	68	77	7	0

EPF Bilibiza block 2

	April	May	Jun	Jul	Aug
Harvesting date:	06/05/2009	06/06/09	06/07/09	06/08/09	06/09/09
Harvested by:	Augusto	Augusto	lancubo	Augusto	lancubo
Double row	Treatment 2	226	5	12	0
Single row seedlings	Treatment 4	33	6	16	0
Single row 1 seed + 3 cuttings	Treatment 1	105	11	12	0
Single row 1 seedling + 3 cuttings	Treatment 3	26	6	27	0

The hedges at Ngeue and Primeiro de Maio did not yield any seeds in the period covered.

Comparison of Hedge Types



Overall the Double row performs best which is expected since it occupies more land than the other hedges and has more plants. However, the relative performance of the different hedge types is not the same in the two trial that have yielded seeds so far. Since they are located close to each other agro-climatic conditions cannot account for this difference and the conclusion is therefore that the current dataset is so small that any real difference drowns in noise.

Below is the performance of the different hedge types relative to the average performance of the individual trial.

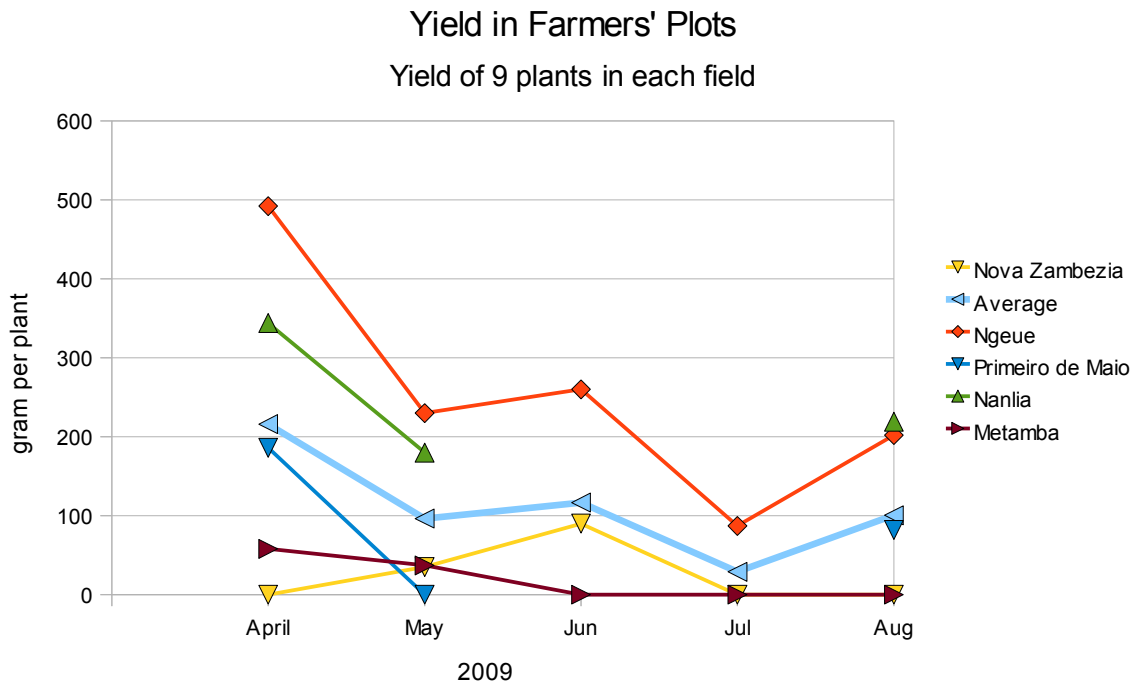
Treatment	All sites	1 EPF Bilibiza	2 EPF Bilib
Single row 1 seed + 3 cuttings	-28%	-51%	52%
Double row	31%	-23%	188%
Single row 1 seedling + 3 cuttings	-42%	-6%	-30%
Single row seedlings	-12%	80%	-35%

Yield in Farmers Plots

Data

Location	Average gr. harvest pr. plant per month					
	April	May	Jun	Jul	Aug	
Nova Zambezia		0	4	10	0	0
Ngeue		55	26	29	10	22
Primeiro de Maio		21	0	0	0	9
Nanlia		38	20	0	0	24
Metamba		6	4	0	0	0
Average		24	11	13	3	11

Seasonality



The overall seasonality discussed earlier is hinted here too, i.e. a major harvest at the end of the rains and in some areas a minor harvest before the rains.

However three of the sites shows a peak in June too. It also appeared in some of the data series from improved hedges described earlier in this document. As more data is collected it will be interested to see if this pattern is normal or caused by some e.g. unusual weather conditions this year.

Farmers' Hedges

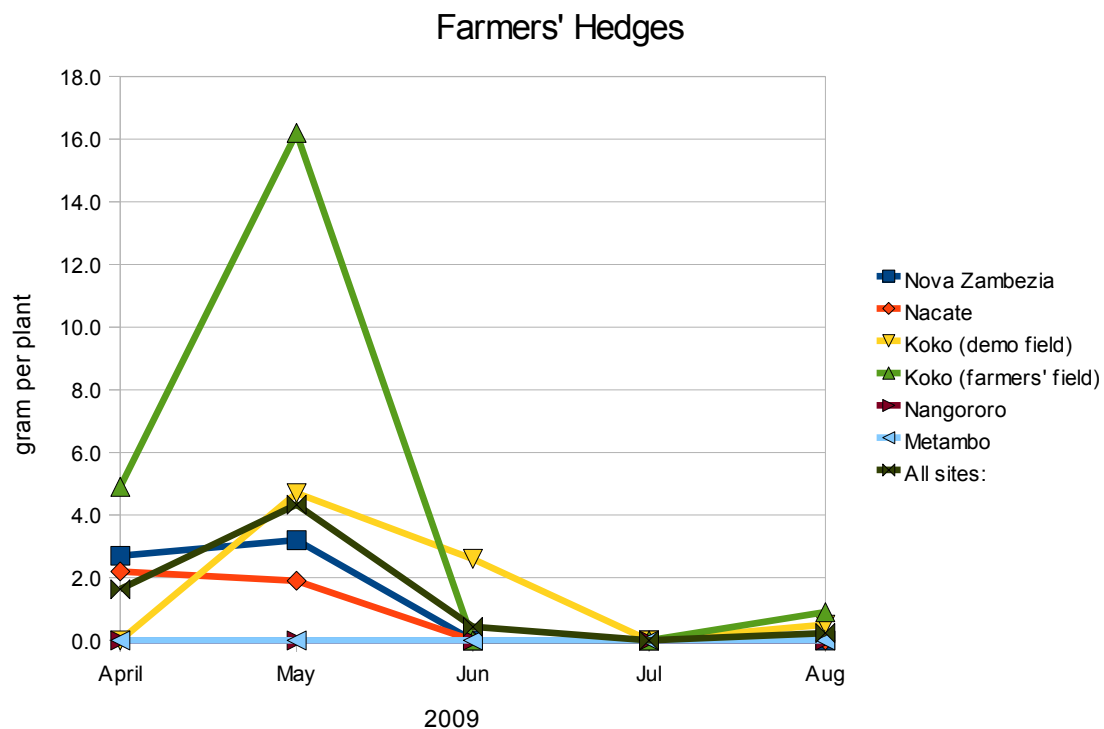
Date

Location	Yield (gr) per plant					
	April	May	Jun	Jul	Aug	
Nova Zambezia		2.7	3.2	0.0	0.0	0.0
Nacate		2.2	1.9	0.0	0.0	0.0
Koko (demo field)		0.0	4.7	2.6	0.0	0.5
Koko (farmers' field)		4.9	16.2	0.0	0.0	0.9
Nangororo		0.0	0.0	0.0	0.0	0.0
Metambo		0.0	0.0	0.0	0.0	0.0
All sites:		1.6	4.3	0.4	0.0	0.2

Location	Yield (gr) per meter hedge					
	April	May	Jun	Jul	Aug	
Nova Zambezia		4.2	4.9	0.0	0.0	0.0
Nacate		1.6	1.4	0.0	0.0	0.0
Koko (demo field)		0.0	5.2	2.9	0.0	0.5
Koko (farmers' field)		13.4	44.4	0.0	0.0	2.5
Nangororo		0.0	0.0	0.0	0.0	0.0
Metambo		0.0	0.0	0.0	0.0	0.0
All sites:		2.1	5.5	0.5	0.0	0.3

There is one measurement that appears unrealistically high, namely the June harvest from Koko (farmers' field). As more data is collected it will become apparent if this is an outlier that should be removed. For this analysis the data point is kept.

Seasonality



The dual season pattern appears again in this data set.

Farmers' Hedges

Yield per meter hedge

