Testing Agricultural Technology in Northern Ghana

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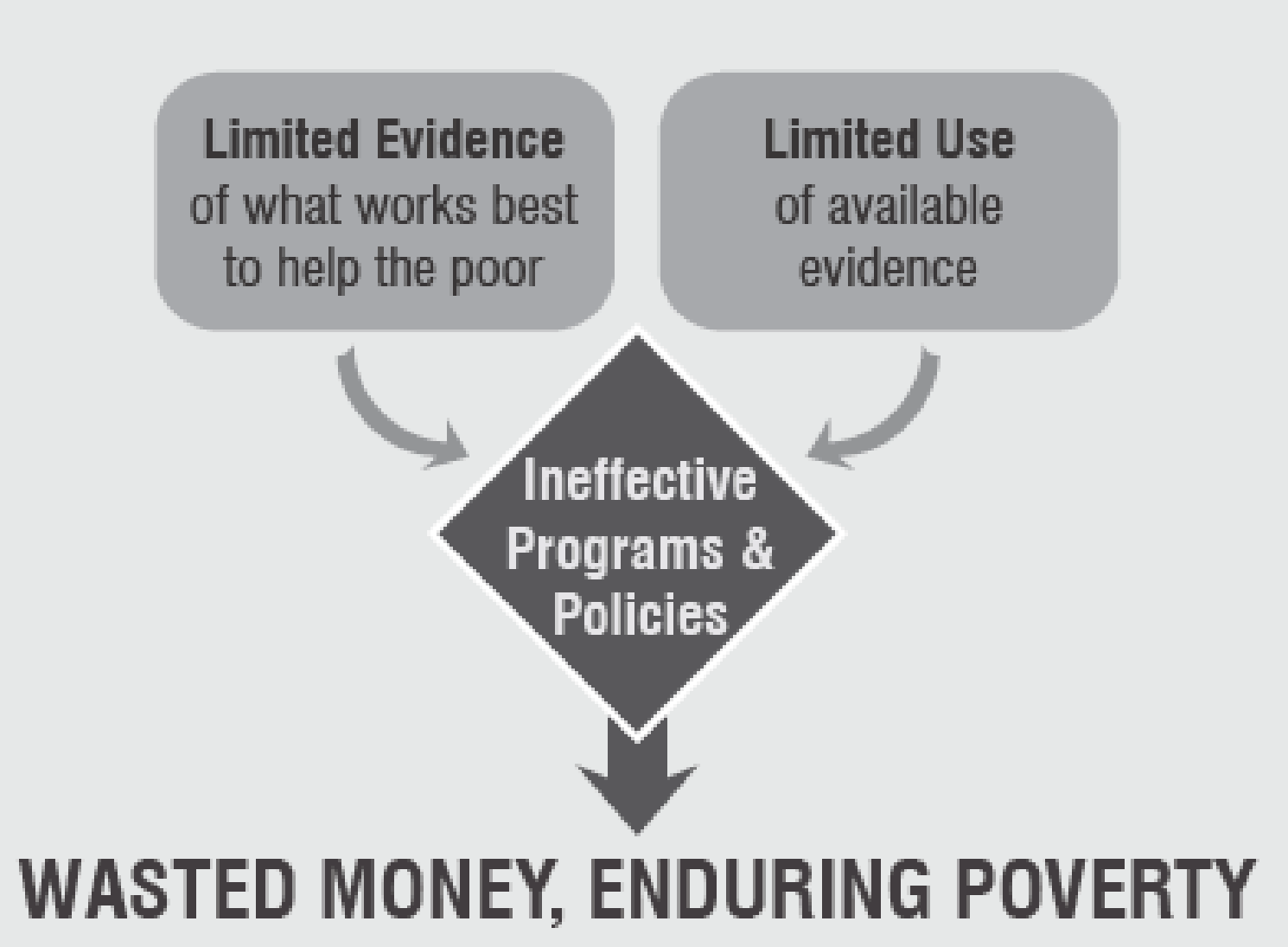
Who are we?

Innovation for Poverty Action

ipa
INNOVATIONS FOR
POVERTY ACTION

Discover and promote effective solutions
to global poverty problems

The problem


Limited Evidence
of what works best
to help the poor
Limited Use
of available
evidence
Ineffective
Programs &
Policies
WASTED MONEY, ENDURING POVERTY

The solution

IPA Ghana

Three projects for agricultural development:

- Disseminating Innovative Resources and Technologies for Smallholders (DIRTS)
- Testing Agricultural Technology (TAT)
- Conservation Agriculture Evaluation (CAGE)

Testing Agricultural Technologies in Northern Ghana (TAT)

RESEARCHERS:

Christopher Udry (North Western University)

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Shashidhara Kolavalli (IFPRI)

STUDY AREA:

3 northern regions of Ghana:

Upper East

Upper West

Northern

PARTNERS:

Savanna Agricultural Research Institute (SARI)

International Food Policy Research Institute (IFPRI)

TIME LINE:

Phase I: 2015

Phase II: 2016

TAT – Introduction

Sub-Saharan Africa in the last 40 yrs (Akram-Lodhi, 2008) :

- Growth of the Agriculture sector: 20%
- Increase in the amount of land cultivated: 80%
- Increase in productivity: 20%

Low adoption of improved inputs:

In Northern Ghana only 20% farmers adopt improved seed varieties

TAT – Needs assessment

- Inadequate availability
- Heterogeneity in the localized returns to technologies

1) **Improving information about the performance of new seeds in a variety of contexts in Northern Ghana**
2) **Studying the means by which farmers learn about and test new technologies**

TAT – Phase I

We tested the performance of 5 seed varieties-

- Pioneer
- PAN53
- Mamaba
- Sanzal Sima
- Obaatanpa

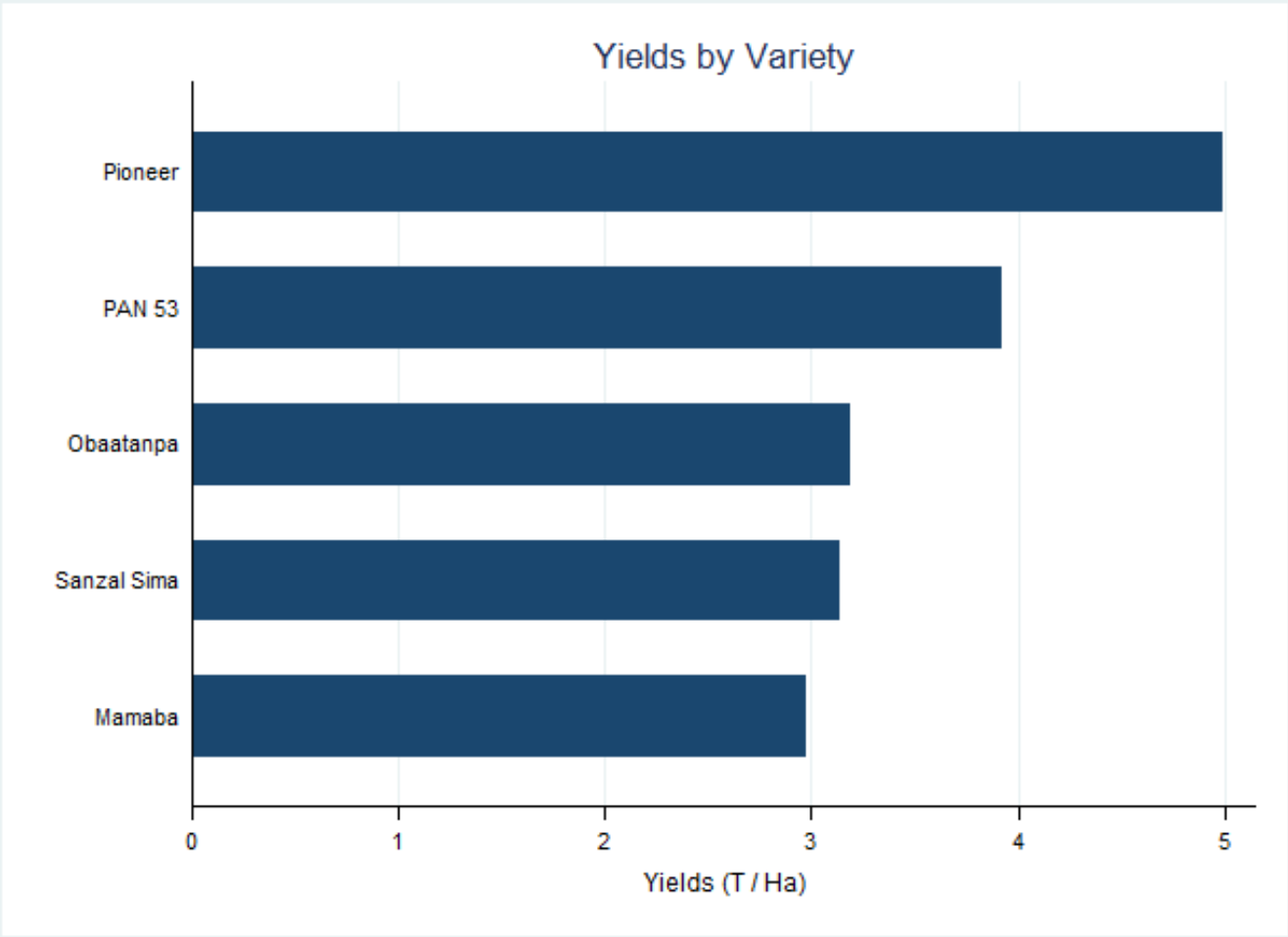
TAT – Phase I

In 10 districts in the 3 northern regions of Ghana.

Two types of trial plots per district:

- 1 Mother trial
- 4 Baby trial

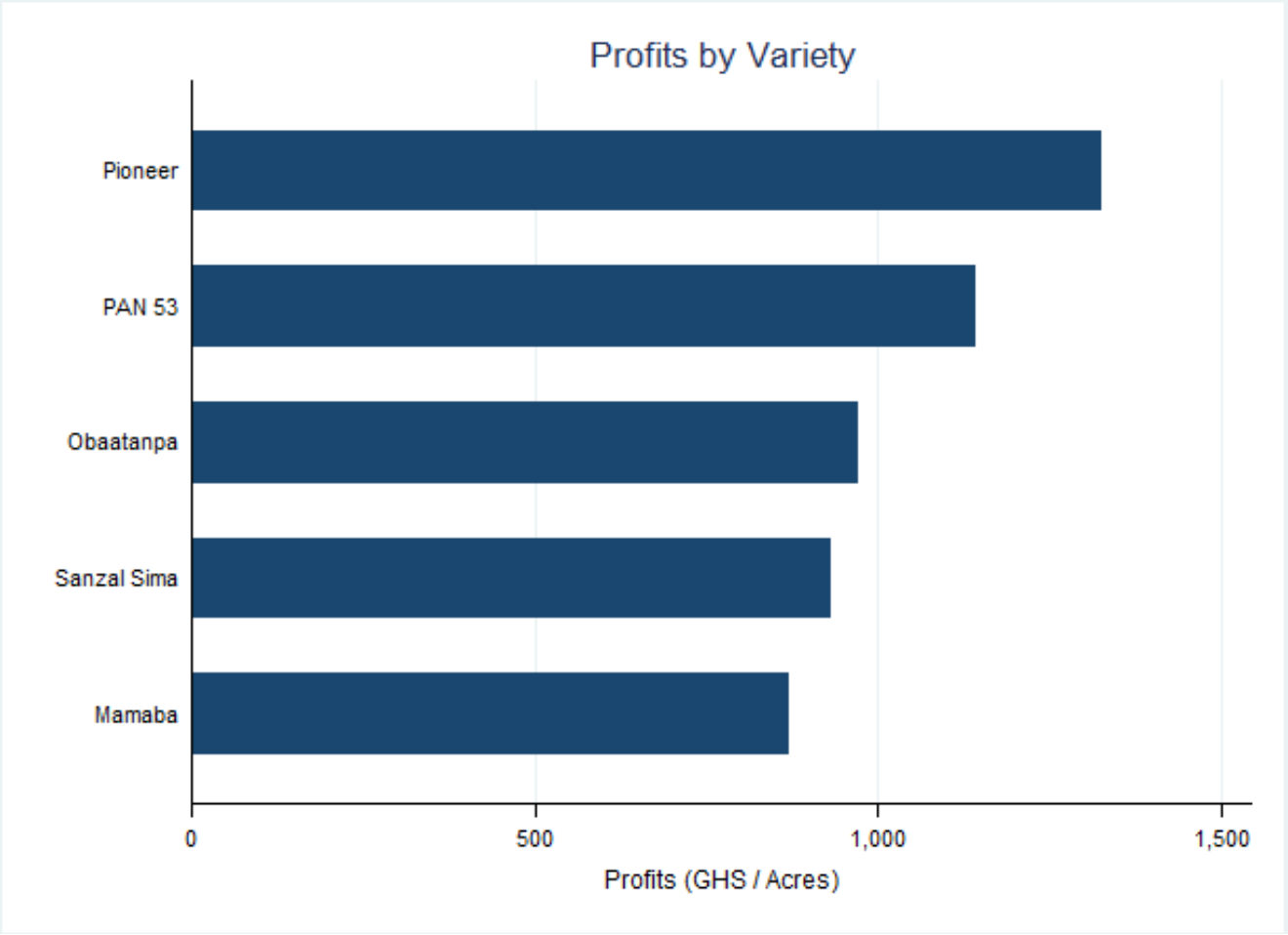
TAT – Phase I


Yields by Variety
Pioneer
PAN 53
Obaatanpa
Sanzal Sima
Mamaba
0
1
2
3
4
5
Yields (T / Ha)

TAT – Phase I

	N	Mean Yield (t/ha)	Standard deviation	Within-district correlation
Pioneer	57	4.99	1.16	0.20
PAN 53	61	3.97	1.43	0.48
Obaatanpa	78	3.19	1.27	0.21
Sanzal Sima	60	3.13	1.34	0.50
Mamaba	58	2.99	1.49	0.73

TAT – Phase I


Profits by Variety
Pioneer
PAN 53
Obaatanpa
Sanzal Sima
Mamaba
0
500
1,000
1,500
Profits (GHS / Acres)

TAT – Phase II

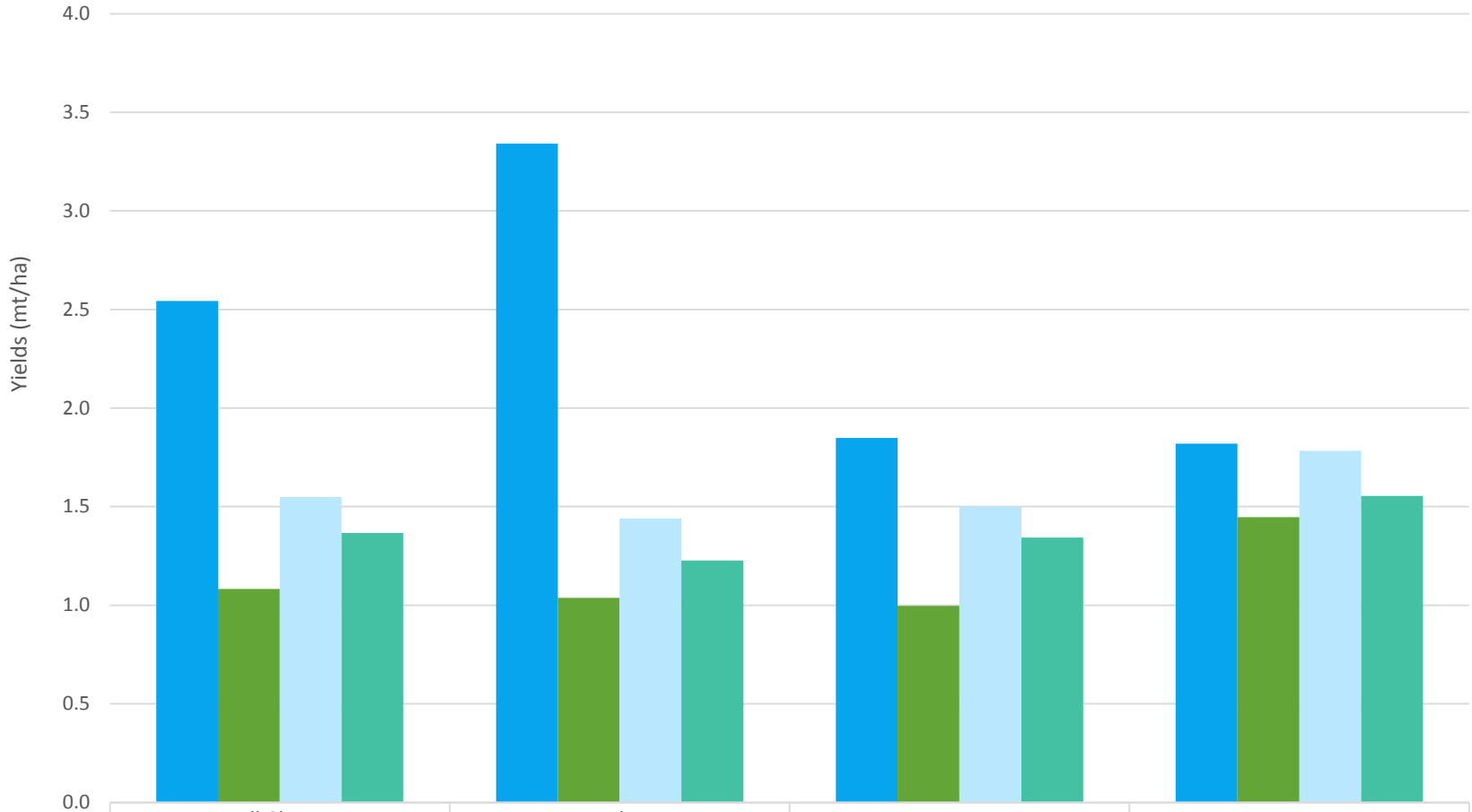
- Community sensitization in all communities that took part to the 2015 trials;
- Interested farmers were given the opportunity to buy; Pioneer subsidized starter pack;
- Delivery of the starter pack;
- Data collection: 302 farmers interviewed

TAT – Phase II

Pioneer yields from farmers' plots

	Freq.	Yield (t/ha) - farmer	Yield (t/ha) - trial
Bawku Municipal	28	2.11	4.91
Bolga Municipal	28	2.13	5.12
Kassena-Nankana	33	1.83	3.85
Nadowli-Kaleo	27	1.70	4.69
Sagnerigu	52	1.80	-
Savelugu-Nanton	31	1.50	-
Sissala East	29	1.68	6.09
Tolon	52	1.37	5.11
Wa Municipal	53	1.31	6.07
West Gonja	62	1.38	4.49
West Mamprusi	28	2.45	4.68
Yendi Municipal	18	1.16	4.72
Total	441	1.66	5.01

TAT – Phase II



	All Ghana	Northern	Upper East	Upper West
Pioneer	2.5	3.3	1.8	1.8
Obaatanpa	1.1	1.0	1.0	1.4
Other Hybrids	1.5	1.4	1.5	1.8
Other OPV	1.4	1.2	1.3	1.6

Other hybrids include Mamaba, Pan 53 and, non-IPA sourced Pioneer

TAT – Phase II

The ideal seeding rate for Pioneer should be 10 kg of seeds per 1 acre of land cultivated

	Freq	Seeding rate
Bawku Municipal	28	3.88
Bolga Municipal	28	2.58
Kassena-Nankana	33	2.96
Nadowli-Kaleo	27	2.22
Sagnerigu	52	3.23
Savelugu-Nanton	31	3.45
Sissala East	29	2.94
Tolon	52	4.15
Wa Municipal	53	3.67
West Gonja	62	4.04
West Mamprusi	28	2.25
Yendi Municipal	18	3.07
Total	441	3.34

TAT – Phase II

Are farmers over-reporting land?

	Freq	Mean	Std. Dev.
Land cultivated - reported	6,130	2.22	1.64
Land cultivated - measured	6,130	2.25	1.69
Difference	6,130	-0.02**	0.77

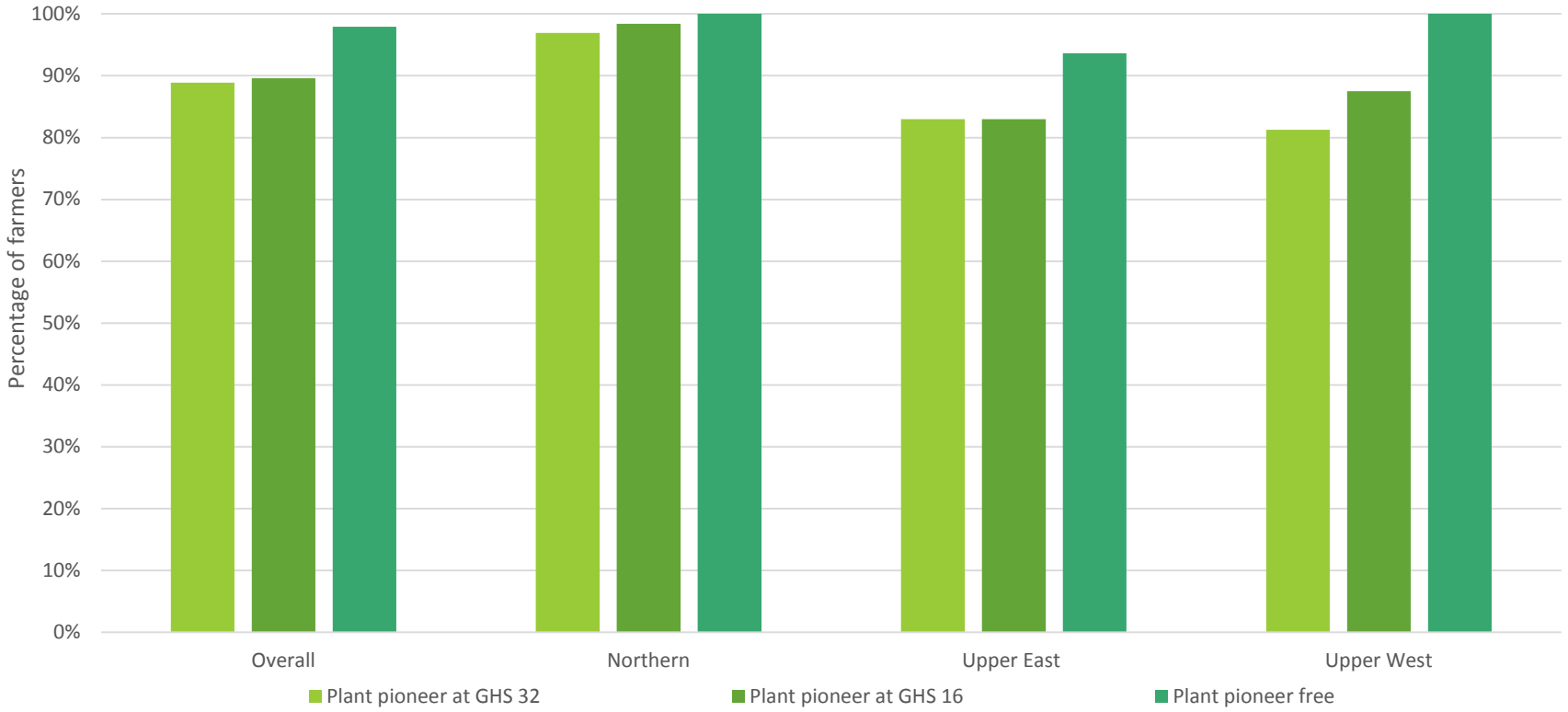
Source: DIRTS – Plot Measurement Survey, preliminary results

TAT – Conclusions

- Pioneer and PAN53 are high-yield profitable technologies;
- Neither of the other varieties tested, Mamaba or Sanzal Sima, performed consistently higher than the farmers' variety, Obaatanpa;
- Due to inappropriate seeding rate, the average yield that farmers are obtaining from Pioneer is lower than that from demo trials;
- Nonetheless, Pioneer still outperformed all other varieties, especially in the Northern region, where Pioneer yields were more than double the yields of other varieties.

TAT – Conclusions

- Farmers expressed significant interest in purchasing Pioneer next season;
- This suggests that Pioneer seeds should be made available to farmers in the North.



Questions? comms@poverty-action.org