

Nile Breweries

Local Sourcing Impact Assessment –

IITA

Summary of Findings

25 - 26 May 2016



Summary: Positive Impacts



- Story of socio-economic success
- Creation of a commercial market for sorghum
- Popularity and growth of Eagle lager
- Higher yields and productivity for NBL farmers compared to control group
- Significantly higher proportion of crop sold by farmers in NBL supply chain
- Improved incomes, quality of life and access to social / health services
- Total crop income (\$710) & household income (\$1228) of sorghum households is more than three times and two times compared to control
- 89% of NBL farmers said their quality of life has improved since joining the NBL initiative. 70% of sorghum and 62% of barley farmers attributed improvement in wellbeing to revenues from NBL
- Key role in improving food security
- Inclusion of women in commercial value chain

Summary: Opportunities



- Addressing yield gaps (34% for sorghum and 40% for barley) and competition from other crops
- Improving availability of extension service – via partnerships
- Strengthening quality management and controls
- Improving incomes and enhancing food security
- Increasing women’s participation and promoting joint decision-making – which drives productivity
- Enabling access to finance (e.g. savings, insurance, electronic payment systems) – via partnerships



Objectives of research

- Evaluate impacts of sorghum and barley supply chains
- Identify opportunities for strengthening impact and sustainability – productivity, access to services, trade relationships, environmental sustainability, livelihood & wellbeing, gender

Sample

- **406** NBL sorghum farmers from 6 Northern districts and 4 Eastern districts
- **200** sorghum control farmers from Tororo district
- **199** NBL barley farmers from 3 Eastern districts
- No control group for barley as production is localised and large proportion supplied to NBL
- 19 farmer groups linked to sorghum production
- 5 associations / aggregators, 30 agents and some extension officers

Farmer Characteristics: Sorghum



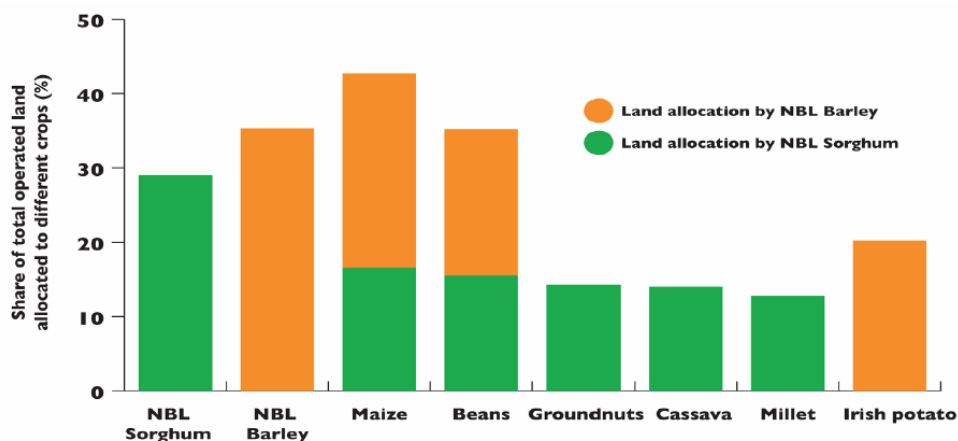
Farmer Characteristics	Sorghum NBL farmers (N=406)	Sorghum Control (N=200)	Barley NBL farmers (N=199)
Male headed households	90.9%	87.5%	96.5%
Age of household head (year)	41.8	46.8	40.6
Years of education of household head	7.4	6.1	8.6
Household size	7.1	5.6	7.6
Dependence ratio	0.54	0.5	0.57
General farming experience (years)	18.5	22.7	17.2
Sorghum/barley farming experience (years)	14.6	23.2	5.8
NBL sorghum/barley farming experience (years)	5.7	-	3.9
Member of farmer association (FA)	75.6%	8.5%	46.2%
Member of FA related to sorghum/barley production	68.5%	-	22.6%
Total farm size operated (acres)	8.2	4.2	5.3
Share of farm size allocated to NBL sorghum/barley	29.0%	-	35.3%
<i>Average number of livestock owned</i>			
Cows	4.3	1.8	3.3
Goats/sheep	4.9	2.2	3.8
Pigs	0.9	0.7	0.3
Poultry (chicken, turkeys, ducks)	13.1	9.1	7.9

Importance of NBL crops



- NBL crops are important among participating households
- Annual average **crop income (\$710)** and **household income (\$1,228)** obtained by NBL sorghum farmers is **more than three times and two times respectively**, compared to control group farmers

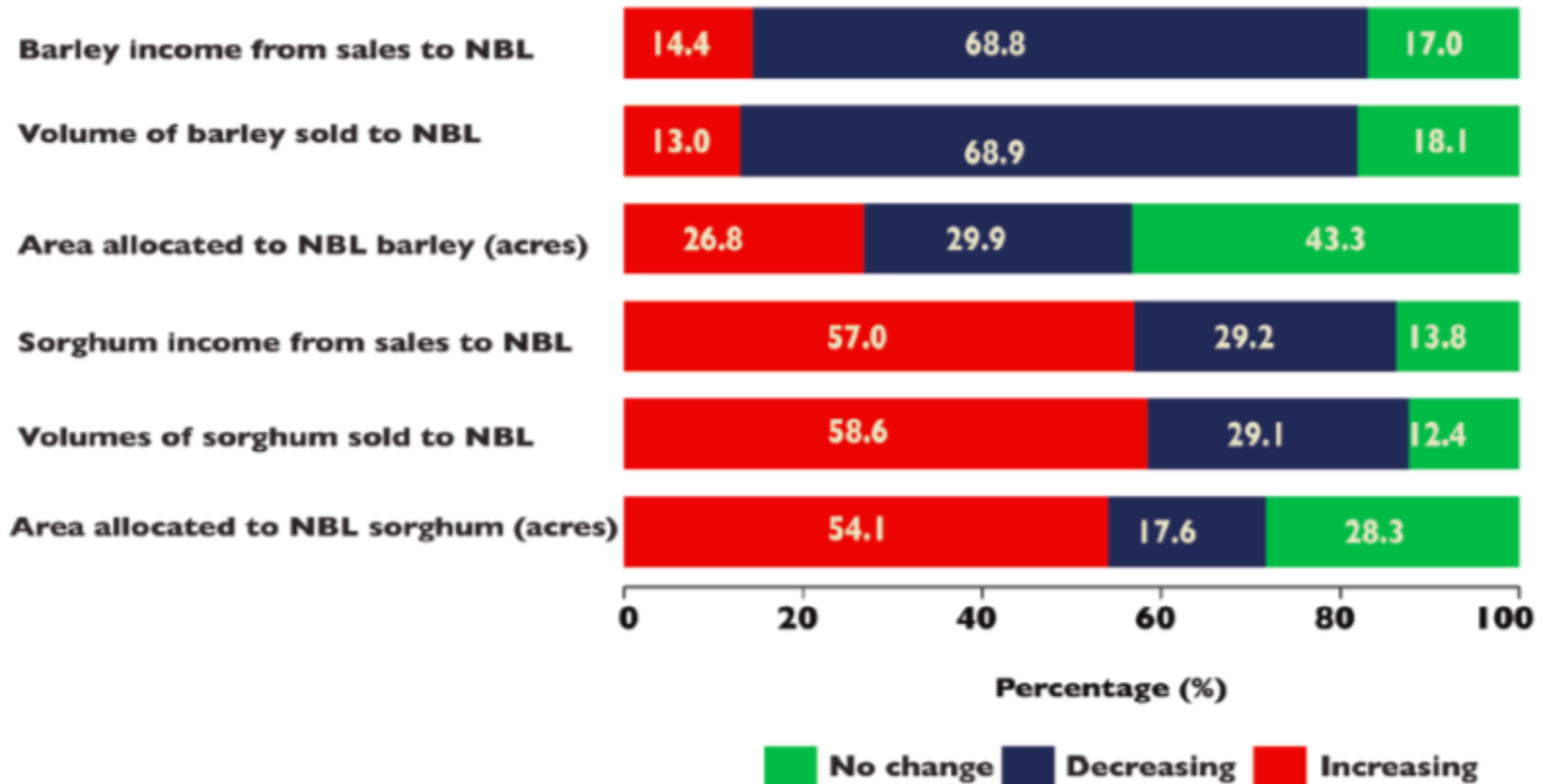
	Sorghum	Barley
% of land allocated	29%	35%
% contribution to annual value of crop production	27%	30%
% contribution to total net cash crop income	40%	30%
% contribution to total annual household income	31%	12%



Importance of NBL crops



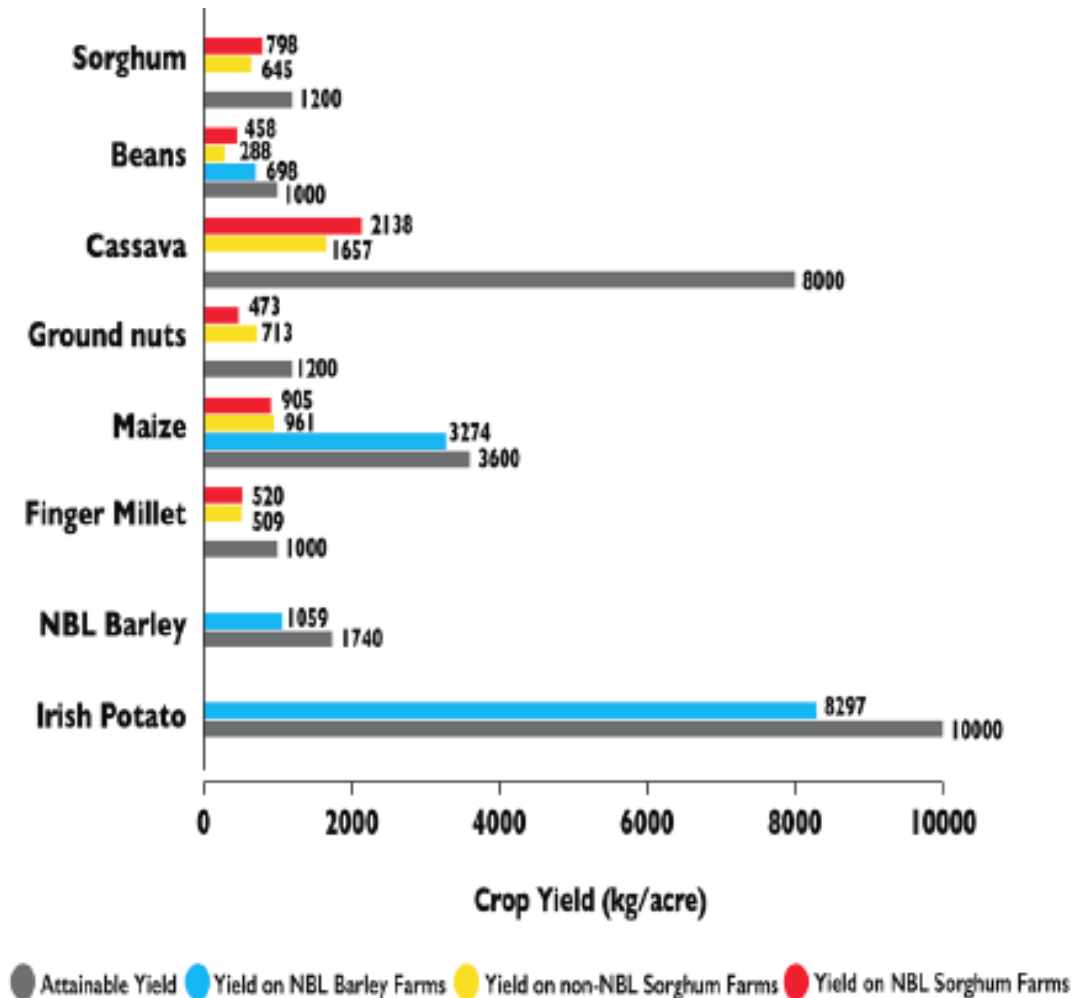
Positive trends in sorghum with over 50% of farmers increasing land allocation, volumes and income. 68% of barley farmers reported decline in volumes & income.



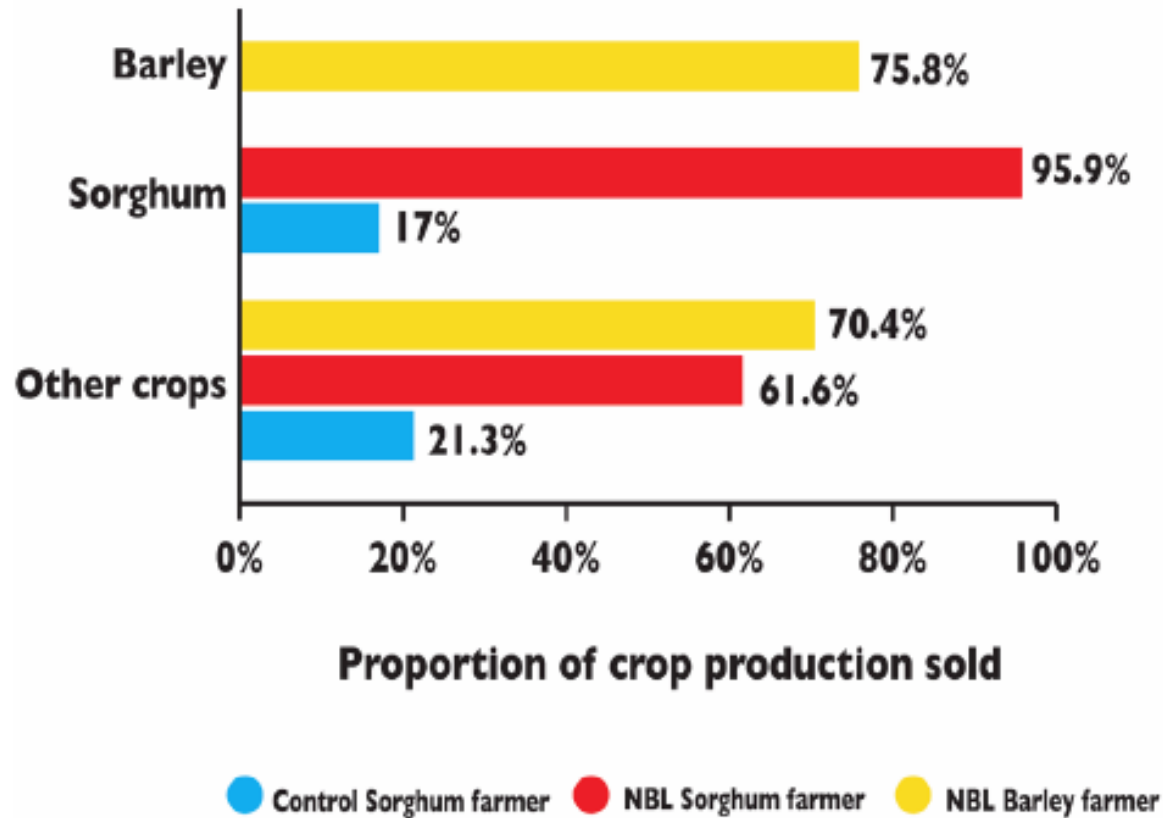
Yield Gaps



Both sorghum and barley face gaps compared to attainable yields (34% and 40% respectively)



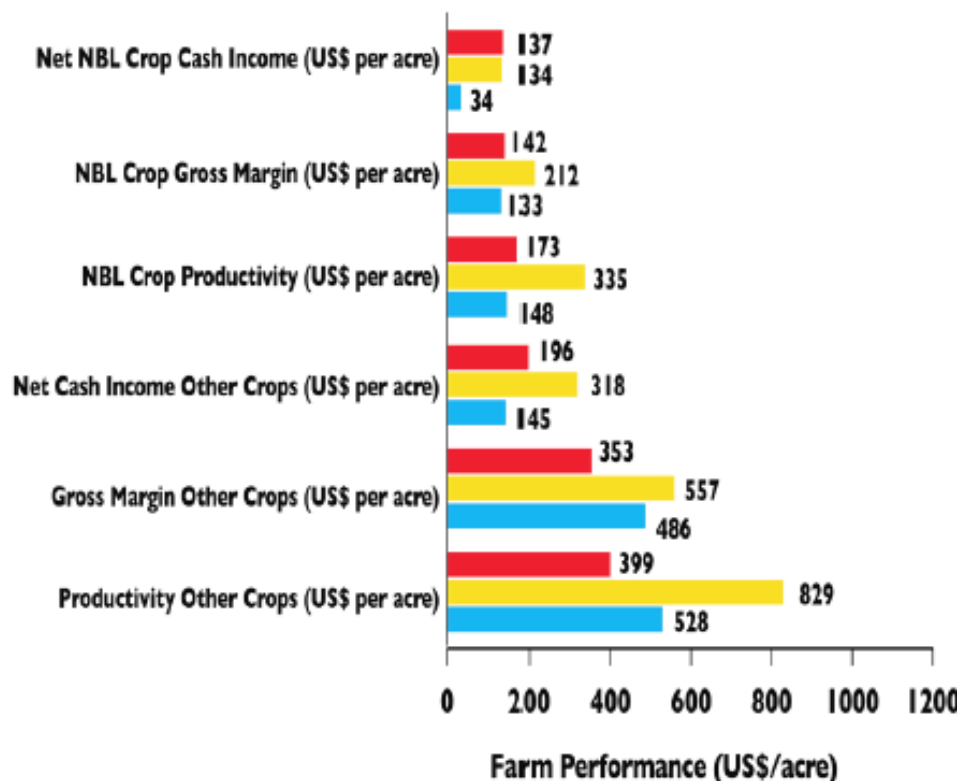
NBL sorghum farmers sell a significantly higher proportion of crops than control group – including Epuripuri as well as other crops grown



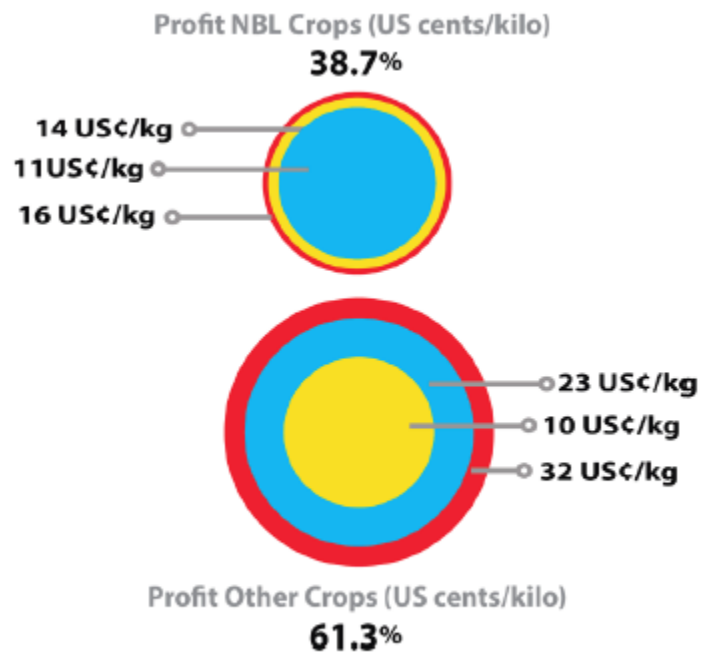
Farm Productivity

NBL sorghum farmers' income and margins are higher than the control group.

Incomes and margins from NBL sorghum and barley are lower in comparison to the average of other crops grown by these farmers.



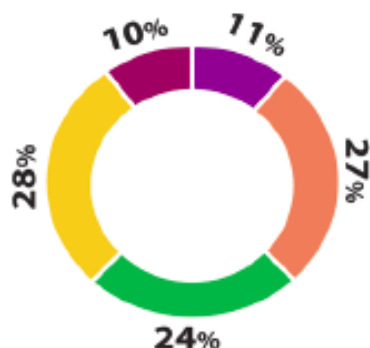
Control Farmer (Blue) NBL Barley Farmer (Yellow) NBL Sorghum Farmer (Red)



NBL Barley farmer (Yellow) NBL Sorghum farmer (Red) Control farmer (Blue)

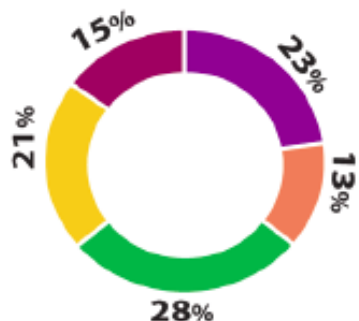
Access to Extension

Majority of farmers are aware of extension programme. Limited awareness and visibility of demonstration plots.



Frequency of NBL extension agents' visits to sorghum farmers

● Once a year ● > Thrice a season ● Twice a season ● Once a season ● Never



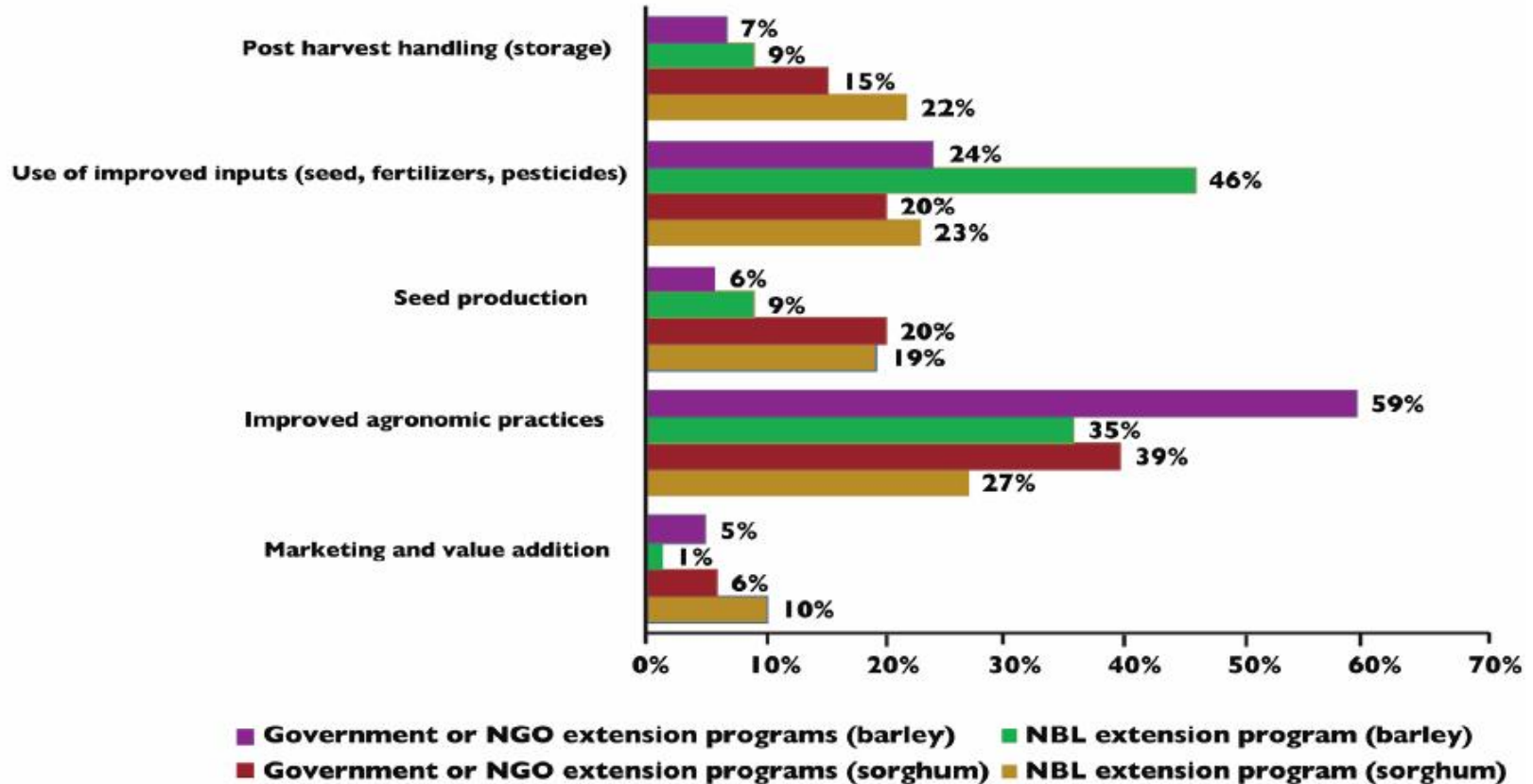
Frequency of NBL extension agents' visits to barley farmers

- Majority of sorghum and barley farmers (66% and 75%) said they are aware of extension service
- Sorghum farmers – 79% said they have been visited at least once in a cropping season, with 28% being visited three times in a season – this includes visits by NBL extension officers and agents / input providers
- Barley farmers – 62% have been visited at least once in a cropping season, with 21% being visited three times in a season
- However some farmers (sorghum – 11%; barley – 23%) have never been visited
- Only small proportion of farmers (28-40%) are aware of demonstration plots.
- Due to the distance (1.3 – 2.6km) farmers rarely visit demonstration plots

Access to Extension



Areas of extension / training focus on improving agronomic practices and use of inputs.
Less focus on marketing / value addition and post harvest handling.



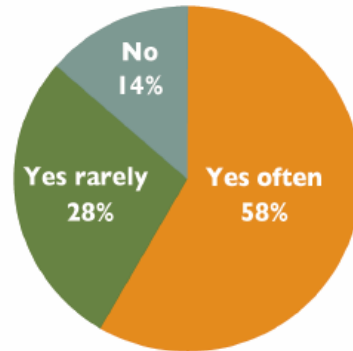
Access to Extension



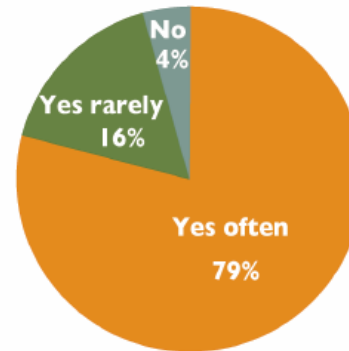
Majority of farmers report applying skills learned from extension agents.

Difficult to measure actual adoption / application.

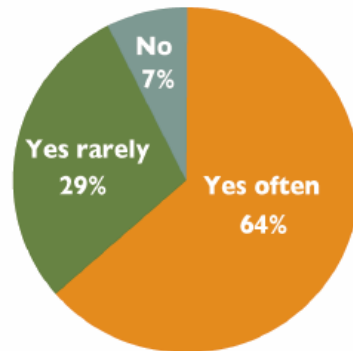
NBL extension program
(Sorghum farmers)



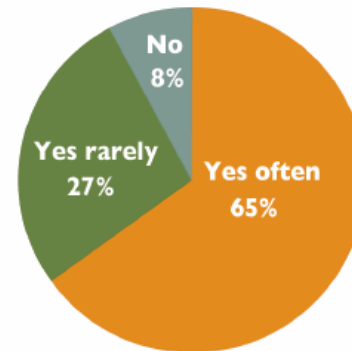
NBL extension program
(Barley farmers)



Gov't/NGO extension programs
(Sorghum farmers)



Gov't/NGO extension programs
(Barley farmers)



Adoption of agricultural practices



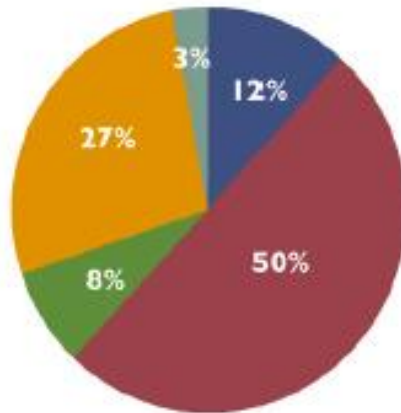
Adoption of practices is higher in barley-producing areas than sorghum areas.

Crop	Sorghum			Barley
	Practices	NBL plots	Non-NBL plots	
Crop management practices	12.0%	17.0%	-3.484**	10.8%
Soil and water conservation practices	5.8%	4.3%	2.205**	68.5%
Soil fertility enhancing practices	24.5%	17.6%	5.088***	74.4%
Use of pesticides	8.0%	4.3%	3.56***	75.5%
Conservation agriculture practices	87.5%	53.6%	13.754***	79.0%

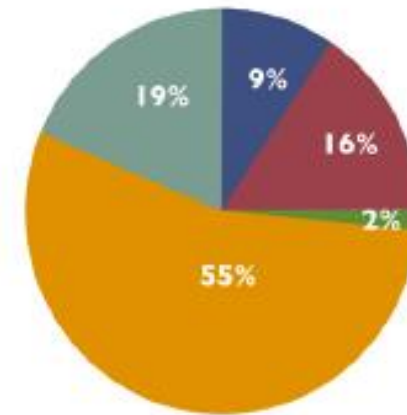
Access to Inputs

Sorghum farmers are generally satisfied with provision of inputs; although barley farmers reported significant challenges

Level of satisfaction with access to inputs
by sorghum farmers



Level of satisfaction with access to inputs
by barley farmers

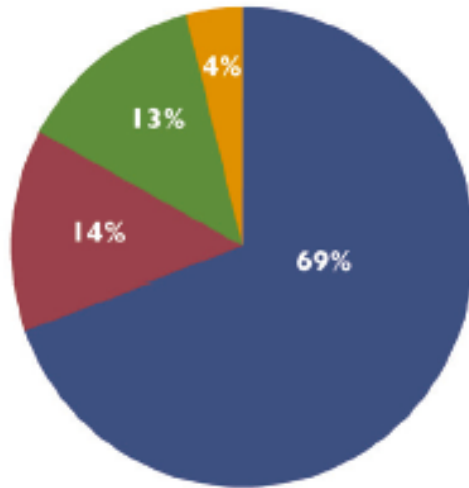


● Very satisfied ● Satisfied ● Indifferent ● Not satisfied ● Very unsatisfied

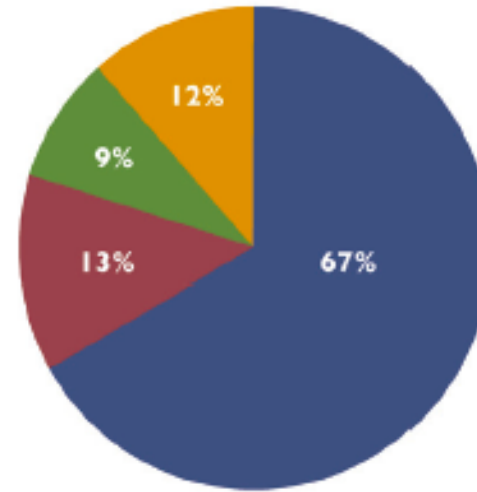
- Sorghum – More than 60% of farmers are satisfied with access to inputs because they are easily accessible
- Barley – More than 70% of farmers said they are not satisfied because inputs are very expensive, not supplied in time and sometimes of poor quality

Access to Financial Services

Nearly 70% of NBL sorghum and barley farmers do not have access to financial products



Access to credit in the past 12 months – NBL Sorghum



Access to credit in the past 12 months – NBL Barley

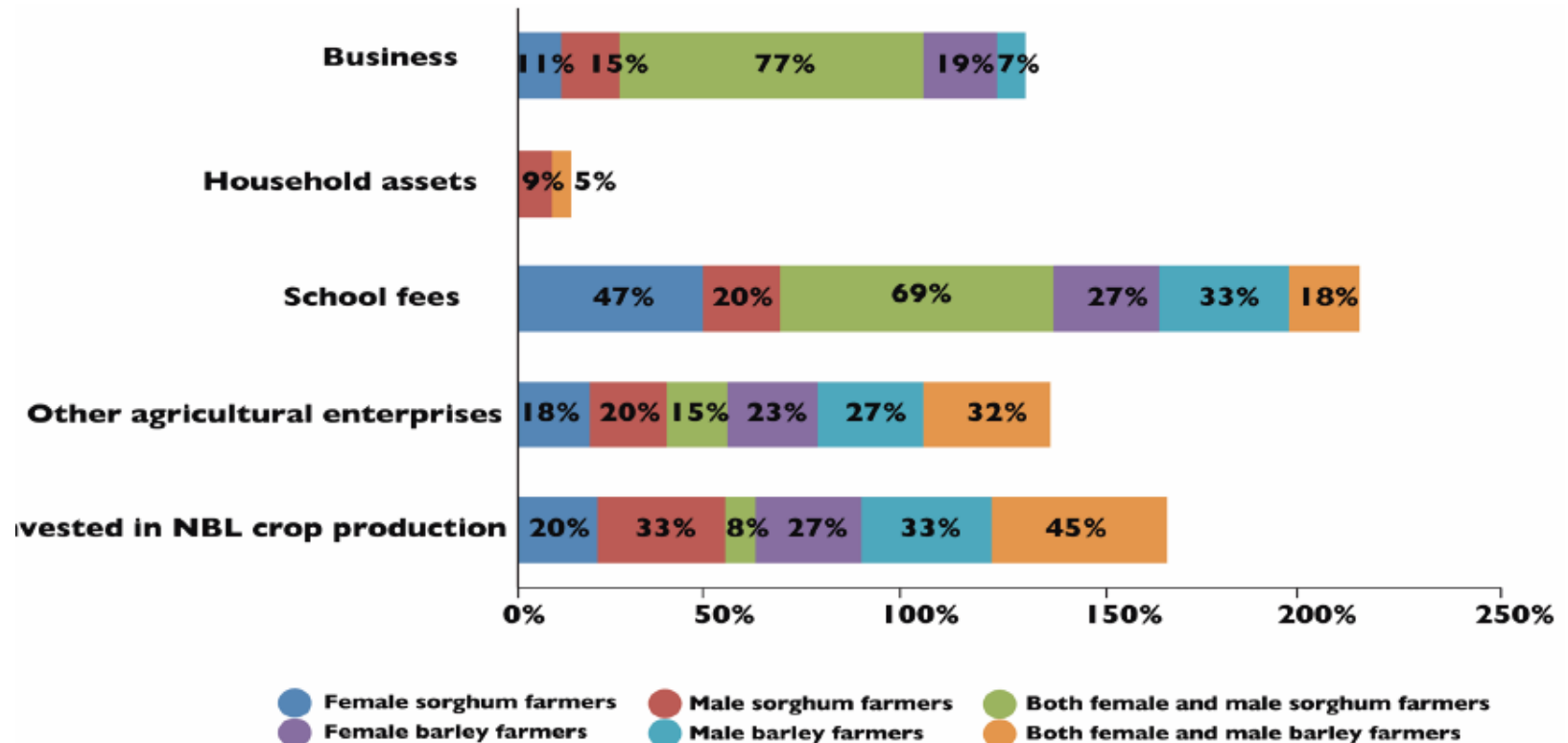
No access **Female accessed** **Male accessed** **Both accessed**

- Nearly one third of NBL farmers accessed some form of credit in the last 12 months – mostly through informal groups or shop-owners or input-traders
- No mention of access to other financial products and services

Access to Financial Services



Credit received is mainly used for school fees, investment in business or investment in NBL production



Access to Social Services

NBL helps provide a wide range of social services – including scholarships, construction of boreholes and HIV counselling, testing and treatment.

10% - 17% of farmers reported awareness of these services.

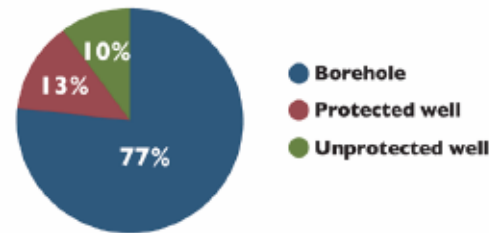
Aware of NBL social services in sorghum growing communities



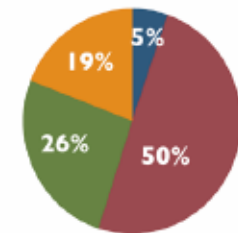
Aware of NBL social services in barley growing communities



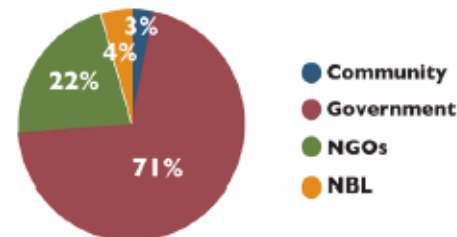
Source of drinking water in sorghum growing communities (N= 406)



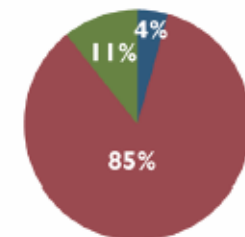
Source of drinking water in barley growing communities (N= 189)



Funding body of the drinking water source in sorghum growing communities



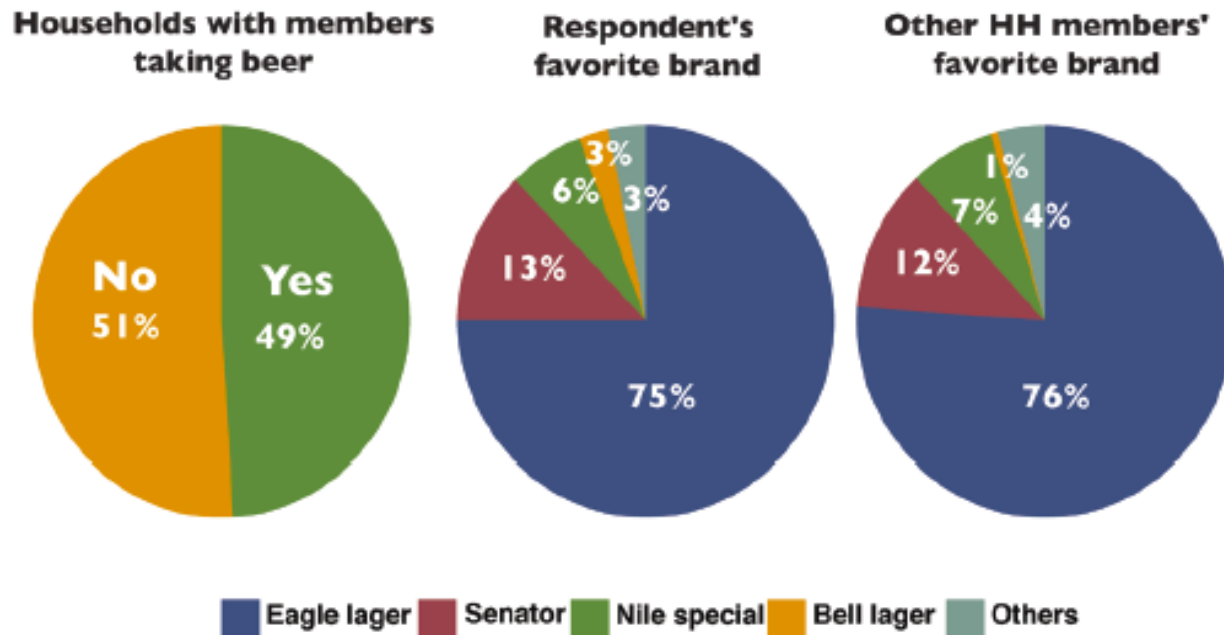
Funding body of boreholes and protected wells in barley growing communities



Brand loyalty among farmers



Eagle remains the top choice among farmers and household members

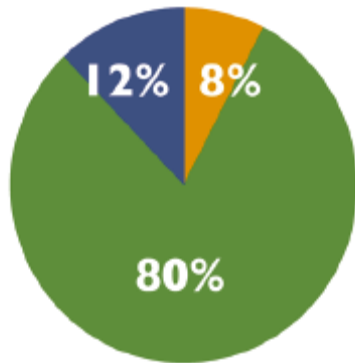


- 72% of farmers are aware of Eagle lager as the product made from NBL sorghum
- Other farmers believe NBL sorghum is used to make other products – Senator (7%), Nile Special (9%), Bell Lager (4%), Others (8%)
- Among beer drinking household members, Eagle lager is the top choice followed by Senator and Nile Special

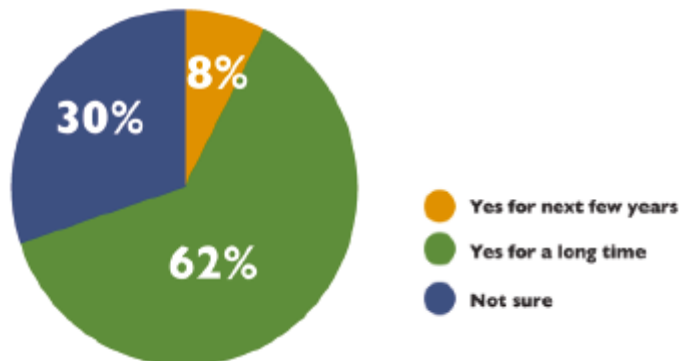
Relationships & Loyalty

80% of sorghum farmers want to continue working with NBL for a long time. But a third of barley farmers are not sure.

Loyalty to NBL as primary buyer of sorghum



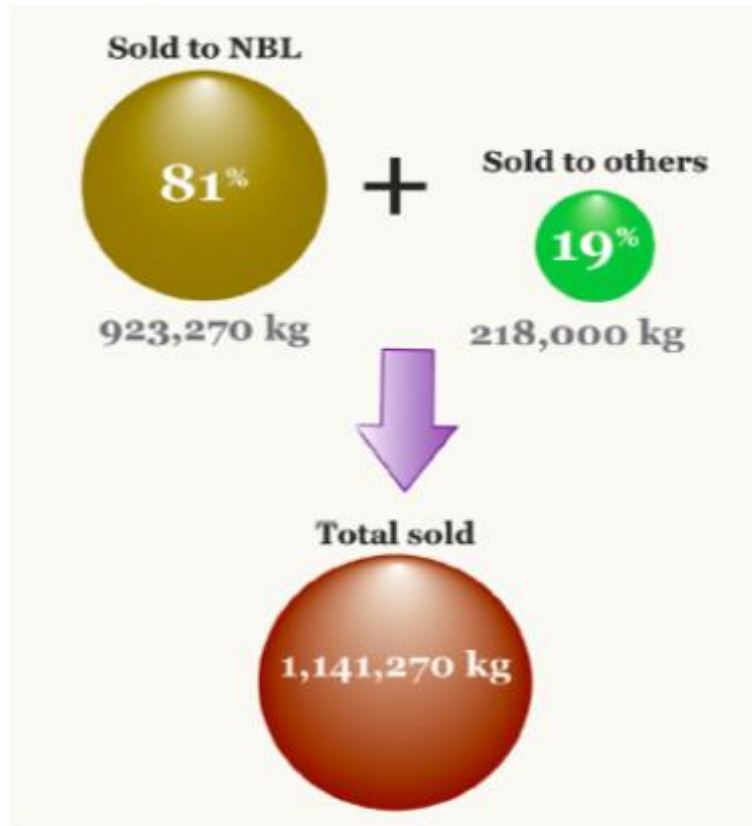
Loyalty to NBL as primary buyer of barley



- Majority of farmers want to continue engagement with NBL for many years
- Associations – 3 out of 5 not satisfied with current contract terms – low prices, delayed payments and sometimes unmet promises
- Agents – 33% of agents (sorghum) and 58% (barley) lack formal contracts – inadequate channels to discuss formalization process
- Of Agents with contracts – 34% were dissatisfied due to low prices and delayed payments. Rest were satisfied.
- In spite of dissatisfaction – 67% of associations and 100% of sorghum agents are positive they will continue engagement with NBL over next 5 years.
- 25% of barley agents not willing to continue engagement for next 2 years – due to low prices & poor quality inputs

Relationships & Loyalty

19% of NBL sorghum is sold to other customers. Side-selling is driven by prices.

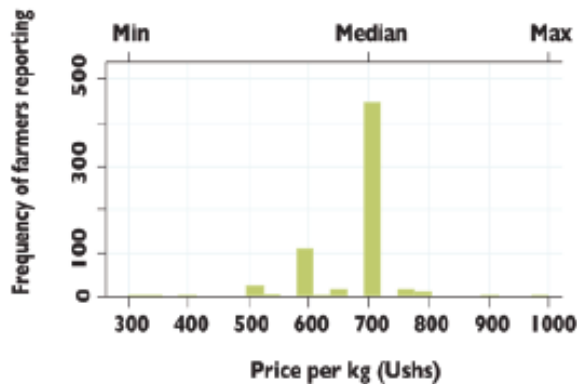


- In 2014-2015 cropping year, 19% of NBL sorghum sold to others buyers
- Main competitors:
 - Other companies (50%)
 - Large traders (21.4%)
 - Local large aggregators (14.2%)
 - Export traders (14.2%)
- Main reason for side selling is higher price offered by alternative buyers
- 4 out of 18 farmer groups said their members are open to sell their harvest outside the association
- In some cases members bypass farmer group obligations and sell outside the association
- 1 farmer group said 100% of total produce is sold by members to other buyers

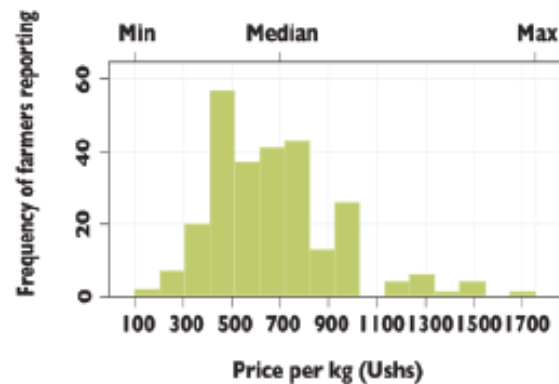
Prices

Notable variability in prices achieved. Some NBL farmers receive less than the median price of Ushs 700 per kg for sorghum and Ushs 1000 per kg for barley

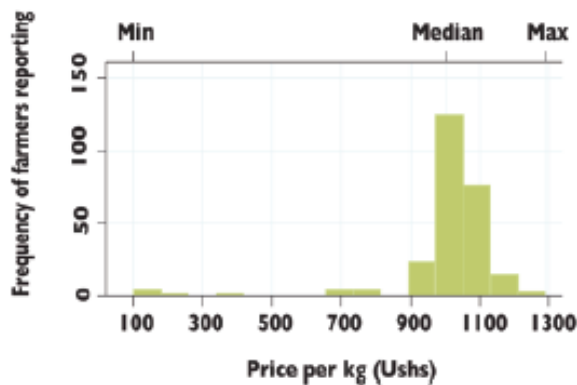
Price per kg in 2014/2015 seasons
NBL sorghum



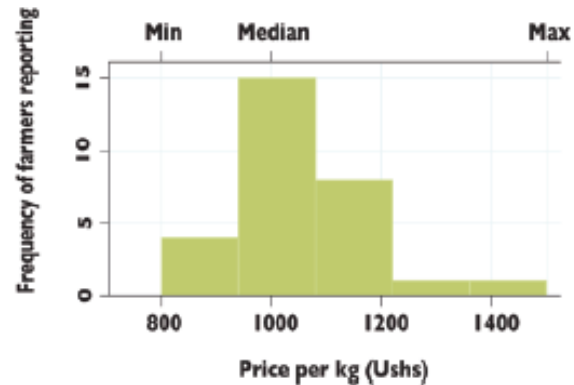
Price per kg in 2014/2015 seasons
non-NBL sorghum



Price per kg in 2014/2015 seasons
NBL barley



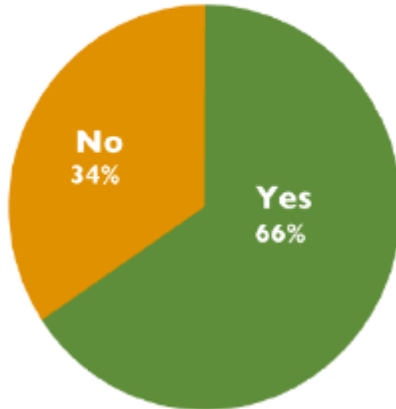
Price per kg in 2014/2015 seasons
non-NBL barley



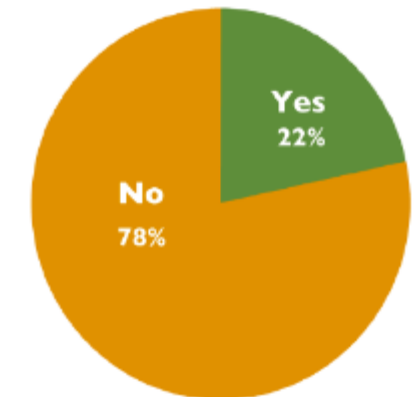
Quality checks in place across the supply chain with varying degree of robustness.

- 4 out of 5 associations / aggregators said farmers are still largely failing to meet first quality standard – leading to rejection
- Sorghum - 94% of agents said they ensure grains are properly dried. 53% said they check uniformity of varieties.
- Sorghum – Agents claim quality is a challenge. Failure to supply properly dried sorghum is the most common.
- Sorghum – Most of below-standard crop is rejected by agents but 11% is accepted with warning
- Barley - 50% of agents have quality standards in place
- Barley – 67% of below-standard crop is rejected by agents; 33% is accepted at reduced price

Households sorting sorghum grains before selling

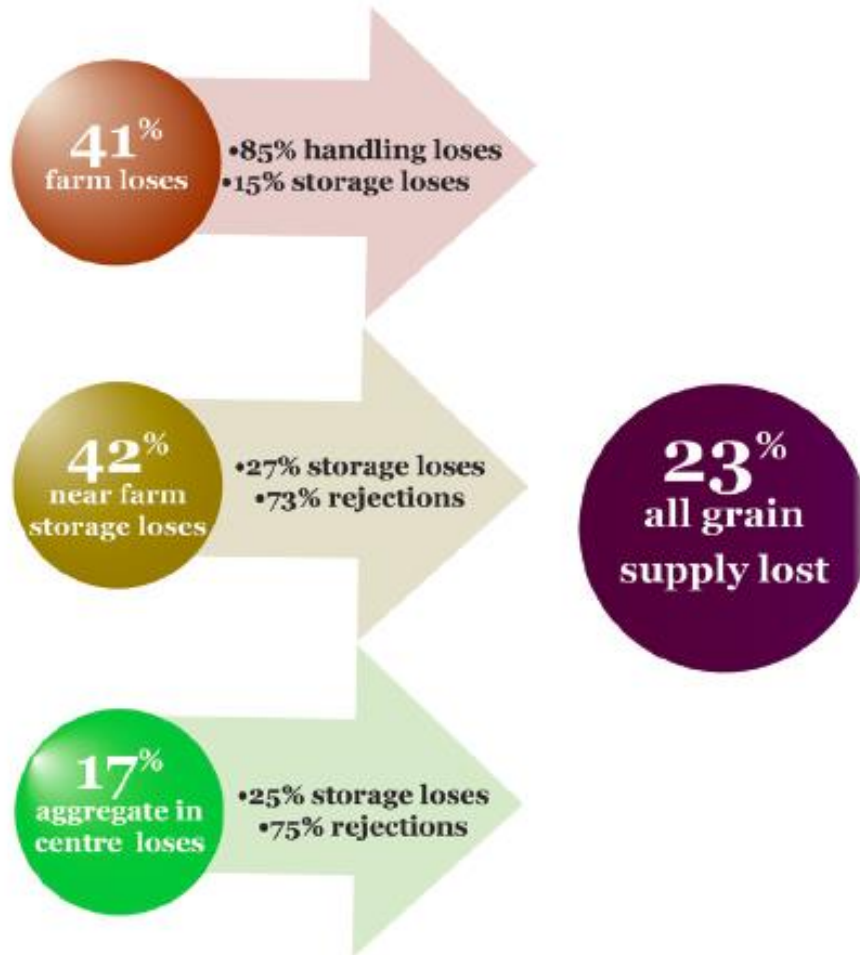


Households sorting barley grains before selling



- Gaps in information transfer from agents to farmers on quality standards – could be the major reason why some farmers receive less than recommended prices
- 34% of sorghum farmers and 78% of barley farmers do not sort grains before selling
- Only 4 households out of 605 (sorghum and barley) grade grains based on colour and size before selling

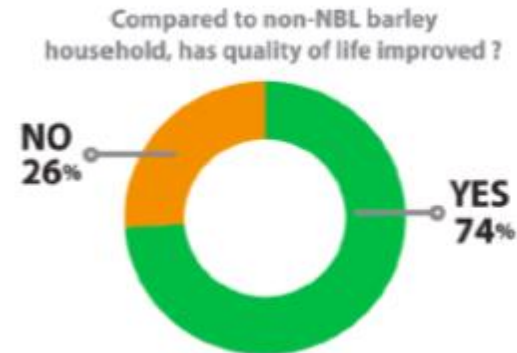
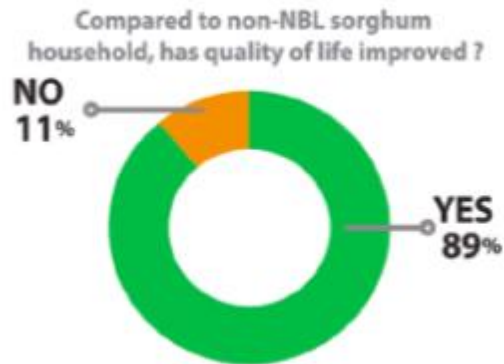
Supply Chain Losses



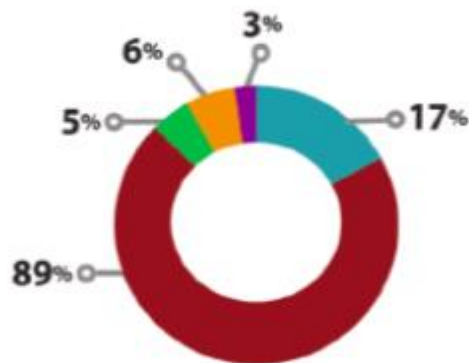
- Of the 23% grain loss across the supply chain – most loss occurs at farm-level or near-farm stores
- 58% of households store sorghum before selling – mainly in plastic bags (58%) or granaries (39%)
- Most barley is sold off immediately and not stored
- Of the near-farm losses – 73% are due to rejections, probably because a good proportion of farmers do not sort their grains before selling

Livelihoods & Wellbeing

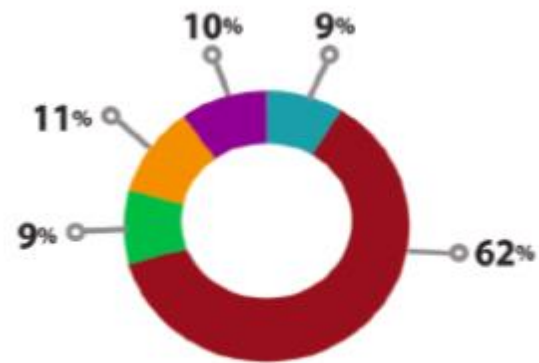
Most sorghum and barley farmers report improvements in quality of life and welfare, since joining the NBL supply chain. NBL sorghum farmers' household income (\$1,228) is twice that of the control group. Inadequate data on absolute poverty levels.



Compared to before started producing NBL sorghum, has welfare of the household improved?



Compared to before started producing NBL barley, has welfare of the household improved?



● Strongly agree
 ● Agree
 ● Neither agree nor disagree
 ● Disagree
 ● Strongly disagree

Based on the food self-sufficiency ratio, 12% of NBL sorghum households and 16% of NBL barley households have experienced inadequate food supplies in the last 12 months

- Food self-sufficiency ratio is based on the total energy produced in on-farm crop harvest divided by the total energy requirements of the household
- Based on this methodology, only **12%** of NBL sorghum households and **16%** of NBL barley household are food insecure
- Without NBL sorghum and barley, **32%** and **34%** of NBL sorghum and barley households would be food insecure, similar to the control group at 36%
- This suggests that NBL sorghum and barley play a significant role in supporting household food self-sufficiency

Food Security



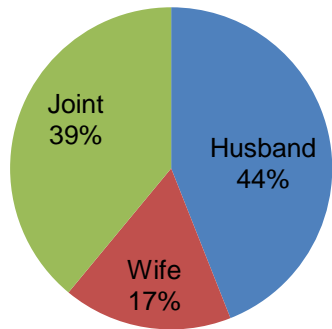
However based on farmers' perceptions, food insecurity is considerably higher. This could suggest households have inadequate food supplies during "non-income" months due to inadequate savings

	NBL Sorghum	Sorghum Control	Barley
Proportion of farmers who reported being food insecure in the last 12 months (%)	63%	67%	53%
Number of months of insecurity in the previous 12 months	1.6 months	2.4 months	1.1 months
Proportion of food consumed during months of insecurity – 25% of normal	21%	17%	19%
Proportion of food consumed during months of insecurity – half of normal	46%	64%	49%
Proportion of food consumed during months of insecurity – 75% of normal	34%	19%	32%

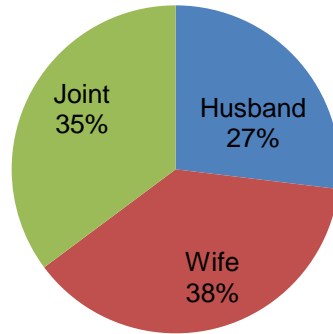
Gender

NBL's supply chain provides market and incomes for a significant number of women. Currently men are the major decision-makers in most aspects of crop production.

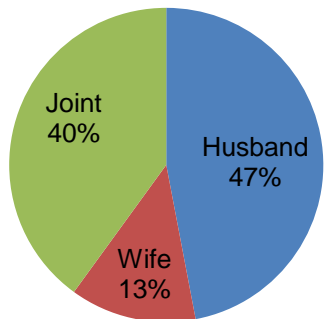
Land Allocation - Sorghum



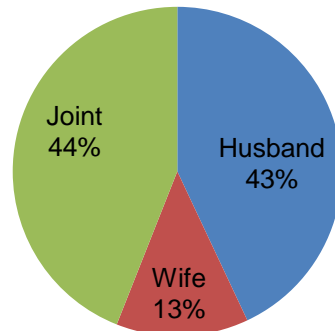
Labour Provision - Sorghum



Decisions on Crop Sales – Sorghum



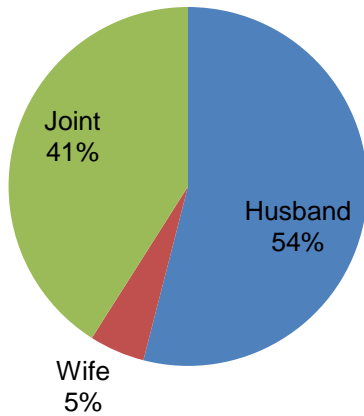
Revenue Utilisation Decisions - Sorghum



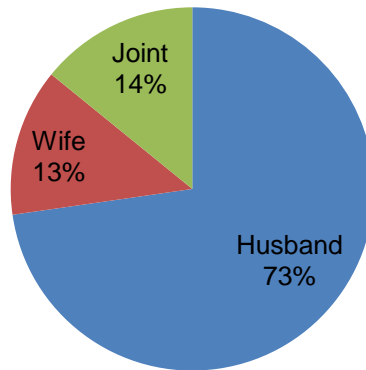
- Graphs show the division of decision-making responsibilities by gender for sorghum
- Similar trends seen on other crops grown by sorghum farmers (millets, maize, cassava)
- In most cases husbands are the majority decision-makers on land allocation, crop sales and revenue utilisation
- Although women play a limited role in land allocation - they spend a lot more time managing and working on cultivated crops
- Joint-decision making is more common on NBL farms compared to control group

Gender

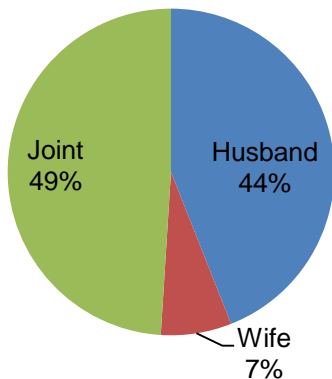
Land Allocation - Barley



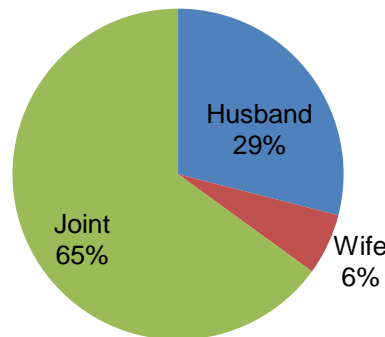
Labour Provision - Barley



Decisions on Crop Sales - Barley



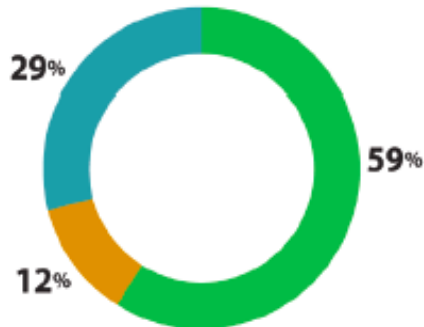
Revenue Utilisation Decisions - Barley



- Husbands are the major decision-makers on land allocation and labour provision on barley (54% and 73% respectively)
- Women's participation as primary decision-makers is very limited in barley households
- Joint-decision making is more common on crop sales and revenue utilisation
- Opportunities to promote more joint decision-making – will require educating men and women on more equal gender roles by working with the right partners

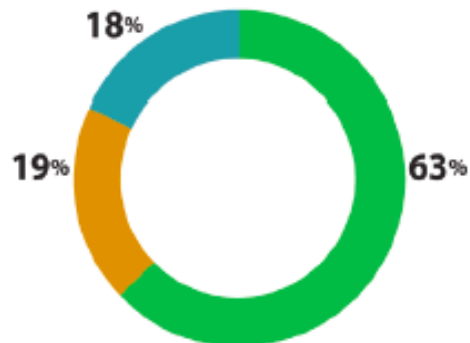
Men are the primary participants in training and extension programmes.

Participation in extension/training
(Sorghum farmers)



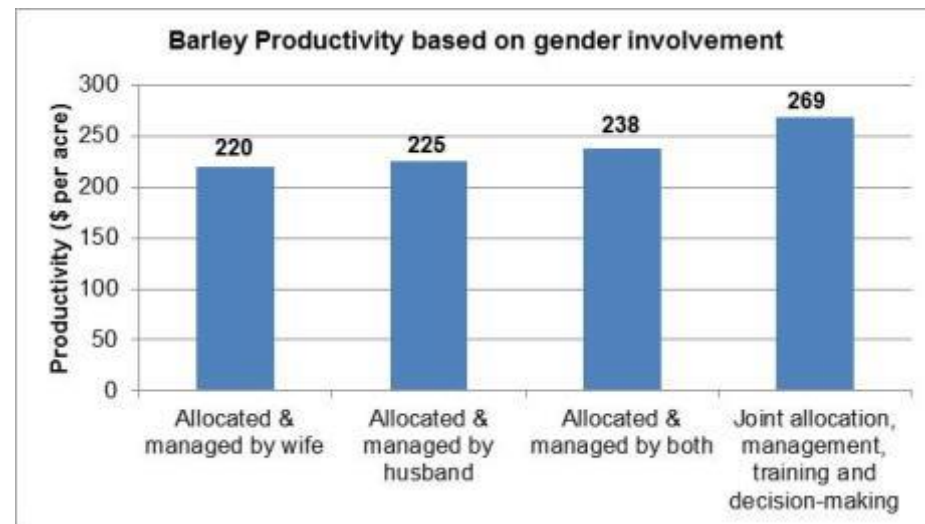
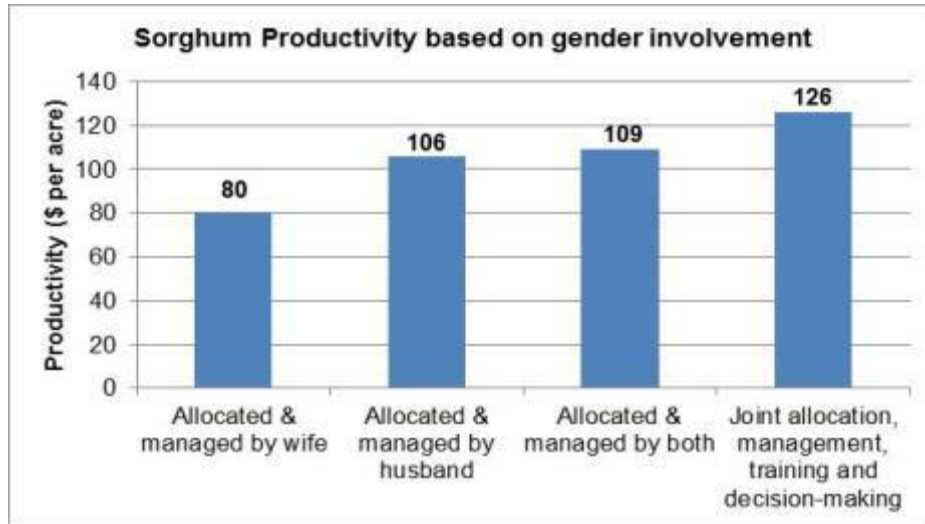
● Both ● Wife ● Husband

Participation in extension/training
(Barley farmers)



- Participation in agricultural extension or training programmes in majority of sorghum and barley households is dominated by men – although women are the main providers of labour on family farms
- Joint participation in extension and training programmes is greater in sorghum households (29%) compared to barley households (18%)
- Increasing women’s participation in extension and training programmes will impact productivity

Yields can increase by nearly 20% through joint management, training & decision-making



- Yields are lower when plots allocated and managed by wives alone (\$80 compared to \$106 for sorghum)
- Could be because men make the first choice of plots with good productivity potential
- With access to training - yields achieved by women alone can increase from \$80 to \$92 for sorghum – which shows training is part of the solution but not the whole solution
- Plot yields are consistently higher (up to \$126 per acre for sorghum) in households where husbands and wives work jointly and make joint decisions on crop sales and revenues
- Similar trends for barley where joint-decision making improves yields (up to \$269 per acre)

Farmer Typologies



Farmer groups are not homogenous. Interventions should be tailored to sub-segments.

CLASS 1

- Average farm – 6.7 acres
- NBL Sorghum yield – 707 kg per acre (41% less than attainable)
- Annual household income – USD 757
- Limited resources
- More likely to be working off-farm
- Limited resources to adopt new technologies or recover from negative shocks

CLASS 2

- Average farm – 6.9 acres
- NBL Sorghum yield – 824 kg per acre (31% less than attainable)
- Annual household income – USD 1,120
- Relatively resource rich
- Supply less labour
- High degree of business orientation
- Less vulnerable to negative shocks

CLASS 3

- Average farm – 7.5 acres
- NBL Sorghum yield – 854 kg per acre (29% less than attainable)
- Annual household income – USD 1,745
- Can rent out part of their resources & hire labour
- High degree of business orientation
- Can easily recover from negative shocks