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Seed Security Assessment of the 4 most vulnerable districts in Zimbabwe: Issues limiting the contribution of farmer seed system to food and nutrition security in Zimbabwe



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Food and Agriculture Organization
of the United Nations



Assessment Objectives

- To assess current seed security situation in drought affected areas to understand constraints and opportunities for intervention
- To ascertain the capacity of drought affected vulnerable communities and households to timely access appropriate seeds from existing formal and informal seed mechanisms

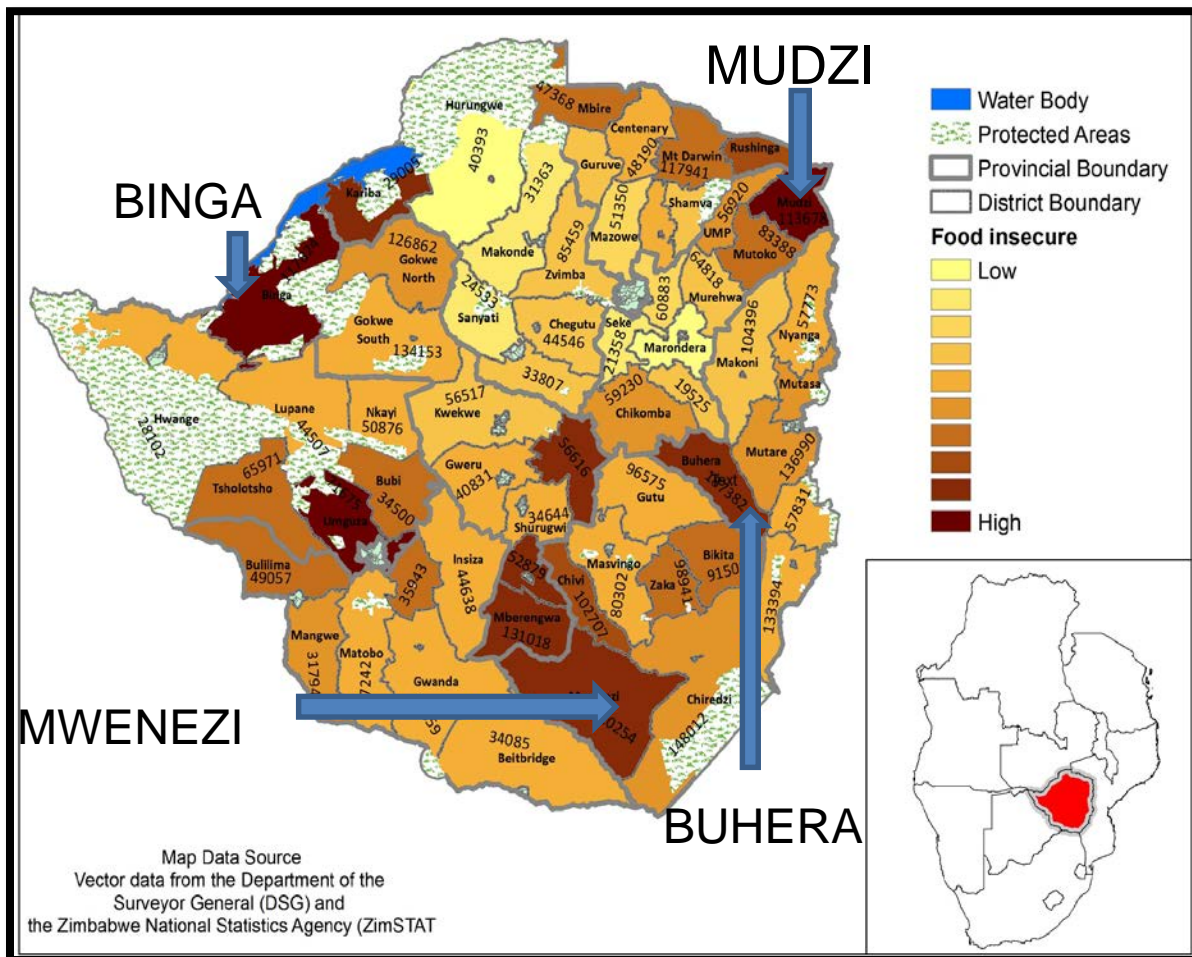
Seed

- Economical way to promote productivity, nutrition and resilience benefits to farmers:
 - Variety introductions
 - Yield enhancing traits
 - Disease and pest resistant traits
 - Nutrition – biofortification (orange maize, sweet potato)
 - Drought tolerance

Elements of Seed Security

- **Seed availability**
 - Depends on seed supply/sources
- **Seed access**
 - Means to obtain
 - Cash, loan, barter, gift
- **Seed quality**
 - Physical, physiological attributes, seed health
- **Varietal suitability**
 - Preferred crop varieties, adapted to farmer conditions

Sample districts



Household survey	Sample
Mudzi	96
Binga	98
Buhera	96
Mwenezi	96
Total	386

Sampling criteria

- Food insecurity
- Agro-ecology

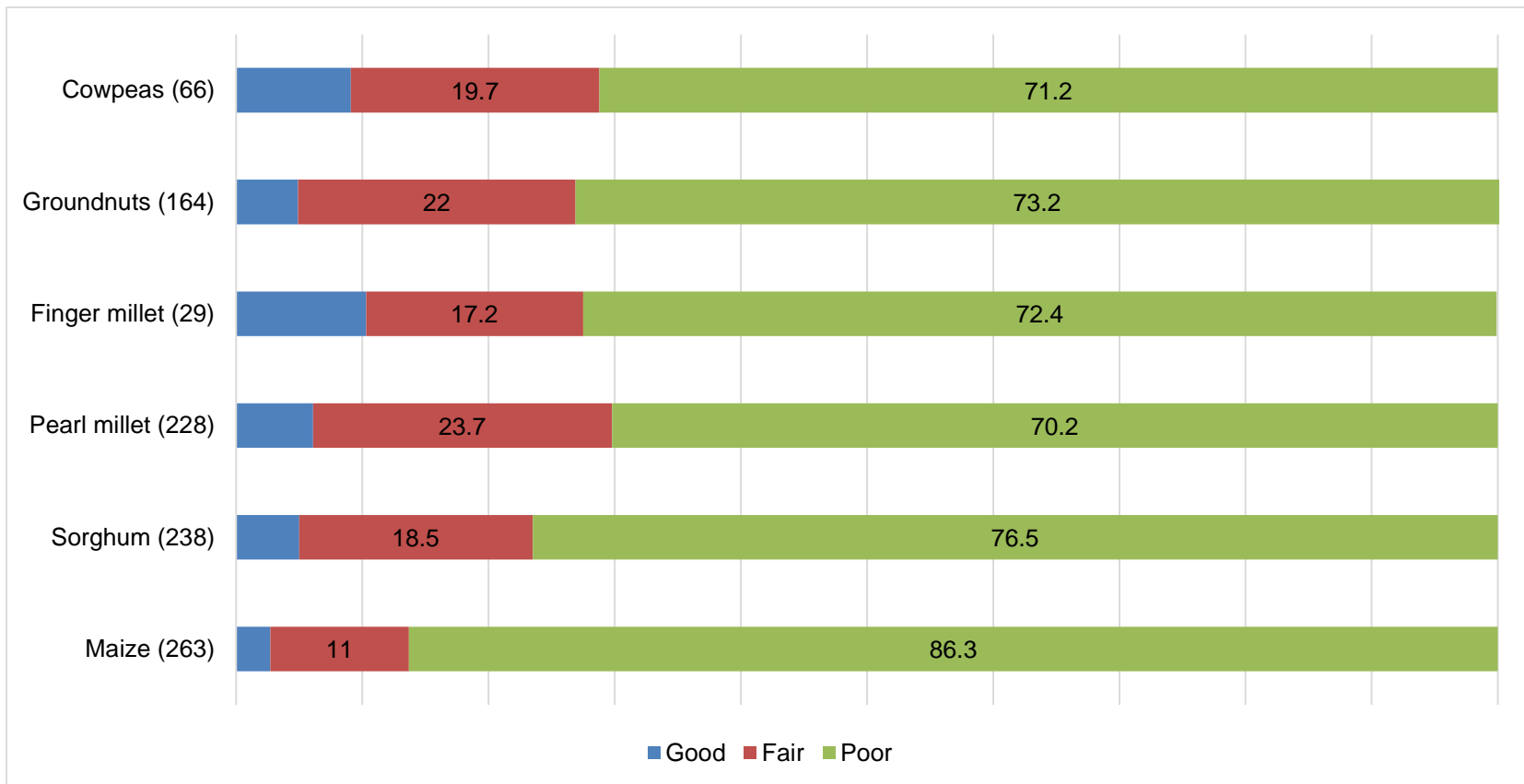
Other tools Used

- Focus Group Discussions
- Key Informant Interviews

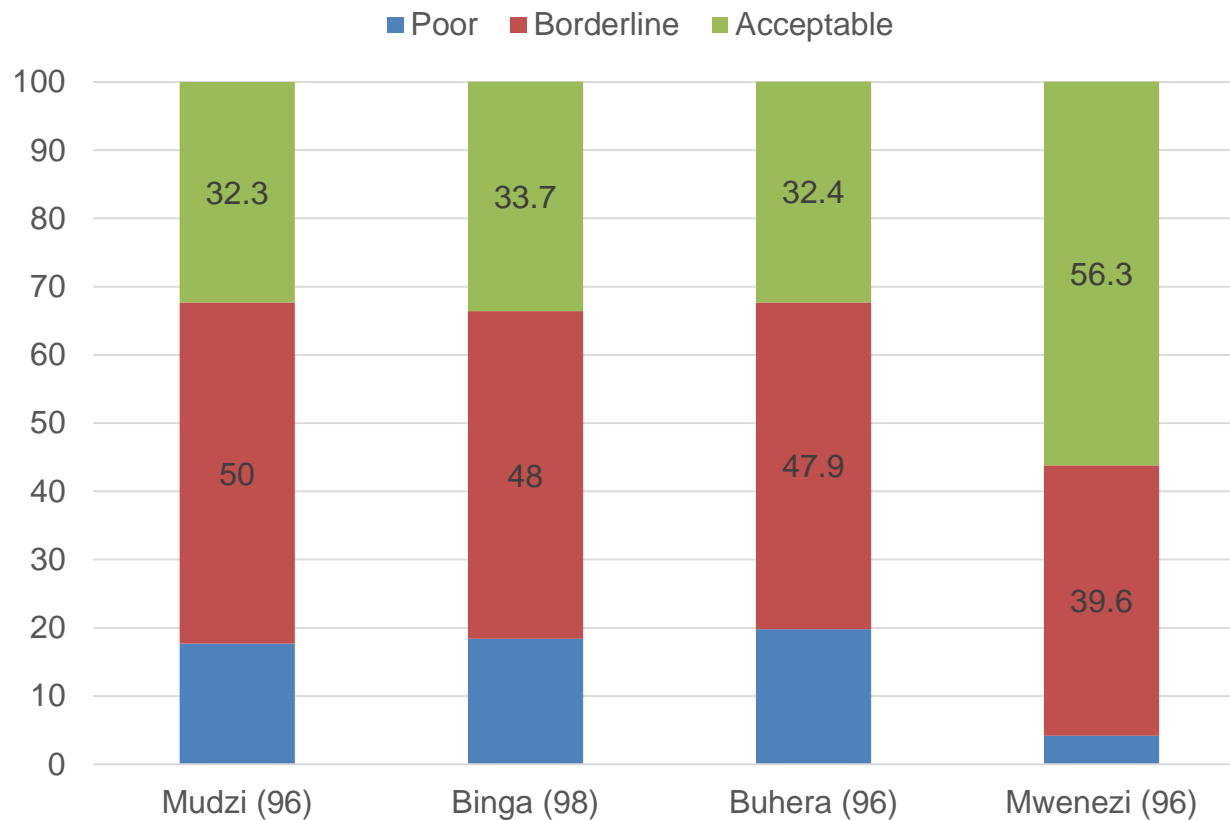
Socio-demographics

	Description	All districts	Mudzi	Binga	Buhera	Mwenezi
Age	Head (years)	49.4	48.5	47.5	53.8	47.7
Gender	Head (1=Male)	72.80	68.75	74.49	81.25	66.67
Education	Head (1=Secondary and above)	42.49	41.67	40.82	45.83	41.67
Marital status	Head (1=Currently married)	61.66	64.58	58.16	58.33	65.63
Farming experience	Years	21.5	19.7	19.8	27.4	18.9
Family size	Number	6.4	5.9	6.3	7.6	6.3
Full time labour	Number	2.5	2.1	2.8	2.7	2.5
Part time labour	Number	2.2	2.1	2.0	2.6	2.4
Credit	(1=yes)	20.73	6.25	26.53	16.67	33.33
Food poor	(1=poor and borderline)	61.4	67.7	66.3	67.7	43.8
<i>Observations</i>		386	96	98	96	96

How do you rate the harvest for 2015/16 ? (% of plots)



Food availability and access at household level (%)



Seed Security

Organized along four seed security parameters: **seed availability, accessibility and quality** (McGuire & Sperling, 2011, 2016):

- *Which seed channels* were used, and for crop category;
 - *Who used specific channels*; and focusing on the varietal aspects of seed (probability to use local market, agrodealers, informal & formal - pending);
 - *How seed was acquired*;
 - *Seed quality*
 - *How farmers accessed new varieties*
- ✓ *We then investigated smallholder farmer's future seed security plans for the next season*

1. Which seed channels were used overall, and for crop category?

Sources where farmers got seed, as a % of total seed : 2015/16

Seed source	Mudzi	Binga	Buhera	Mwenezi	All districts
Own stock	45.7	40.3	50.0	38.4	44.1
Local market	18.8	22.2	16.4	14.6	17.8
Social network	20.8	23.9	21.7	25.2	22.8
Agro-dealer	7.2	12.8	9.2	15.1	10.9
Seed aid	7.5	0.8	2.7	6.8	4.4
Total %	100.0	100.0	100.0	100.0	100.0
Total kg	2818	2648	3677	2864	11997

NOTES

- Social networks – friends, relatives, other farmers, neighbours
- Formal seed systems consist of agro-dealers and seed aid
- Informal seed systems consist of own stock, local market and social network

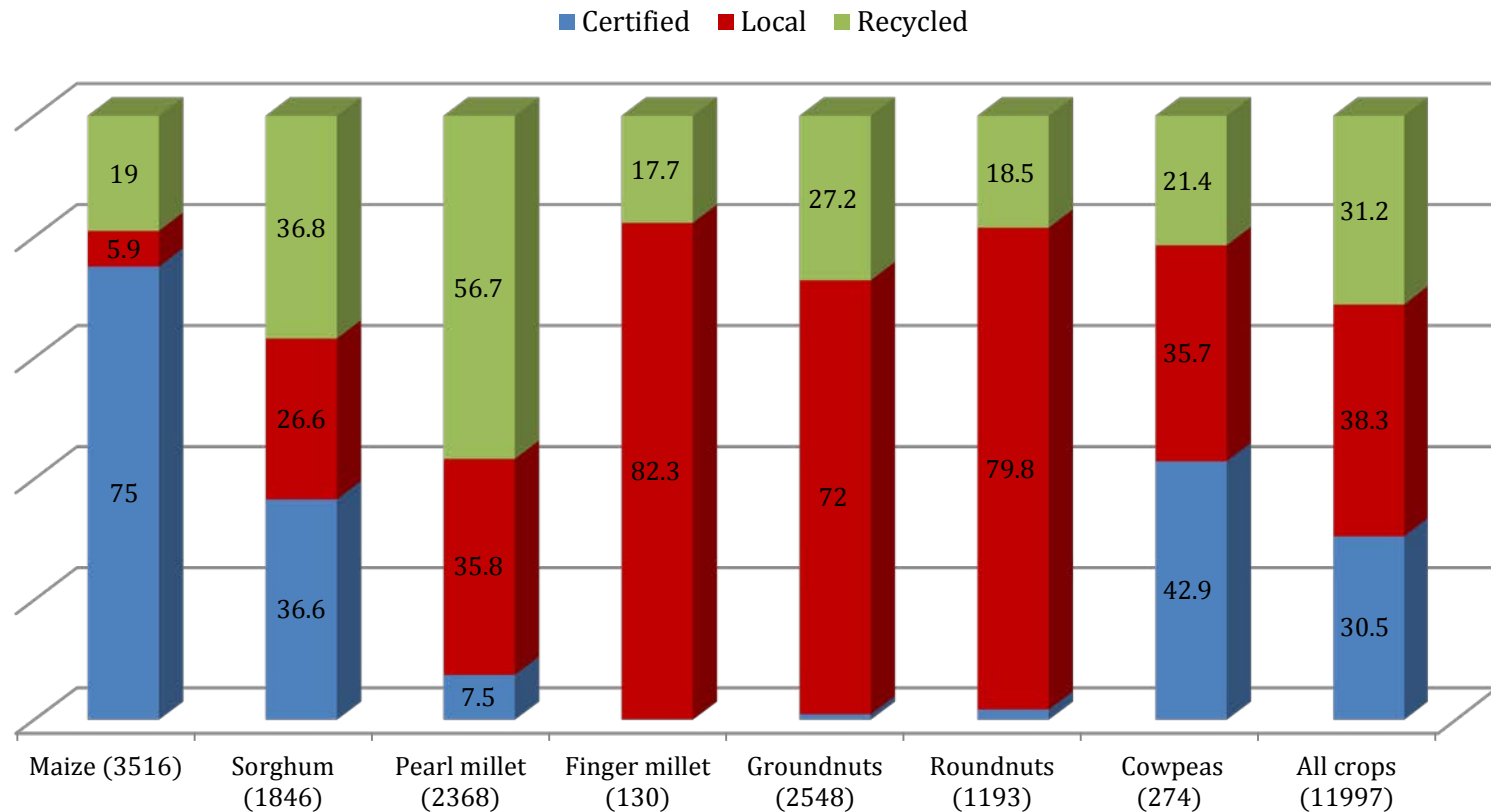
- Own stock – major source across all districts
- Social network contributing a fifth of seed requirements in all districts
- Informal seed systems (own stock, local market and social network) very important

Sources of seed by crop cluster: 2015/16 (% of kg)

Crop	Own stock	Local market	Social network	Agro-dealer	Seed aid	Total (kg)
Maize	17.9	32.5	13.0	30.3	6.2	3516
Sorghum	35.5	15.2	32.5	7.4	9.3	1846
Pearl millet	57.3	10.7	27.9	2.6	1.4	2368
Finger millet	43.1	6.2	50.0	0.8	0.0	130
Groundnuts	66.4	8.8	24.0	0.5	0.2	2548
Bambaranuts	64.8	11.9	21.6	1.7	0.0	1193
Cowpeas	21.1	12.1	27.2	4.4	35.2	273

- A third of maize was sourced from local market and agrodealers each
- A third of cowpeas seeds from seed aid
- Informal seed systems (own stock and social networks) dominates across all small grains and legumes
- Promote and strengthen both formal and informal seed systems for crop diversification and resilience

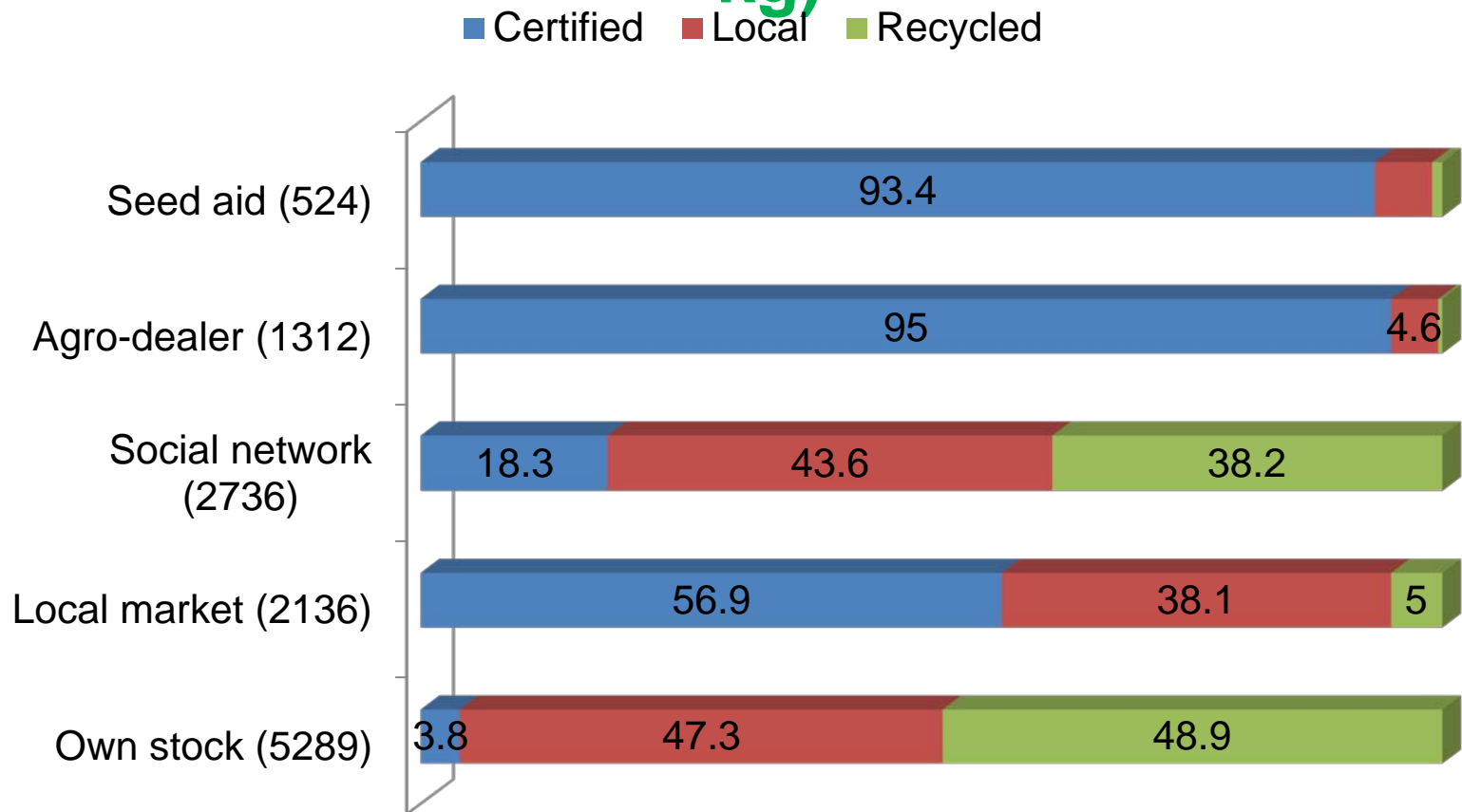
Seed types planted: 2015/16 (% of kg)



NOTES

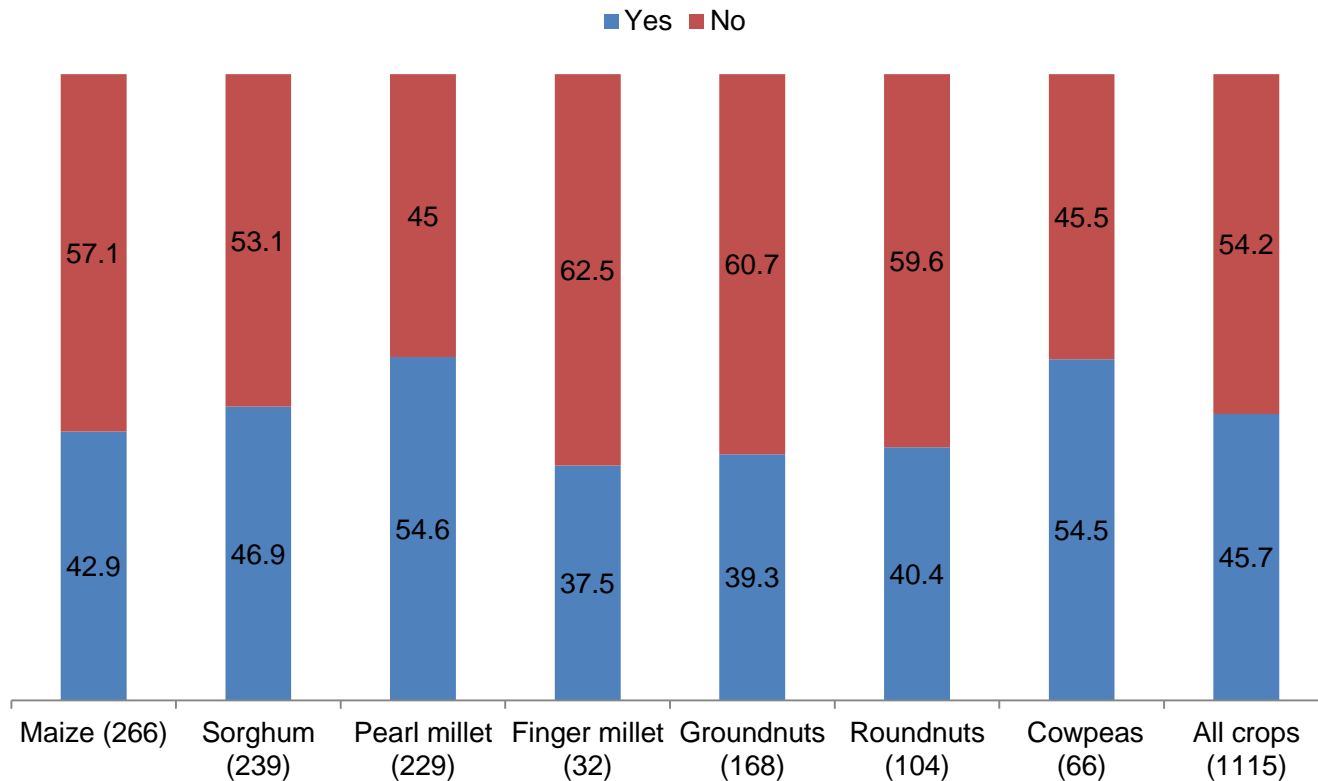
- Certified seeds – hybrids and open pollinated seed that have formally been certified
- Recycled – retained grain from previous harvest that have been selected to be seed
- Local - local landraces
- Maize dominated by certified seeds
- Half of cowpeas seed is certified – mostly through seed aid
- Local and recycled seeds dominate small grains and legumes
- Research, development & marketing of certified small grains and legumes seeds needed

Sources of seed for seed types: 2015/16 (% of kg)



- Agro-dealers, seed aid and local markets providing certified seeds
- Recycled seeds mostly confined to own stock
- Certified seeds to be channeled through formal seed sector

Was seed enough by crop: 2015/16 (% of crop plots)



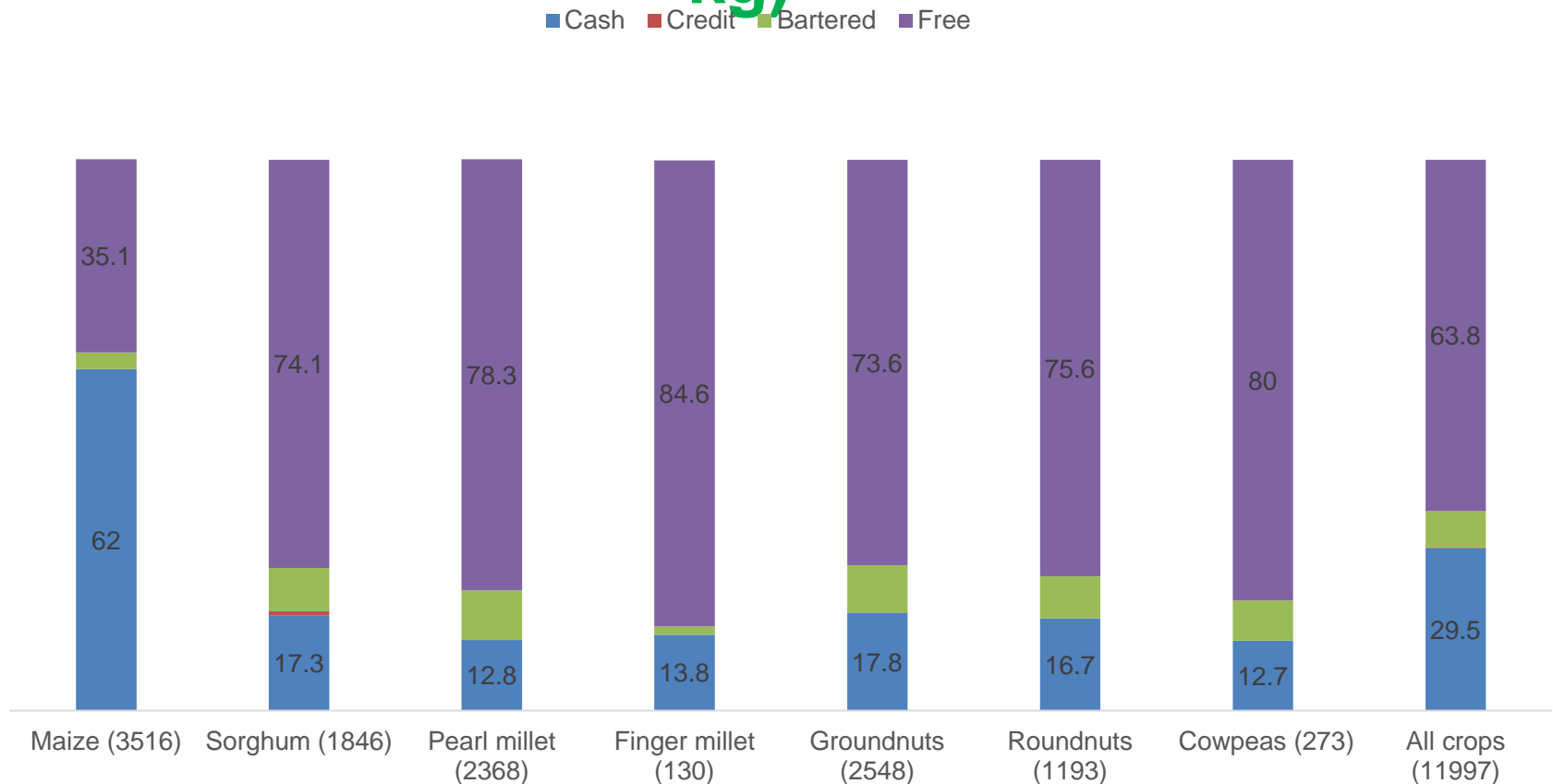
- Farmers perceive seed was not enough for all crops in past season
- About half of cropped plots – seed was not adequate
- Translated in reduction of cropping area

Pros and cons of seed sources

Seed source	Pro	Cons
Friends/Neighbours/Relatives	Affordable and easily accessible, one can barter trade with other commodities required by a friend.	Mixed seed quality, Poor storage, viability loss and poor germination leading to reduced harvest
Local Market	Affordable and easily accessible, can keep track record of a good supplier, can get credit, price is negotiable.	Mixed seed quality, Poor storage, viability loss and poor germination leading to reduced harvest
Agro-Input dealers	Good quality certified seed with high germination	Limited number of agro-dealers involved in seed selling and seed expensive
Community based seed groups	Good quality seed grown in the local environment whose performance is assured by farmers	The number of community seed groups still few and the quantities of seed produced limited
Government	Good quality certified seed of the right varieties	Seed comes late in the season and benefit a selected few
Seed Aid	Good quality certified seed of the right varieties at the right time.	Benefits a selected few
Contract Grower	Seed supplied on time, follow up advice sometimes given	Need to perform to meet the contract requirements
Others (specify) Own Seed	Very affordable and easily accessible	Difficult to determine the quality of seed.

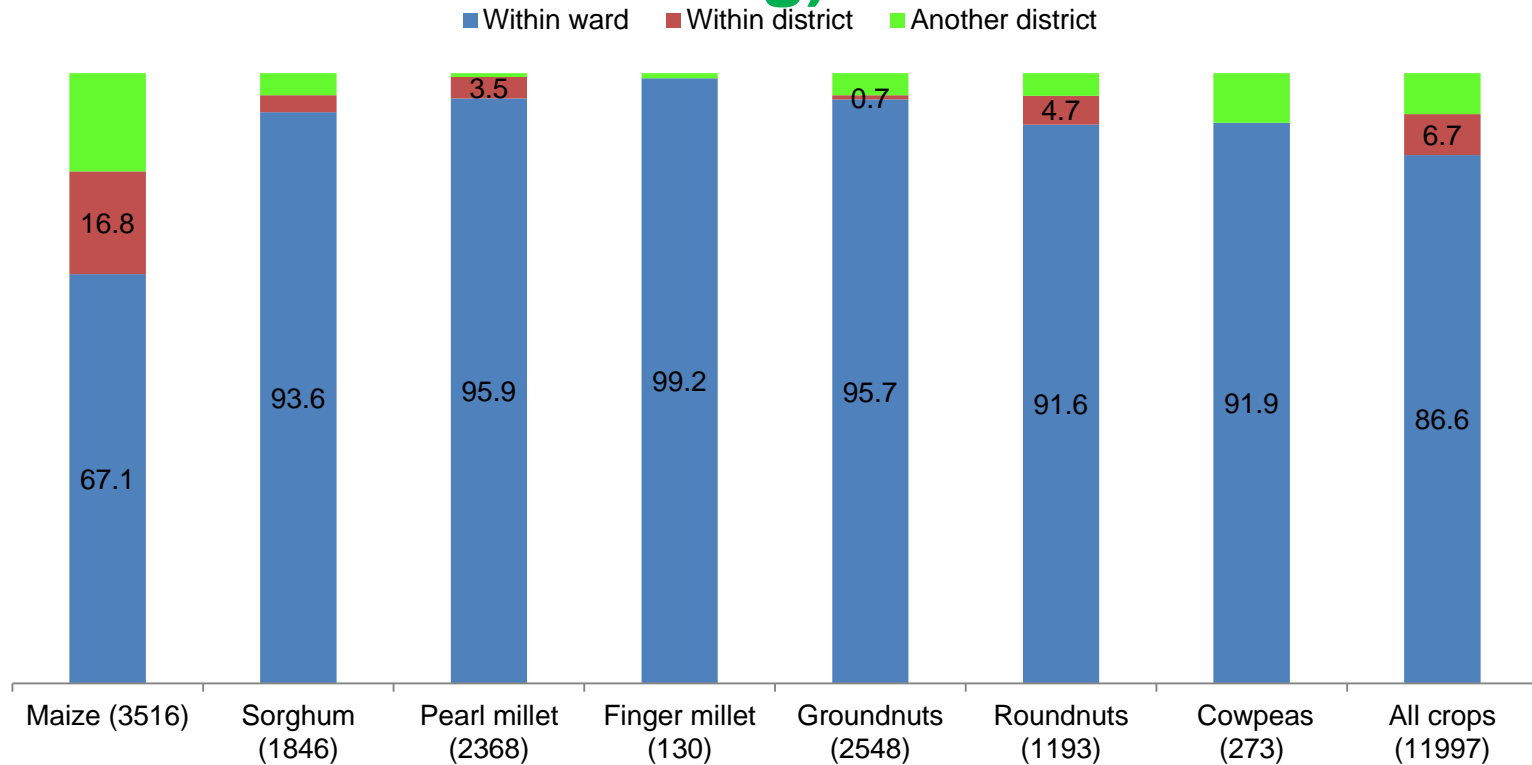
2. How seed was acquired, location and timeliness

How seed was acquired by crop: 2015/16 (% of kg)



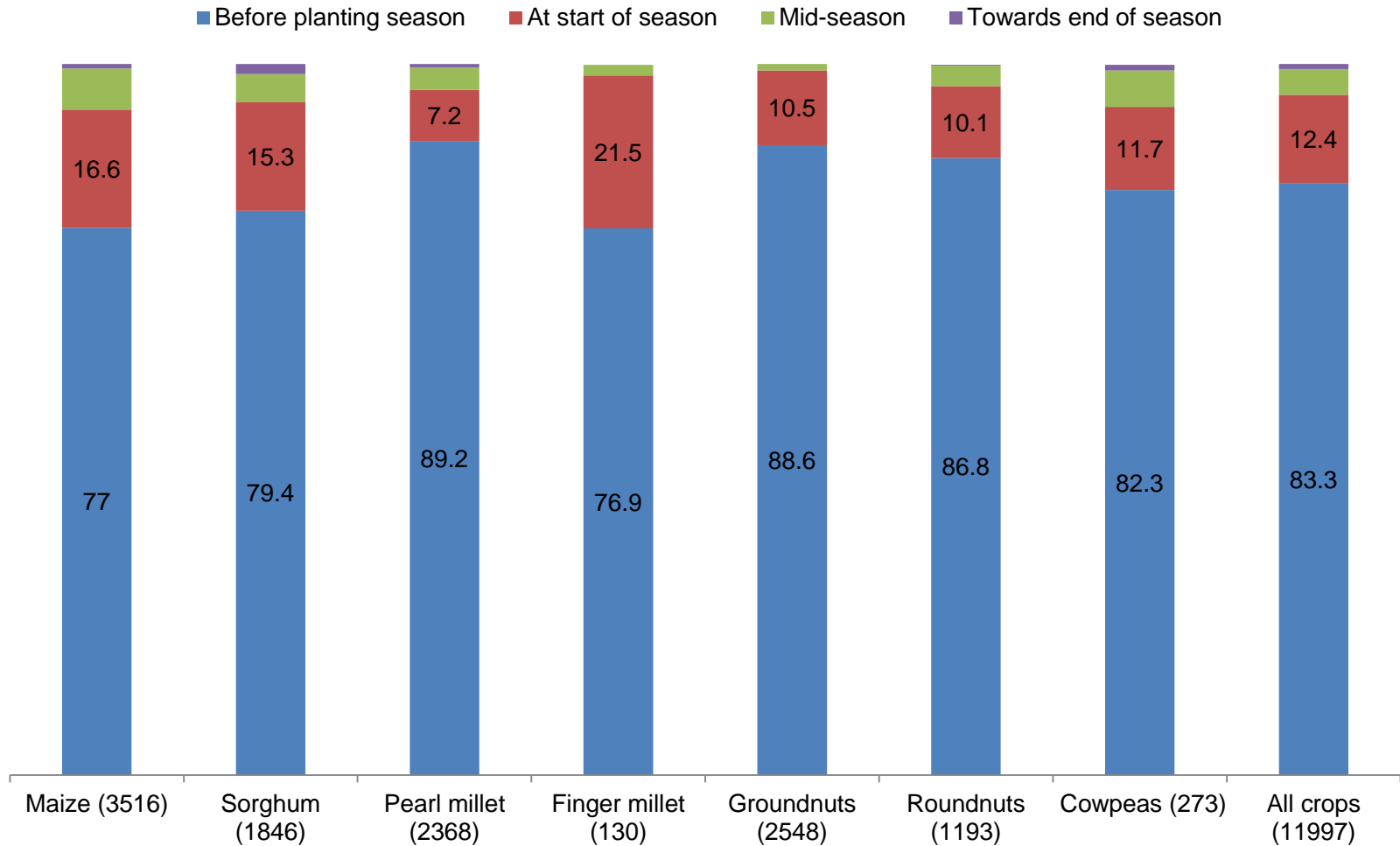
- Cash purchases dominate only for maize
- All other crops – free acquisition – mostly from own stock

Location where seed obtained: 2015/16 (% of kg)



- Majority of seeds obtained within ward

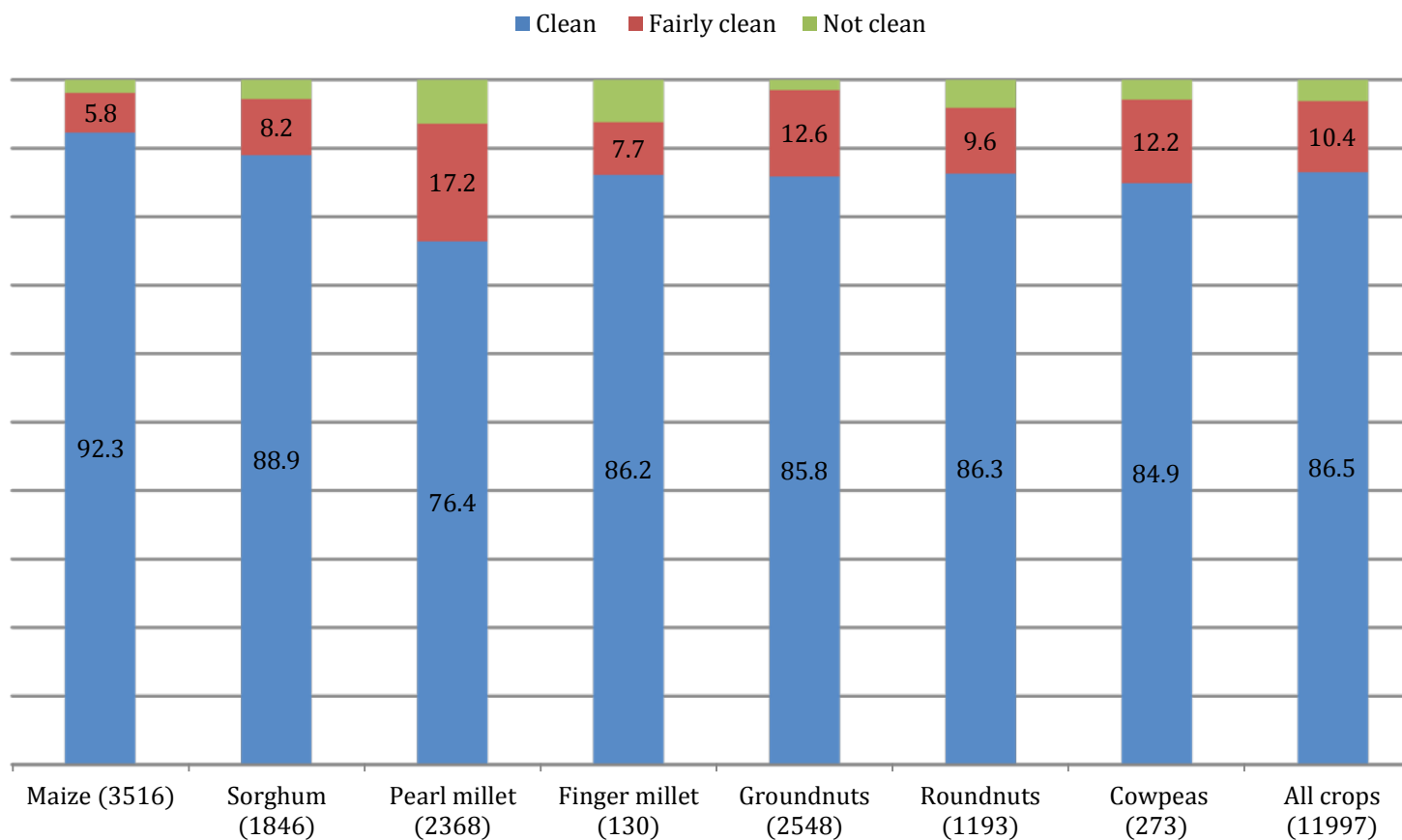
Timeliness of seed acquisition: 2015/16 (% of kg)



- Most seeds acquired before planting season
- A fifth maize, sorghum and finger millet seeds acquired at start of rain season
- Timeliness crucial for timely planting with early rains

3. Seed quality

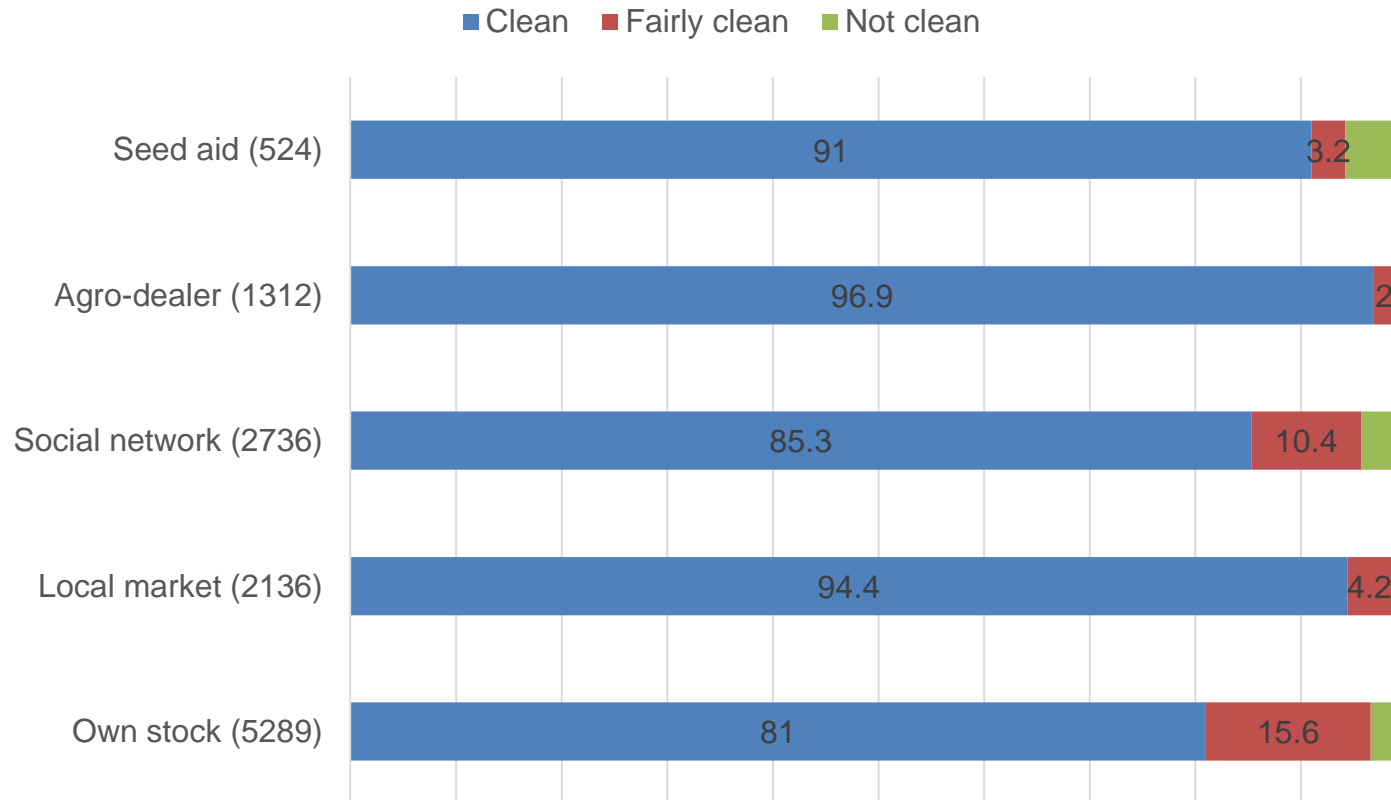
Perception on quality of seed by crop: 2015/16 (% of kg)



- Overall, seed perceived to be clean
- Pearl millet – about a fifth of seed fairly clean seed
- Quality control to remove impurities needed in all crops

Perception on quality of seed by source: 2015/16

(% of kg)



- Seed perceived to be clean from all sources
- About a tenth of owns stock and social networks seed – fairly clean
- Quality control in informal seed systems to be promoted(basic seed grading according to uniformity, no impurities etc)

Seed Quality versus seed sources

Source	Seed Quality	Comment
Friends/Neighbours/Relatives	Bad to Fair	Poor storage, viability loss and poor germination but affordable in limited quantities
Local Market	Bad to Good	Poor storage, viability loss and poor germination but affordable in limited quantities for some crops
Agro-Input dealers	Good	Certified seed sold but expensive
Community based seed groups	Good	Grown in the local environment and are assured of its performance
Government	Good	Certified seed but affordable by a selected few
Seed Aid	Good	Certified seed but affordable by a selected few
Contract Grower	Good	Company contracted and seed affordable
Others (specify): Own Seed	Average	Affordable but difficult to determine quality as it depends on how it was selected and stored

4. How farmers acquired new varieties

- New variety introductions - an economical way to strengthen seed systems and security and increase production ([McGuire & Sperling, 2016](#)).
- Asked smallholder farmers whether they accessed new varieties and details on the sources and methods of acquisition

Farmers obtaining new variety in last 5 years and sources

Seed source	Mudzi	Binga	Buhera	Mwenezi	% All	N
Social network	34.3	10.6	22.9	18.9	21.0	34
Local market	8.6	2.6	14.3	3.8	6.8	11
Agro-dealer	8.6	25.6	5.7	5.7	11.1	18
Community seed bank	0.0	5.1	2.9	0.0	1.9	3
Government	28.6	43.6	45.7	26.4	35.2	57
NGO/FAO	20.0	12.8	8.6	43.4	23.5	38
Contract seed growers	0.0	0.0	0.0	1.9	0.6	1
All sources	100.0	100.0	100.0	100.0	100.0	162
TOTAL new varieties	35	39	35	53		162
No# receiving new variety	32	35	32	40		139
No# in sample	96	98	96	96		386
% receiving new variety	33.3	35.7	33.3	41.7	36	

- New varieties flow through government, NGO/FAO and social networks in all districts
- Government input scheme may be driving new variety introductions
- Agro-dealer also important source of new varieties in Binga
- Cash purchases dominate new variety acquisition
- Need to strengthen agrodealers to stock and supply new varieties

Crops varieties which disappeared

District	Gender	Crops	Reasons why
Mwenezi	Females	Sesame and Rice	Sesame due to seed shortage and rice as result of less rains
	Males	Cotton and sunflower	Cotton due to lack of markets whereas sunflower due to seed shortage
Binga	Females	Groundnuts and sorghum	Groundnuts (Makulu red, Natal Common) due to seed shortage . Some traditional landraces have been lost due to recurring droughts and climate change .
	Males	Sesame and finger millet	Sesame being long maturing was affected by recurrent droughts and short seasons , while finger millet due to lack of transference of indigenous knowledge over generations
Mudzi	FGD1 males	Rapoko Sunflower roundnuts	Red spider mite Changes in rainfall patterns Soil getting poorer
	FGD2 females	Sorghum (dhlakama) Maize R201, R215,R214	Disappeared due to lack of rainfall Maize- no longer promoted by breeders
Buhera	FGD1 mixed	Millet and Sorghum local varieties (Tsveta, chigaranji, chiruninga) Baker wheat Gundamupanga	No company involved in seed production of the local varieties Long maturing and disappear due to shortening of rainy seasons
	FGD2 males	Rice, tsenza, sweet potatoes (yellow) and chizaya	Rice and Tsenza disappeared also due to lack of rain and absence of wetlands . Other crops due to too many pests and bird damage

Summary of Issues and Recommendations

- Complementary seed sources be strengthened
 - ✓ Formal seed sector (agrodealers) are the important source of maize
 - ✓ Informal seed sector dominates legume and small grain seeds.
 - ✓ Use emergency seed aid for both informal and formal markets
- Role of informal seed markets to provide good quality seed to be enhanced. eg. Seed Fairs
- Need for extension training on selection, grading and post-harvest management of good quality local and recycled seeds for planting.
 - ✓ These local landraces are adaptable to the climatic conditions and their preservation is critical for biodiversity.

Summary and Recommendations

- The private, public and relief organizations should strive to sustain and not undermine agrodealers.
 - ✓ Big wholesalers should link and supply seeds through agrodealers who are close to the farming communities.
- New varieties are being introduced through multiple channels – agrodealers, Government, NGO/FAO and social networks.
 - ✓ These new varieties should be complemented with extension support on how to grow them and their agronomic performance so as to stimulate uptake.
 - ✓ Varietal demonstration in the farming communities should be encouraged so that farmers learn about the new varieties.
- Climate change, pests and diseases, absence of breeding and promotional programs – contributing to disappearing varieties
 - ✓ Strategies should be developed to reclaim/harness disappearing crop varieties

Acknowledgements

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Thank You

