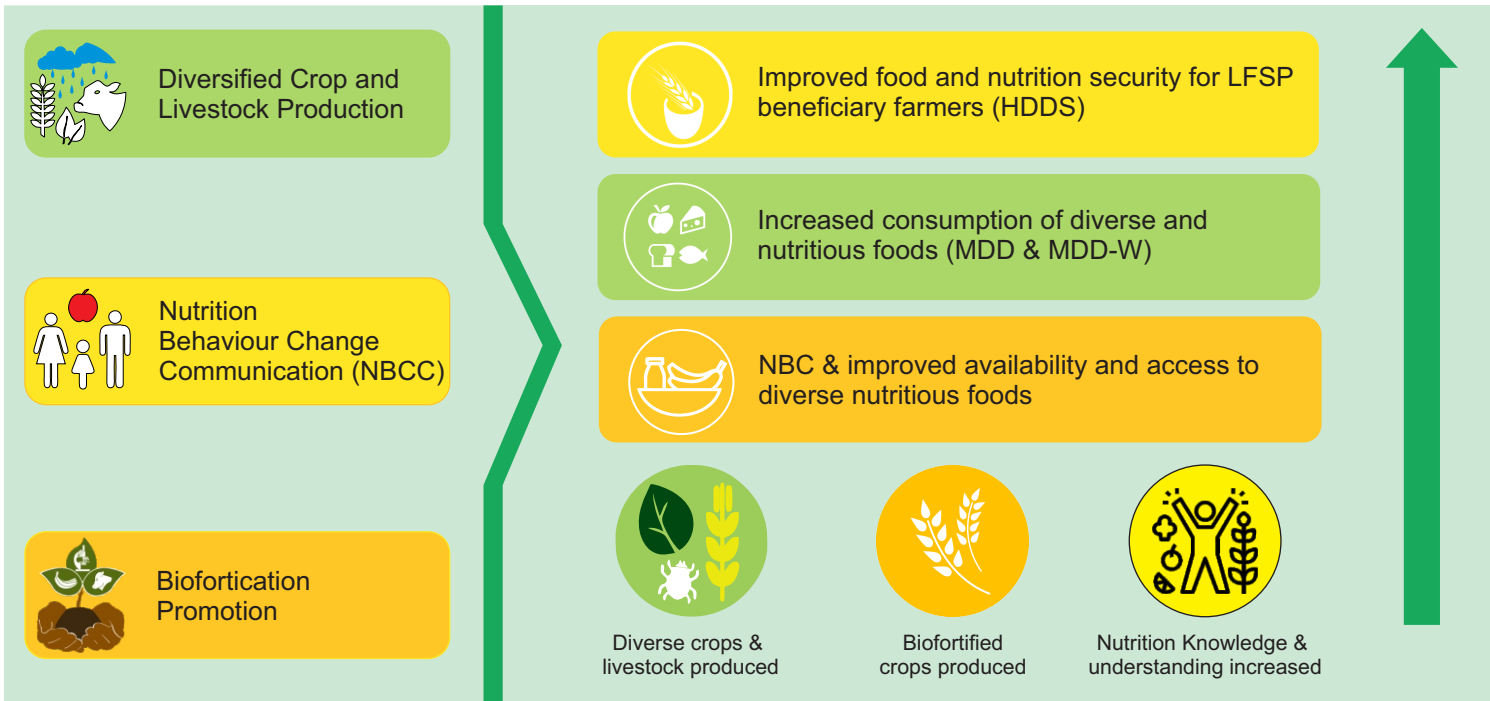


Background

The LFSP Nutrition and Biofortification component aims to increase production and consumption of diverse, nutritious diets among target households. This objective is delivered through a well designed three pronged programming approach focusing on:

1. Support towards diversified crop and livestock production;
2. Promotion of biofortified crops and
3. Nutrition behaviour change communication targeting women of child bearing age and children under two years.

These three interventions are expected to directly lead to increased production of a wide variety of crops (including indigenous underutilized crops like millets) and livestock (particularly small livestock), increased production of biofortified crops – vitamin A maize (VAM) and high iron and zinc beans (HIB) and increased nutrition knowledge and understanding. This simultaneous attainment is expected to lead to increased consumption of diverse and nutritious foods which will in turn contribute towards improved household food and nutrition security of target households.






The LFSP is operational in 12 districts organised as follows:

Province	District	Programme components	Local / Programme name
Mashonaland Central	Bindura	All programme components	ENTERPRIZE Programme IPs: World Vision (lead), Farmers Association of Community self-help Investment Group (FACHIG), and ICRISAT
	Mt Darwin		
	Guruve		
	Mazowe	Biofortification promotion only	Managed by HarvestPlus
Manicaland	Mutare	All programme components	INSPIRE Programme Ips: Practical Action (Lead), ICRISAT, SAT
	Makoni		
	Mutasa		
Midlands	Kwekwe	All programme components	EXTRA Programme IPs Welthungerhilfe (Lead), Heifer International, We Effect, Community Technology Development Organisation (CTDO) and ICRISAT
	Gokwe North		
	Gokwe South		
	Shurugwi		
Mashonaland West	Zvimba	Biofortification only	Managed by HarvestPlus

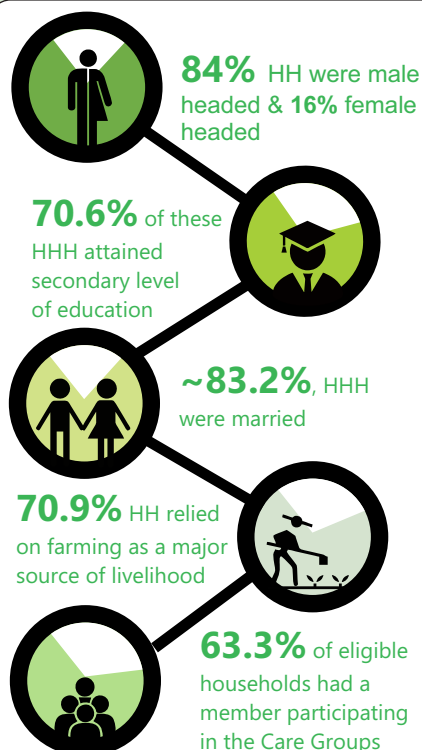
Study Objective

The objective of the study was to assess how the LFSP Nutrition and Biofortification promotion activities are **changing the targeted behaviours and practices** of programme beneficiaries, with a view to **identifying possible gaps, opportunities** and further **areas of focus moving forward.**

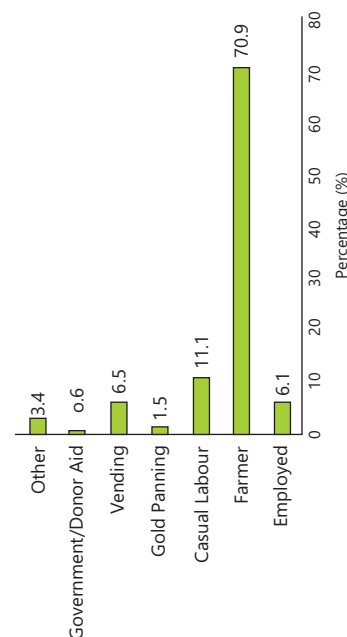
Methodology

	481 Households (HHs) sampled in 9 of the 12 LFSP districts
	18 Focus Group Discussions with 107 farmers and 137 primary care givers participating in Care Groups
	93 Key Informant Interviews (KII)

*The study was conducted in 9 of the 12 LFSP Districts Mutare, Makoni, Mutasa, Bindura, Mt Darwin, Guruve, Kwekwe, Shurugwi and Gokwe South.

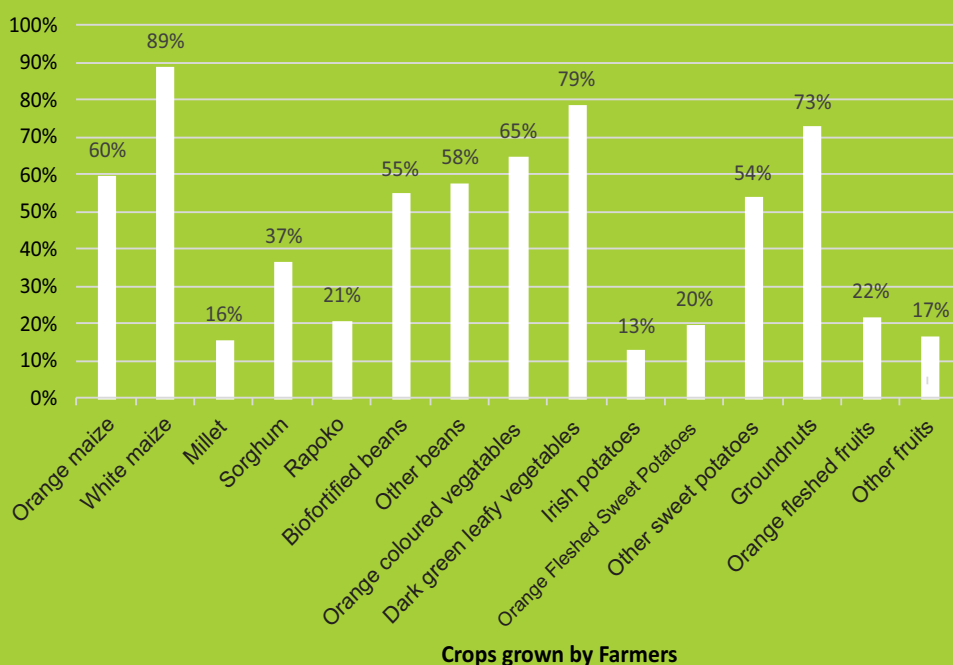


HH Source of Livelihood



Summary Findings

Crop Production and Diversification



- The **most commonly grown crops** were **white maize** (89%), **dark green vegetables** (79%) and **groundnuts** (73%)
- Farmers also reported growing **biofortified beans** (55%), **other beans** (58%), **orange coloured vegetables** (65%), **other sweet potatoes** (54%) and **orange maize** (60%).
- The major source of **SEED** for white maize was the government **input support programmes** (62.9%). Including VAM and HIB into these schemes has potential to increase production
- Except for VAM (92.4) & HIB (95%) most HH (>50%) started growing the crops they grow before the LFSP.
- >40%** hh reported starting to grow small grains and Irish potatoes after the programme.
- Decision to grow all crops was joint (male & females) **>50%**
- >65%** of households reported household consumption as the major reason for growing all crops.



Crop & Livestock Production and Diversification

Association between crop production and MDD for Children

Variable	Total n (%)	MDD for children		P-Value
		Low (<4 groups) n (%)	Acceptable (=4 groups) n (%)	
<i>Households that grows:</i>				
Orange maize	227 (58.8)	105 _a (51.7)	122 _b (66.7)	0.004*
Irish potatoes	52 (13.5)	16 _a (7.9)	36 _b (19.7)	0.001*
Orange fleshed vegetables	254 (65.8)	124 _a (61.1)	130 _b (71.0)	0.042*

Notes: *P <0.05, Pearson's Chi-square Test; †P value based on Fishers Exact Test

Households growing orange maize, Irish potatoes, and orange fleshed vegetables, were significantly associated with attainment of acceptable MDD by children.

Association between diversified crop production and MDD-W

Variable	Total n (%)	MDD-W		P-Value
		Low (<5 groups) n (%)	Acceptable (=5 groups) n (%)	
HH Crop production				
Sorghum	158 (35.6)	114 _a (40.4)	44 _b (27.2)	0.005*
Rapoko	92 (20.7)	43 _a (15.2)	49 _b (30.2)	<0.001*
Irish potatoes	59 (13.3)	22 _a (7.8)	37 _b (22.8)	<0.001*
Orange fleshed sweet potatoes	91 (20.5)	49 _a (17.4)	42 _b (25.9)	0.038*
Other sweet potatoes	246 (55.4)	146 _a (51.8)	100 _b (61.7)	0.047*
NUA 45 beans	243 (54.7)	132 _a (46.8)	111 _b (68.5)	<0.001*
Other fruits	78 (17.6)	61 _a (21.6)	17 _b (10.5)	0.004*

Notes: *P <0.05, Pearson's Chi-square Test; †P value based on Fishers Exact Test

Growing of sorghum, rapoko, Irish potatoes, orange fleshed sweet potatoes, other sweet potatoes, NUA 45 beans and other fruits, was significantly associated with attainment of acceptable MDD-W by women aged 15-49 years in these households.



Crop diversification

KEY FINDINGS:

- Growing of orange maize, Irish potatoes, and orange fleshed vegetables was significantly associated with attainment of acceptable MDD for children.
- Growing of sorghum, rapoko, Irish potatoes, orange fleshed sweet potatoes, other sweet potatoes, NUA 45 beans and other fruits, was significantly associated with attainment of acceptable MDD-W by women aged 15-49 years
- Majority of households reported selling maize (50.7%) and dark green leafy vegetables (35%) on local markets, mostly from their households. Less than 35% of household reported selling crops like orange fleshed fruits and vegetables and small grains (with the exception of sorghum - 41%) on local markets.
- Majority of households still reported using traditional food preservation methods (direct solar drying -96%, use of ordinary grain sacks – 46.2%), Lack of resources to acquire improved technologies was reported as a barrier. Low production also affected willingness to invest in preservation technologies.
- Crop pests and diseases, high production costs and frequent droughts and water shortages** were reported as the major challenges faced in crop production by majority of farmers.

KEY MESSAGES:

- Farmers can produce more crops and in excess for sale on local markets if they are supported to overcome the challenges they are facing in crop production right now.
- Having excess produce sold on the local markets will help ensure those not able to produce can buy a wide variety of produce at relatively low prices locally. Only maize and green leafy vegetables are sold on local markets by majority of households
- Growing crops like sorghum, rapoko, orange fleshed sweet potato, NUA45 beans and other fruits increases improves the chances of women and children consuming diets that meet their nutrient needs.



Livestock production

Livestock	Average number owned	Proportion of HH owning (%)	Started Post LFSP (%)	No of Times HH consumes this livestock
Cattle	4.96	54.5	31	Never
Goats	6.04	65.3	46	1/year
Sheep	3	2	75	1/year
Rabbits	6.58	7.6	68	1-2/month
Boshveld chickens	10.39	13	89	1-2/month
Indigenous chicken	12.79	88.3	41	1-2/month
Broiler chickens	33.25	4.6	77	1-2/month
Layer chickens / eggs	21	1	80	1/week
Turkeys	6.61	15.2	60	1/year
Ducks	4.3	4.2	86	1-2/month
Guinea Fowls	5.45	15.8	61	1-2/month
Other birds	12.4	4.2	68	1-2/month

Diversified livestock production by MDD

Variable	Total n (%)	MDD for children		P-Value
		Low	Acceptable	
		(<4 groups) n (%)	(=4 groups) n (%)	
<i>Households that keep:</i>				
Goats	245 (63.5)	118 _a (58.1)	127 _b (69.4)	0.026*
Indigenous chickens	343 (88.9)	174 _a (85.7)	169 _b (92.3)	0.039*

Notes: *P <0.05, Pearson's Chi-square Test; †P value based on Fishers Exact Test

Households that kept goats and indigenous chickens were associated with attainment of acceptable MDD for children. People keeping goats and indigenous chickens were more likely to eat meat more than those not keeping these animals.

Diversified livestock production and MDD-W

Variable	Total n (%)	MDD-W		P-Value
		Low	Acceptable	
		(<5 groups) n (%)	(=5 groups) n (%)	
<i>Households that keep:</i>				
Cattle	248 (55.9)	170 _a (60.3)	78 _b (48.1)	0.017*
Sheep	8 (1.8)	1 _a (0.4)	7 _b (4.3)	†0.004*
Rabbits	34 (7.7)	15 _a (5.3)	19 _b (11.7)	0.017*
Boshveld chickens	48 (10.8)	21 _a (7.4)	27 _b (16.7)	0.004*

Notes: *P <0.05, Pearson's Chi-square Test; †P value based on Fishers Exact Test

- Ownership of small livestock like sheep, rabbits and Boshveld chickens was significantly associated with attainment of acceptable MDD-W for women of child bearing age (15-49 years) in these households. People keeping these small livestock were more likely to be consuming meat than those not keeping these.
- Ownership of cattle was associated significantly with low MDD-W. FGD participants indicated that the primary reason for keeping the large livestock like cattle was for draught power and/or economic assets.

MDD - Minimum Dietary Diversity for Children. Indicator used to assess dietary diversity for children aged 6 - 23 months. Children consuming 4 of 7 food groups are said to be consuming a diet adequate to meet their nutrient needs for growth and development for an active healthy life.

MDD-W - Minimum Dietary Diversity for women. An indicator used to assess adequate dietary diversity for women aged 15-49 years. Women consuming 5 of 10 food groups are said to be eating a diet adequate to meet their nutrient requirements for a healthy life.



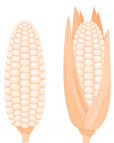
Crop & Livestock Production and Diversification

Key Findings

- Cattle, goats and indigenous chickens were reportedly owned by majority of households. Other livestock owned included turkeys **(15.2%)**, guinea fowls **(15.8%)** and boshveld chickens. Except for cattle, more than **50%** of households reported starting to keep these livestock after they joined the programme.
- Unfortunately consumption of animal protein was at most once a week for the **1%** of households with layers chickens and 1-2 time per months for majority of other small livestock.
- Only households that kept goats and indigenous chickens were associated with attainment of acceptable MDD for children
- Ownership of small livestock like sheep, rabbits and Boshveld chickens ($P=0.004$) was significantly associated with attainment of acceptable MDD-W for women of child bearing age.
- Households keeping small livestock like goats, rabbits, indigenous and Boshveld chickens were more likely to consume meat than those not keeping these
- Farmers reported joint ownership of majority of livestock they owned.
- Boshveld chickens **(33%)** and broiler chickens **(6%)** were the only livestock that farmers reported receiving support from the LFSP to own.
- Majority of the **4.6%** owning broiler chickens and the **1%** owning layers chickens reported that these were not for consumption, but for the market.
- Major challenges faced by farmers in livestock production were; **livestock diseases and deaths, high production costs, lack of start-up capital** and **knowledge deficit**. Farmers requested further support with animal health and disease management as well as access to improved livestock breeds.

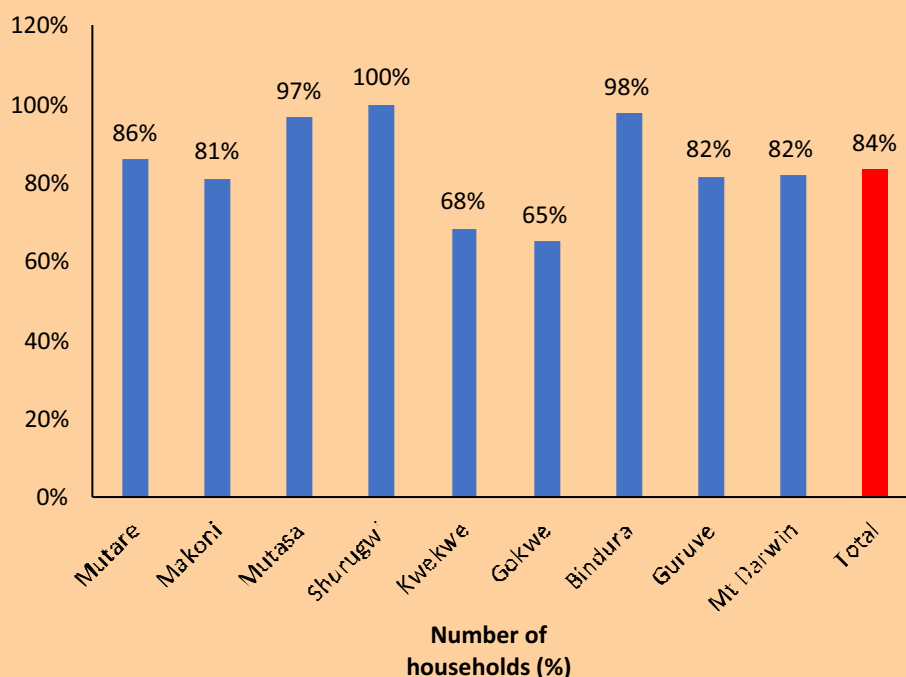
Key messages

- Animal protein consumption by women and children was strongly correlated with household small livestock production, therefore strategies to enhance small livestock production particularly goats, indigenous and Boshveld chickens and chickens would significantly contribute to better household nutrition security.



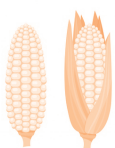
Production of Biofortified Crops

Knowledge of biofortified crops



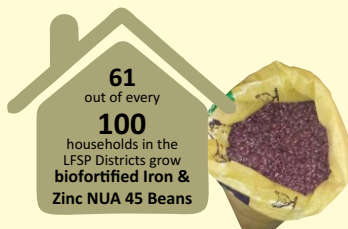
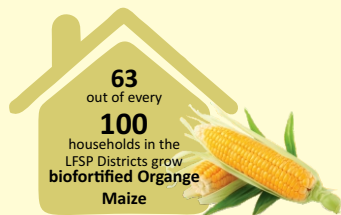
Key Findings

- Majority of interviewees could correctly answer a set of question on what biofortified crops are, showing knowledge on biofortification is very high. Only Kwekwe and Shurugwi had knowledge levels below **80%**.
- Motivation for producing VAM and HIB was mostly health and nutrition benefits (**83%** and **77%**) respectively.
- The source of knowledge was reported to be Care Groups, AGRITEX workers and LFSP staff. Communities reported having learned about biofortification from the LFSP

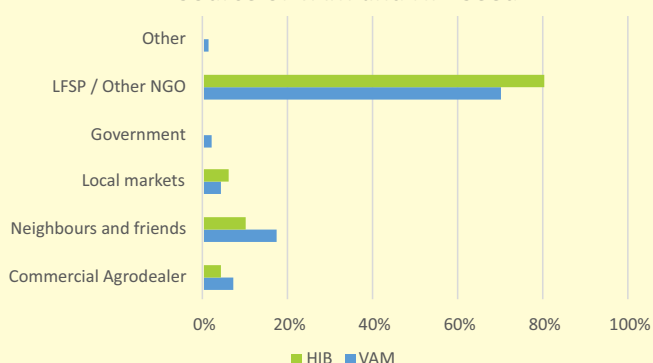


Production of Biofortified Crops

Production of Biofortified crops



Source of VAM and HIB Seed

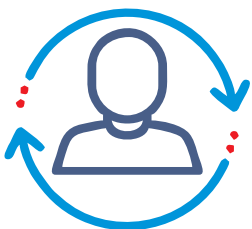


Key Findings

- Despite the high knowledge, production of biofortified crops remains relatively low **63%** and **61%** respectively.
- Farmers also reported growing just small portions for the VAM equivalent to 2kg seed at most compared to 10kg and more of white maize. Production was not enough to meet their day to day maize consumption.
- Majority of households reported getting VAM and HIB seed either from LFSP or other NGO programmes, **70%** NGO for VAM and **80%** LFSP for HIB.
- Cost of seed, late availability of seed in agrodealer shops as well as unavailability of seed at local levels were mentioned as some of the challenges affecting biofortified crop production
- Majority of HH reported willingness to buy VAM maize meal and HIB grain (95.8% AND 97.5% respectively).

Key Message

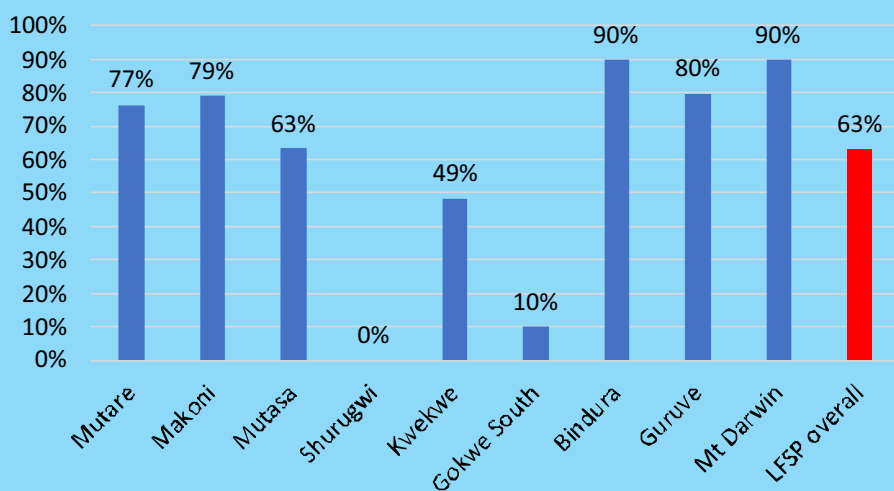
Production of VAM and HIB is still low, both in terms of proportion farmers growing - 63% and 61% respectively and level of production - mostly 2kg of seed or less for VAM and 1kg or less for HIB



NUTRITION BEHAVIOUR CHANGE COMMUNICATION (NBCC) USING THE CARE GROUP MODEL

Participation in Care Groups

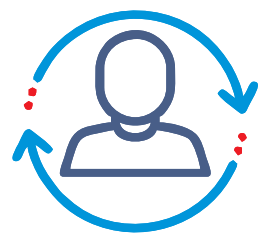
Participation in care groups by districts



63.3% of eligible households (HH) had a member participating in the Care Groups

Key Findings

- Participation in Care groups was very high in ENTERRPIZE followed by INSPIRE and very low in EXTRA.
- Care Group participants felt the behaviour change sessions were very helpful in increasing their knowledge and understanding of healthy eating and basic household hygiene.



NUTRITION BEHAVIOUR CHANGE COMMUNICATION (NBCC) USING THE CARE GROUP MODEL

Behaviour knowledge & practice

Behaviour	% Knowing the behaviour	% Practicing the behaviour
Safe household processing, preparation, preservation and storage of food.	80	20
Exclusive Breastfeeding for children from birth to 6 months.	100	90
Offer children aged 6-24months, timely, adequate and diverse complementary feeding with continued breastfeeding up to 2yrs and beyond.	80	50
Good nutrition for women of childbearing age	90	70
Household production and consumption of diverse nutritious foods including Neglected Underutilized Foods, iron-rich and Vitamin A rich foods all year round.	80	60
Household production and consumption of Biofortified crops.	100	60
Hand washing at the five critical times for all household members.	90	90
Household use of hygiene enabling facilities - tippy taps, rubbish pits, improved latrines and pot racks.	90	100



NBCC - USING THE CARE GROUP MODE

Key Findings

- Knowledge of the promoted behaviours amongst Care Group participants was in all cases higher than practice.
- Participants mentioned several barriers affecting practice ranging from – poor access to food, influence of culture, lack of income to acquire promoted technologies, inadequate knowledge and confidence and general poverty.
- Many women however reported being motivated by ensuring good health and well being of their families.
- Women reported that they found the behaviour change sessions very helpful and participated willingly.

Key messages

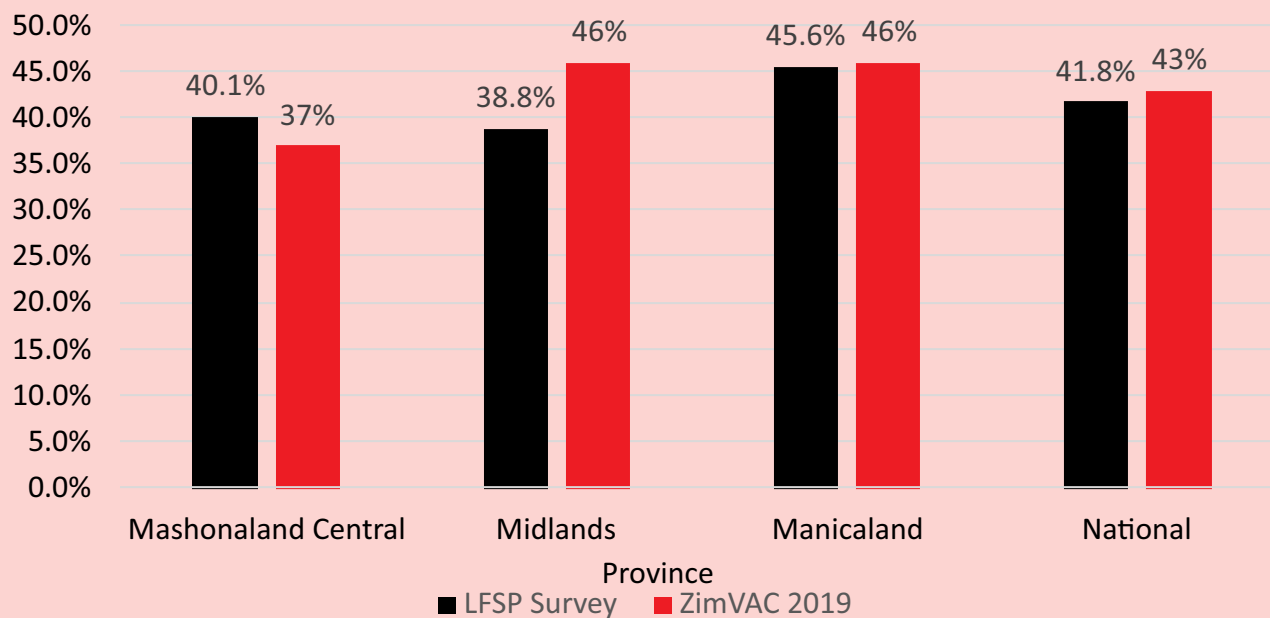
- Participation in Care Groups is still low and needs to be brought up to at least 80% of all eligible women and children for meaningful impact.
- Care groups should support women to overcome the barriers affecting their practice of the promoted behaviours.



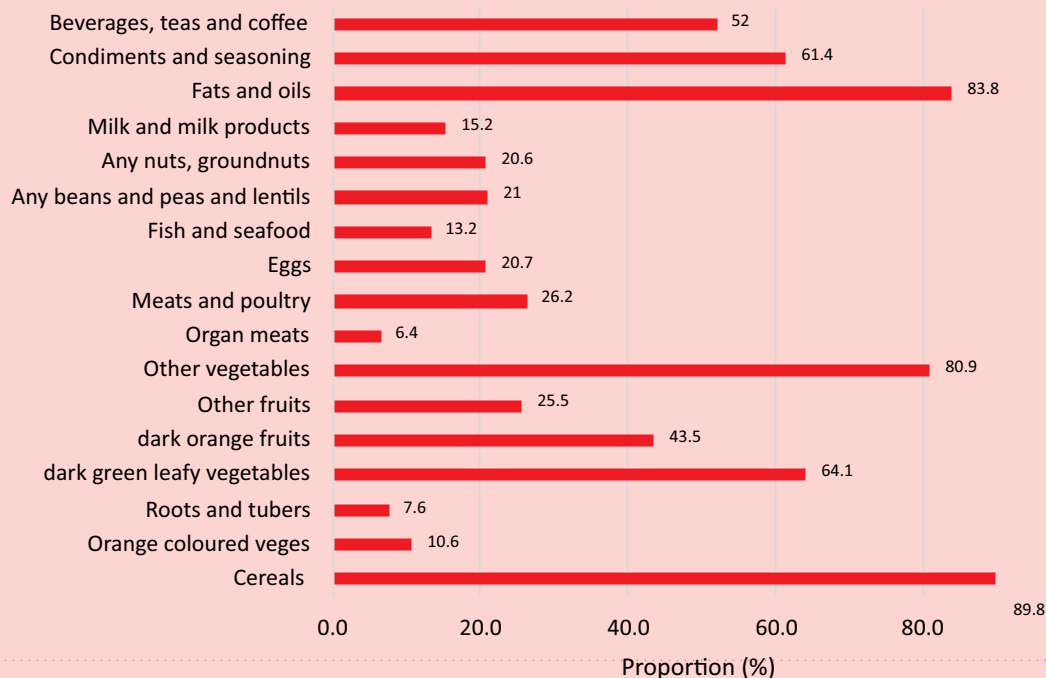
CONSUMPTION OF DIVERSE AND NUTRITIOUS FOODS

Minimum Dietary Diversity for Women MDD-W

MDD-W, LFSP vs ZimVAC 2019



Food groups consumed by women



Key Messages

As highlighted in the findings under the crop section above, growing crops like sorghum, rapoko, HIB and fruits, together with small livestock like goats, indigenous chickens, Boshveld chickens and rabbits helps improve adequate nutrient intake for women and children. Supporting more households to achieve this is important to improve nutrition status of women and children in the LFSP.

Key Findings

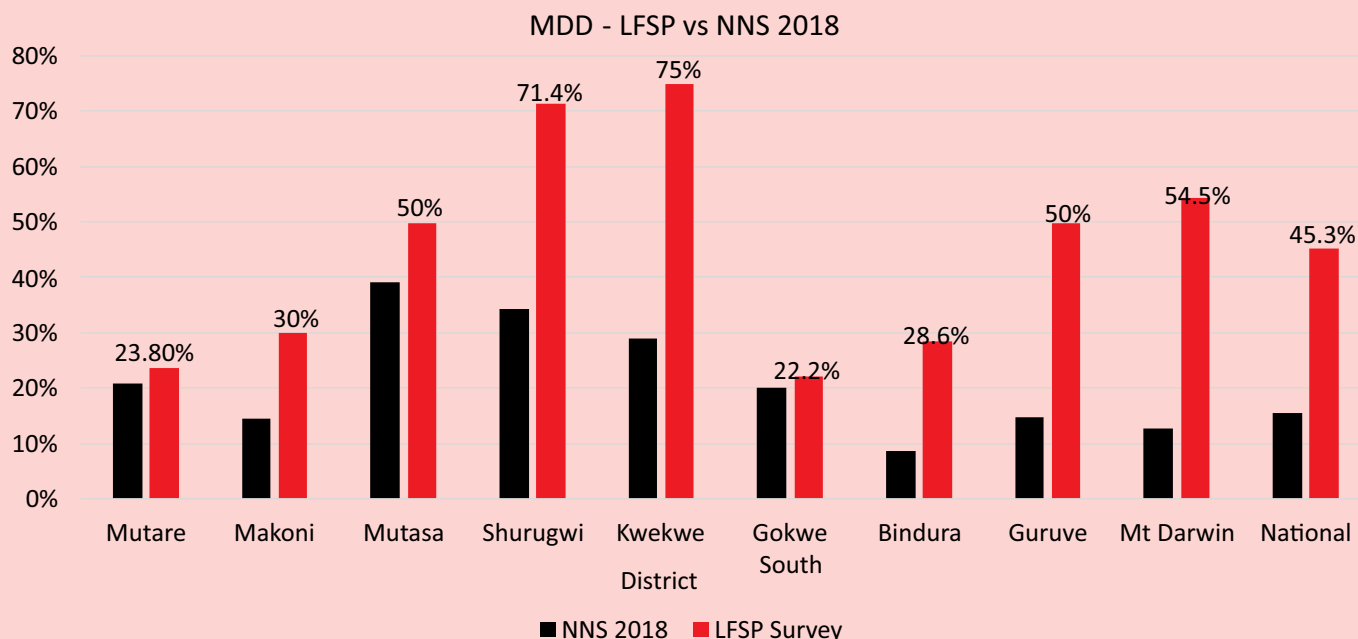
- Less women in LFSP districts were consuming diets adequate to meeting their nutritional needs compared to other places as reported by the ZimVAC 2019 Rural assessment report.
- The most commonly consumed food groups by women were fats and oils, other vegetables and cereals. Very few women reported consuming animal protein, legumes and orange coloured vegetable.

***Note:** It is however worth noting the differences in the timing of the 2 assessments – the ZimVAC collected data just after the harvest – in April/May while the LFSP collected data at the start of the peak hunger season – in November 2019. Seasons have an effect on household food availability and can affect dietary diversity indicators.

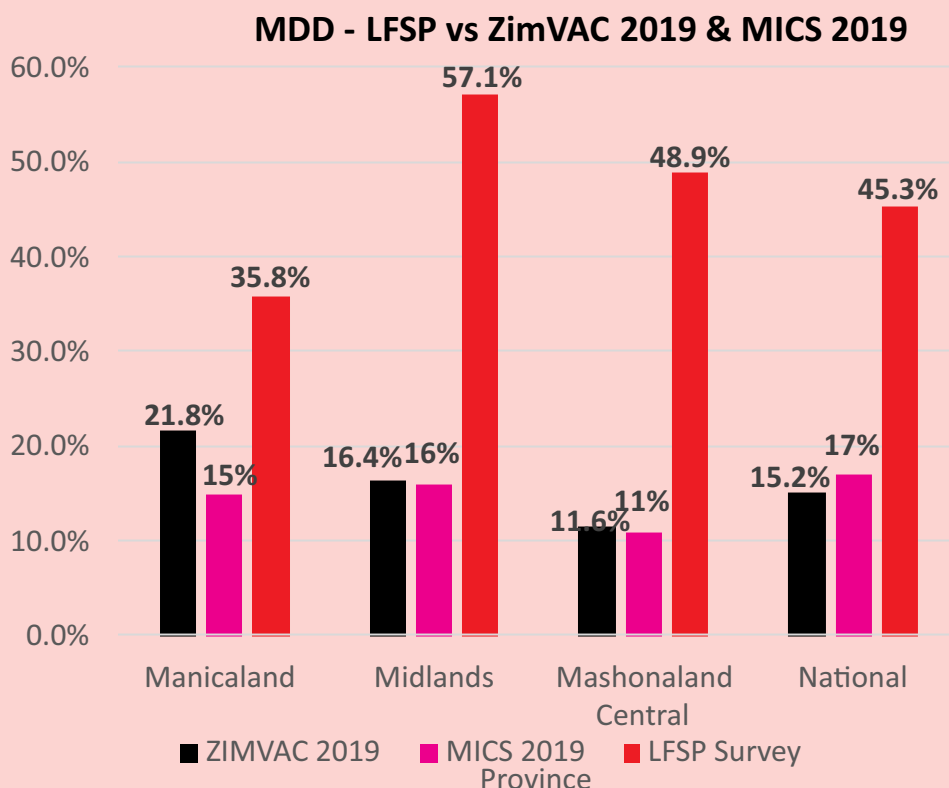


CONSUMPTION OF DIVERSE AND NUTRITIOUS FOODS

Minimum Dietary Diversity for Children



Minimum Dietary Diversity for Children

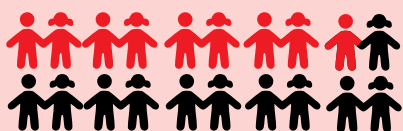


Key Findings

- More children in LFSP districts were consuming diets adequate to meet their nutrition needs compared to many other children in the country as reported by various national assessments..
- Children of mothers and primary care givers participating in Care Groups were more likely to be consuming a minimum acceptable diet (53.4%) than their non-participating counterparts (35.8%)
- Unavailability of food in the households was reported by mothers and caregivers as the major reason for failing to feed children diverse diets – (Children are fed whatever is available in the household)

Key message

- The Care Group Model is helping improve children's dietary patterns in LFSP districts.

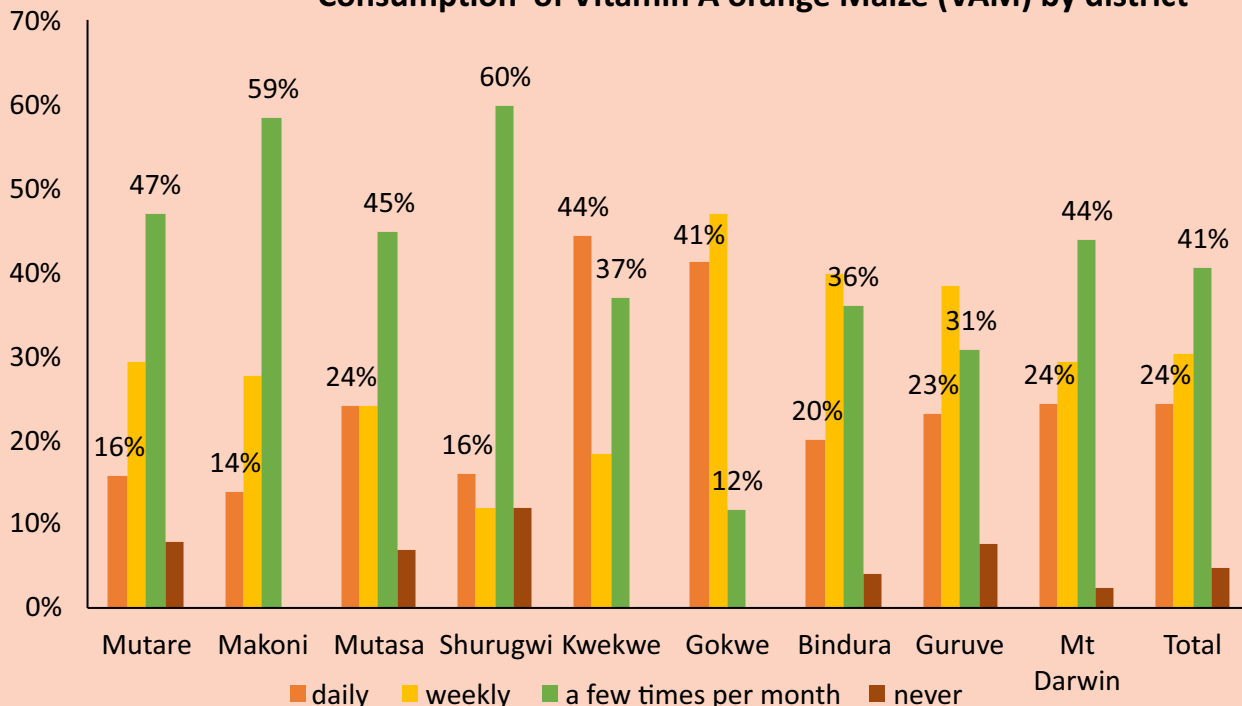


Overall **45.3%** of children in the sampled HHs were receiving the recommended minimum dietary diversity (MDD).

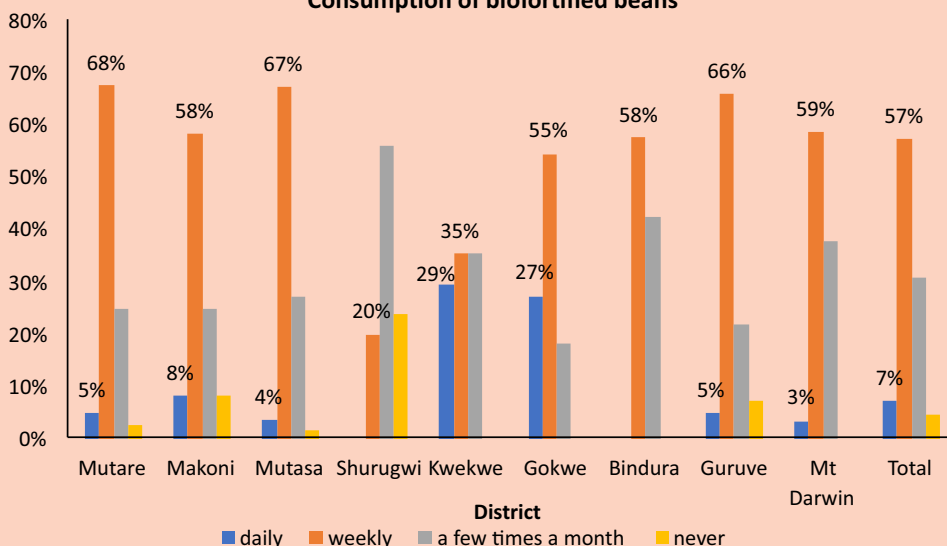


Consumption of Biofortified Crops

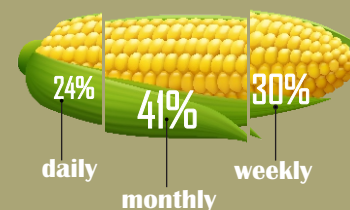
Consumption of Vitamin A orange Maize (VAM) by district



Consumption of biofortified beans



consumption of biofortified Orange Maize



consumption of biofortified Beans



Key findings

- Consumption of VAM in majority of LFSP districts was mostly just a few times per week, except in Gokwe South, Bindura and Gurube where weekly consumption was reported.
- Households with a person participating in Care Groups reported more production and consumption of biofortified crops (**77.8%**), than those without (**64.1%**).
- Unlike maize, consumption of beans was a little more regular – mostly weekly except for Kwekwe, where daily consumption was also higher than in any other district.

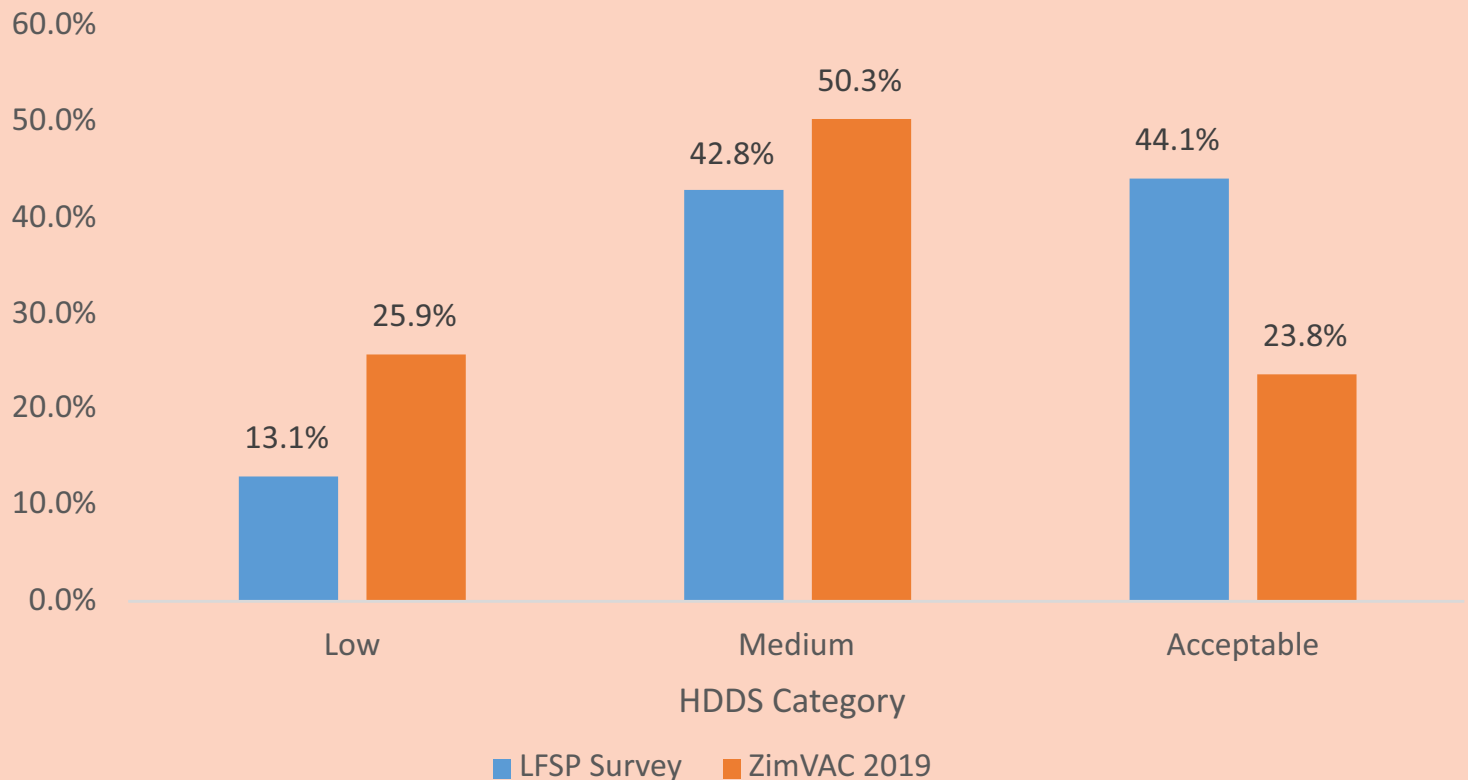
Key Messages

- The low consumption of VAM is a reflection of the low production, which was reported to be above minimal. Most households were growing biofortified crops on small pieces of land
- Care Groups appear to be helping promote production and consumption of biofortified crops.



Household Dietary Diversity

HDDS LFSP Survey vs ZimVAC 2019



Key findings

- More households in LFSP districts had acceptable household economic access to food compared to the national level as reported by the ZimVAC 2019 Rural Assessment. However, this still constitutes less than 50% of the programme households.
- This finding was despite the fact that the LFSP collected data in November 2019, towards the peak hunger season, while the ZimVAC collected data just after the harvest, in April/May 2019
- Households with a member participating in Care Groups were more likely to report increased production and consumption (75.6%) of a wide variety of foods compared to those without (62.3%).
- Unavailability of food at household level was reported as one of the reasons affecting diversified consumption.

Key Messages

- Participation in Care Groups was associated with achievement of household dietary diversity.

Summary Findings



Conclusions

- Growing small grains (sorghum and rapoko), HIB, orange fleshed sweet potato and fruits is associated with consumption of nutritionally adequate diets for women while growing of orange maize, Irish potato and orange fruits and vegetables was associated with consumption of nutritionally adequate diets for children.
- Majority of LFSP households rely on the government input distribution programme for their maize seed needs. Getting VAM and HIB into this programme would increasing production and consumption of these crops.
- Maize and green leafy vegetables were the crops reported by majority of households to be sold on local markets. It can be concluded that local markets are not a major source of nutritious food crops like orange fleshed fruits and vegetables, small grains and biofortified crops like VAM and HIB. Farmers rely mostly on what they produce for consumption.
- Small livestock production, particularly goats, indigenous and Boshveld chickens and rabbits was associated with consumption of nutritionally adequate diets for women and children.
- Knowledge on biofortified crops – what they are and their benefits is very high, but production remains minimal with heavy reliance on the programme. Unavailability of seed at the right time was reported as one major gap.
- Participation in Care Groups was associated with an adequate household dietary diversity score, increased knowledge, production and consumption for biofortified crops and adequate MDD for children
- There remains a gap between knowledge and practice of LFSP promoted behaviour, focusing on identified barriers.
- The LFSP is doing well in MDD and HDDS compared to children and household in other areas as reported by national assessments, but poorly for MDD-W.



Recommendations / Way Forward

Diversified Crop and Livestock Production

- Support households to produce crops like small grains, VAM, HIB, orange fleshed sweet potatoes, orange fruits and vegetables and other sweet potatoes which have been shown to improve the diets of women and children.
- Support households to produce small livestock like goats, indigenous and Boshveld chickens and rabbits which have proven essential to improve the diets of women and children.

Biofortification Promotion

- Address timely availability and access of seed to farmers, as this is a major hindrance to increasing production.
- Consider getting VAM and HIB in the government input programmes as this is a major source of seed for majority of farmers, especially maize.

Nutrition Behaviour Change Communication

- Increase the coverage and reach by Care Groups in all districts, especially in EXTRA, to a minimum 80% of all eligible women and children.
- Target men, elderly women and other significant others in messages promoted through Care Groups to increase adoption.
- Focus on the highlighted barriers to adoption of promoted behaviours in running Care Groups so as to increase practice.