



Conservation Farming Unit

CONSERVATION FARMING & CLIMATE SMART AGRICULTURE

DFID CSAZ ADOPTION SURVEY REPORT

2016/2017

By the CFU RM, M&E Team



This report presents key adoption survey findings for Year 1 upon the implementation of the CSAZ Programme by the Conservation Farming Unit under DFID in June 2016. This report covers the 2016/2017 CFU training period and farming season.

ACRONYMS

ADP	Animal Draught Power
CA	Conservation Agriculture
CAPI	Computer Assisted Personal Interview
CF	Conservation Farming
CFU	Conservation Farming Unit
CSA	Climate Smart Agriculture
CSAZ	Climate Smart Agriculture Zambia
CSPro	Census and Survey Processing System
CT	Conservation Tillage
DFID	Department for International Development
FC	Farmer Coordinator
FGD	Focus Group Discussion
FISP	Farmer Input Support Programme
FO	Field Officer
HH	Household
MRM	Monitoring and Results Measurement
MS	Microsoft
MT	Minimum Tillage
SFO	Senior Field Officer
SPSS	Statistical Package for the Social Sciences
ToC	Theory of Change
TSP	Tillage Service Provider

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EXECUTIVE SUMMARY

The Conservation Farming Unit (CFU), under the sponsorship of the British Government's Department for International Development (DFID), launched a 5-year Climate Smart Agriculture Zambia (CSAZ) in July 2016. The programme seeks to improve food security to over a million people by providing trainings to an outreach of over 200,000 farmers annually across four of the CFU's areas of operations; Central, Eastern, Western and Southern regions. The project is guided by at least three theories of change. The first is that if farmers are well trained in Climate Smart Agriculture (CSA) technologies, then they will adopt the technologies. The second is that if the private sector (agro-dealers and tractor owners and suppliers) are well mobilised, CSA technology adopters will realise even smooth and increased benefits of adoption. The third (not covered by this study) is that if farmers adopt CSA technologies, then they will achieve improved livelihoods and food security.

An internal survey was conducted by the CFU's M&E department. The study used a survey methodology to establish the proportion of farmers who, after the 2016 trainings, adopted the content of the CSA technology trainings. The survey was carried out across 11 out of the 31 districts and in all the four areas of CFU operations in Zambia. The sample size was 446 trained farmers each representing a unique household whose member was trained in 2016. The survey established of those that took up a CSA minimum tillage technology in the 2016/17 season, **21.9%** of the trained farmers who adopted CSA had not used the technology before the 2016/17 season while **78.1%** were continuing adopters who had used a CSA technology prior to the 2016/17 season. All in all, (both new and old adopters), the survey showed that **66%** of the trained farmers adopted minimum tillage during the 2016/17 cropping season. In summary, the survey established the following:

- ✓ **20,305** is the number of new farmers who have adopted CF MT CSA during year against a target of 20,000 farmers.
- ✓ **10,405** is the total hectareage put under CF but computed from Mechanised tillage only. This is against a year one target of 8,940 hectares.
- ✓ **11,383** is the number of new adopters using ADP and mechanised tillage services in the 2016/17 season against a target of 8,500 farmers.
- ✓ **7,391** is the number of new adopters who used herbicides for weed control purposes against a year 1 target of 13,390 farmers
- ✓ **125** is the total number of service providers offering mechanized tillage services and ADP tillage services in Year 1 against a set target of target 400 TSPs.

Contrary to the M&E department thinking that adoption could be influenced by factors such as the sex of the head of household, findings were that there is no evidence to suggest that adoption is dependent on gender of HH head, household's labour size, nor the presence of animal draft power in a household.

Key recommendations that should be seriously considered by the CFU as we prepare for the second year are as follows:

- ✓ There is need for deliberate efforts to increase the number of ripper suppliers and bring them as close as possible to the farmers.
- ✓ While mechanized tillage should continue to be encouraged, emphasis must also be placed on ADP because most CSAZ trained farmers are small scale and although some can hire tractors for ripping, many of them do not have sufficient financial resources to meet the demands of mechanised TSP
- ✓ It is imperative that In-Community Agro-dealers should be encouraged to increase presence through private sector partnerships.

1.0 INTRODUCTION

This section gives a background to the Conservation Farming Unit (CFU) and the Department for International Development (DFID)'s sponsored Climate Smart Agriculture Zambia Programme (CSAZ). It details the Theory of Change (ToC) specific to adoption and gives the study objectives. The last part briefly touches on study delimitation as well as challenges.

1.1 BACKGROUND OF THE CSAZ AND CFU

The Conservation Farming Unit (CFU), a not-for-profit organization being sponsored by the British Government's Department for International Development (DFID), under its Climate Smart Agriculture Zambia (CSAZ), provides trainings to an outreach of over 200,000 farmers annually across four (4) CFU operation regions namely; Central, Eastern, Western and Southern. This covers a total of 31 Zambian districts. The project has 81 Field Officers (FOs) and 11 Senior Field Officers (SFOs) across the four regions. Each FO trains and/or oversees training of about 2,700 farmers three times annually. While these farmers are expected to be unique individuals, there has not been a deliberate policy stopping farmers from repeating trainings as it was felt that they would always have a genuine reason for being present in the same session as they one they attended before. The majority of trainees of CFU are small-scale farmers in the rural areas of Zambia. These trained farmers are in turn expected to practice one form or another of minimum tillage as they have been trained. The previous of such types of trainings were conducted during the 2016 round of trainings in preparations for the 2016/2017 season namely:

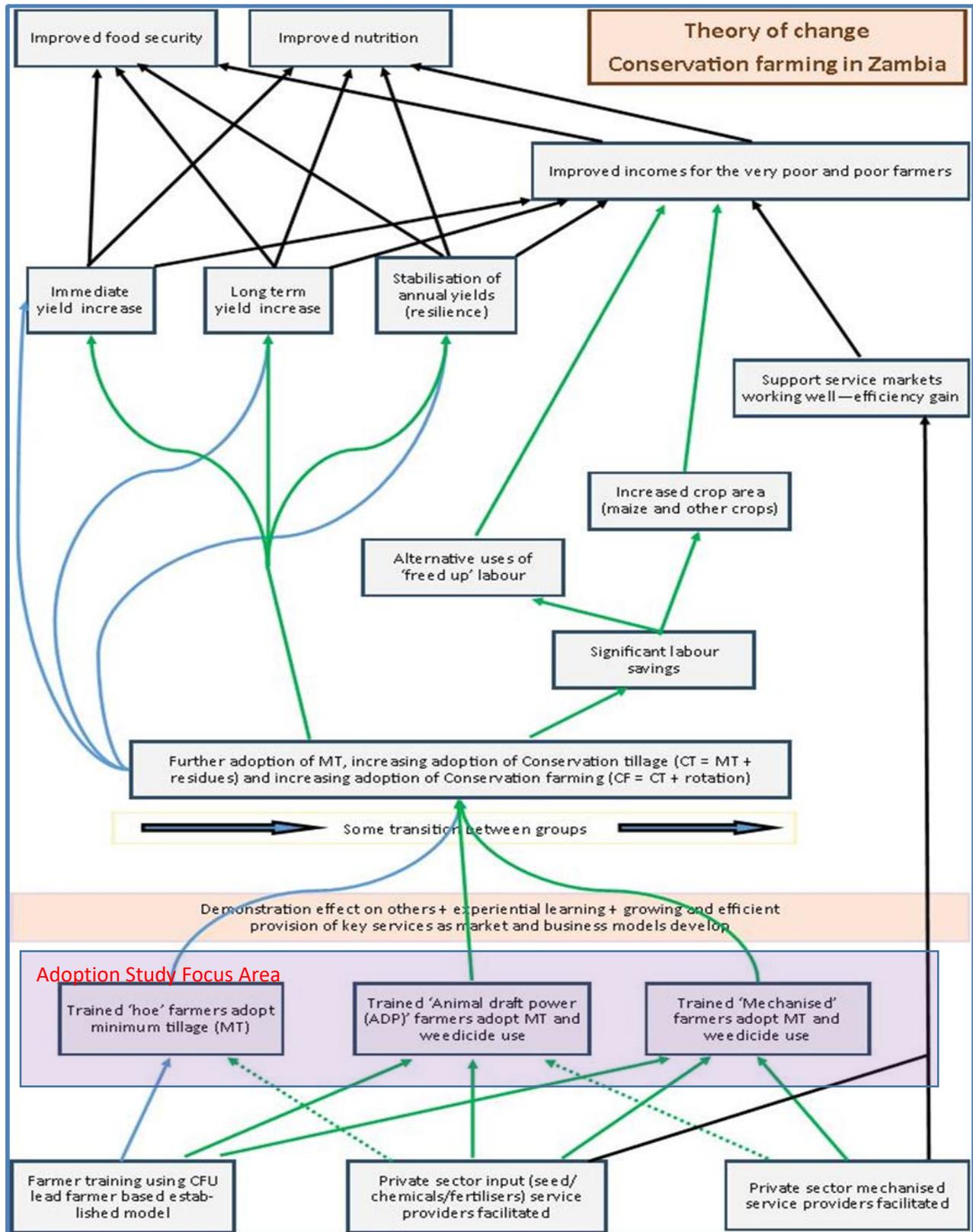
- ✓ Period 1-Land Preparation (with three sessions similar in content, to cater for more than the 30 farmers expected in one training session),
- ✓ Period 2-Nutrient application and seeding (three sessions as above),
- ✓ Period 3-Weed management (again with three sessions).

The core purpose of these trainings was to ensure that the farmer would move on to adopt the CF technology. Ideally a farmer needs to attend all three periods in order for them to gain the complete set of skills needed for full adoption. However, a farmer who goes on to attend at least period one and two and then practices (for year 1) minimum tillage would qualify to be called an adopter. The survey sought to find out if and how many of those trained farmers had adopted the CF technology and if not, why not.

1.2 CSAZ THEORY OF CHANGE

The CFU's CSAZ Theory of Change (ToC) below outlines how training farmers leads to adoption and other higher indicators like yield increase. The highlighted sections of the ToC were the subject matter for this Adoption Survey. The ToC breaks down the different categories of adopters and how these categories interact with each other. It follows from the ToC that trained farmers adopt the different levels of the technology (Minimum Tillage, Conservation Tillage and Conservation Farming) and over time adopt further by progressively moving from MT to CT or from CT to CF. In the survey, questions were raised in such a way as to bring out those differences and see which category is 'housing' most of the adopters under the programme. The survey also tried to establish to some extent whether farmers have progressed from Minimum Tillage (MT) to Conservation Tillage (CT) and to Conservation Farming (CF) by asking what tillage method they employed on the same field in question during the previous season and what type of crops were grown (to check for crop rotation).

Figure 1: CSAZ Theory of Change



1.3 STUDY OBJECTIVES

The main objective of this survey was to ‘*Establish the proportion of 2016 trained farmers that adopted the technology of Conservation Farming (CF).*’

The specific objectives were as follows:

- ✓ Establish the composition of the households from which these farmers come
- ✓ Establish number of CFU trained farmers who have adopted climate smart agriculture at its different levels as defined by the CFU
- ✓ Establish the intra-household ownership of plots by both gender and disability (i.e. fields cultivated other than those of the whole household and the types of tillage they are under).
- ✓ Determine the type of crops planted by farmers under each tillage method
- ✓ For fields prepared with tractors (mechanized) or animal draught power (ADP), establish whether tractors and/or oxen were owned or hired by farmers
- ✓ Determine when farmers accessed seed and when farmers planted crops with regard to the time frame recommended for conservation agricultural practices in Zambia.
- ✓ Determine frequency of weeding throughout the season of focus.
- ✓ Determine herbicide usage among trained farmers.

1.4 DELIMITATIONS

The targeted respondents for this survey were the 2016/2017 CSAZ trained farmers across all the four (4) regions of the CSAZ programme as named above. In these 4 regions and out of a total of 31 districts, the survey was carried out only eleven (11) randomly selected districts - Luano, Chisamba, Rufunsa, Petauke, Lundazi, Vubwi, Pemba, Namwala, Choma, Shibuyunji and Mumbwa. In addition, only Field Officers (FOs), Farmer Coordinators (FCs) and farmers from the sampled districts were eligible for being part of the survey.

1.5 CHALLENGES

As will be expected for any study, the Adoption Study faced several challenges. It however suffices to note that none of the challenges encountered had any significant impact on the results of the survey. The first challenge faced was that of accessibility of individual farmers due to rough terrain. This was a household survey and hence it was planned in such a way that interviews would take place within the homestead of the respondents. In some cases, enumerators had to walk over a kilometer to get to the homestead of the farmer as there was no access road. Fortunately, the enumerators had been forewarned and hence they expected this. The second challenge emanated from the first one as walking great distances impacted on the time allocated to each village/district had not anticipated such walking distances. However, the walking distances were not the same in all areas and there were areas where in fact the distance from one sampled household to the next was less than 100m and this evened out the time allocated to the entire survey. The third challenge was establishing land size. Farmers just did not know how big their plots are and the plots were not always close to homesteads. It was therefore resolved that the survey

would proceed without exact plot sizes and further exercises would ensure a system will be put in place to establish plot sizes long before adoption surveys. The final challenge was that randomly sampled farmers were sometimes from the same household (since the training registers were not taking into account household membership of trainees). The survey was a household based survey and hence that meant replacing such members from the same households since the information from such respondents would have ended up being the same and therefore biasing the results. This was a strain on the tight timeline but had to be done, such sampled persons were replaced by someone else from the pool of replacement respondents that had fortunately been created before starting data collection.

2.0 STUDY METHODS

This survey was conducted in all four (4) regions of the CSAZ project (namely Central, Eastern, Western and Southern) in specific randomly sampled districts within these regions. The overarching methodological framework was sample survey and the data collection tool was a structured questionnaire in Computer Tablets using CSPro software. Qualitative methodologies such as Focus Group Discussions (FGD) and open ended discussions with Farmer Coordinators (FCs), as well as field observations of the crop status at the time of the survey were done. Qualitative methods were conducted by the MRM team. The survey findings were analysed using the Statistical Package for Social Sciences (SPSS) before exporting data to MS Excel for graphing and tables.

2.1 STUDY TOOLS

The tools used in this study were:

- Structured computer based questionnaire
- Focus Group Discussions and Open-Ended Discussions
- Field observations

2.1.1 Structured Computer Based Questionnaire

The structured questionnaire, administered by the enumerators, was a systematic compilation of questions whose specific purpose was to determine the actual practices/ adoption taken up by farmers after-training in the 2016/2017 farming season. The fact that the sample was generated from a database of farmers who were trained by the CFU under CSAZ in the 2016/2017 season meant that the resultant adoption pattern can be attributed to the training. Furthermore, the questionnaire incorporated aspects of gender in households (HHs) in order to establish the extent to which women within the household own land and make decisions regarding the land they own in cases where they do. Such decisions would include (but not limited to) what tillage method to use, what crops to grow and who they sell produce to in order to obtain an income. Another aspect of gender was with regard to the sex of the trainer and opinions on whether this would have had a different impact on the training or on the farmers had the trainer been of the opposite sex. Assets owned and inputs accessed were also areas of interest covered by the questionnaire. The questionnaire is attached as Annex 1.

2.1.2 Focus Group Discussions and Open-Ended Discussions

The FGDs were administered to a group of Farmer coordinators (FCs) following a prepared guide in order to capture perceptions regarding various topics in line with the implementation of CSAZ. These discussions sought to bring out perceptions such as how much of what was trained by FCs during the 2016/2017 season was actually put into practice by the farmers, the addition (in value and livelihoods) that CF has brought about, the impact of climate smart agriculture (CSA) on women and people with disabilities as well as challenges to their uptake of CSA and, finally a look into the future of CSA and its uptake. FCs were also engaged in open-ended discussions in order to establish and have a feel of issues surrounding adoption.

2.1.3 Field Observations

Actual observations of the crops in farmers' fields at the time of the survey were made where the farmer had not yet harvested the respective crop that was under CF. Enumerators were trained to make a judgement of whether the crop would be categorised as a "write off", "Fair" or "Good".

2.2 SAMPLING

All the CFU regions were taken as part of the sources of data. Sampling was three-tiered: Random sampling of 11 out of the 31 districts within these regions was done in order for the survey to have an unbiased spread of information. From each sampled district, a random sample of Field Officers (FOs) and Farmer Coordinators (FCs) was first done before finally carrying out a further random sampling of farmers under each sampled FC. . The sampled farmers all came from the register of unique farmers trained by the CFU in 2016 and were proportionately spread across all sampled areas taking into consideration the size of the areas and the number of trained unique farmers. There was no need to sample untrained farmers as this survey was establishing adoption levels rather than answering the question "Does CF work"?

2.2.1 Geographical Sampling

As earlier mentioned, sampling was done randomly at all levels in the different areas. It was decided that the study would take place in all the four CSAZ areas (CFU Regions) so as to assure representatives by capturing any variations introduced by ecological and human resource factors.

Region and District Level Sampling

Table 1: Sample sizes (Regions and Districts)

Region	District	Total Sampled Farmers
Central	Chisamba	31
	Luano	24
	Rufunsa	85
	Region Total	140
Eastern	Lundazi	43
	Petauke	48
	Vubwi	20
	Region Total	111
Western	Mumbwa	50
	Shibuyunji	29
	Region Total	79
Southern	Choma	51
	Namwala	30
	Pemba	35
	Region Total	116

As is shown in Table 1 above, the Adoption Survey was carried out in all four CFU CSAZ regions. The second column shows the randomly sampled districts and then the third column shows total sample sizes randomly drawn from geographical area. This was done in order to enable the survey to be as representative as possible in reflecting an accurate picture of what happened after farmers were trained by the CFU in the 2016/2017 agricultural season.

2.2.2 Field Officer Level and Farmer Coordinators.

From each district, it was also essential that we randomly sample field officers and the respective farmer coordinators (FCs) under them (for the same reason as given above when sampling districts).

Table 2: Sample Sizes (Field Officers)

Region	Field Officer	Number of Farmers sampled
Central	Bruce Phiri	46
	Jellan Zimba	41
	Benjamin Ngoma	23
	Harrison Syamujaye	20
	George Luvila	10
	Total	140
Eastern	Kachaye Phiri	26
	Joseph Musosa	20
	Masauso Nkhoma	20
	Alick Angel Nyirenda	17
	Chanda Kasanda	16
	Esnart Mwale	12
	Total	111
Western	Sam Chinyemba	21
	Timothy Mpandala	16
	Chombe Musowe	13
	Nawa Mubita	11
	Marvel Mwiinga	10
	Joshua Mateka	8
	Total	79
Southern	Osia Njobvu	35
	Passmore Handongwe	33
	Derick Chizinga	24
	Eric Kantolo	24
	Total	116

Table 2 above shows how the sampled farmers were distributed among the different randomly sampled Field Officers (FOs) in the various randomly sampled districts of the regions. Each FO area, having different spread within the districts saw the survey sampling out at least 4, and not more than 6 field officers per region. Once the FOs chosen, a list of Farmer Coordinators (FCs) under them was drawn and then also randomly sampled. The list is long and for ease of reading, it is included in this report as Annex 3.

2.3 DATA MANAGEMENT

Data was collected by 12 enumerators who were engaged for the purpose. Before actual data collection, the enumerators underwent an intensive three-day training workshop which included field trial runs and testing of the survey tool to be administered. Trial runs were carried out in Chongwe area of Central Region. All enumerators recruited were computer literate, possessing beyond a Grade 12 certificate and have previous knowledge of the CSPro application from data entry exercises carried out by the CFU.

The actual data collection was done using Computer Assisted Personal Interviewing (CAPI) software on Lenovo Tablets and therefore all information obtained was electronic. The interviews were designed using CSPro 6.3 Software which ensured that data obtained was of the highest possible quality at that level. Quality assurance rules were built within the CAPI software and this included skipping to the next section if question is non-applicable to the respondent, ensuring that the number of individual HH groupings (such as Under-5s, above 60s, etc.) reported does not exceed the total number of people in a household, districts that are within the correct region etc.

The analysis tool used, SPSS, allowed for robust data management and analysis as it makes use of syntaxes in order to scrutinize the datasets obtained. SPSS enables us to generate different variables and perspectives from which to approach data analysis. Microsoft Excel was also incorporated into the data analysis for enhanced visuals and graphic presentation of survey findings.

3.0 SURVEY FINDINGS

This section focuses on the actual results obtained from the survey. It highlights the composition of the households (HH) from the farmers trained in the year during the 2016/2017 season, the sex of the household head (HH head), as well as the sex of the trained person, and any disabled persons within those households. The section also focusses on household labour size, the number of HH members receiving the same training, and the ages of trained farmers. The size of plots cultivated by farmers practicing CF was, as already noted above, difficult to determine, so this report will present the number of plots that a household has converted to CF. Asset ownership focused on the availability of animal draft power from oxen and donkeys as well as the farm implements that are appropriate to the CF practices. It will be determined if some oxen owners also provided ADP tillage services to farmers.

The section will also discuss issues related to the timely delivery of and access to inputs. The report will also discuss whether farmers planted with the first available planting rains when those occurred for their respective areas. We also examine the uptake of herbicides to control weeds on the part of those farmers who attended training. The frequency of weeding is also explained in this section. Field day attendance by farmers was also analysed.

First however, focus will be put on secondary data on the CSAZ outputs to date so as to give readers an insight into the training of farmers during the 2016 (Year 1 of the project) training period.

3.1 Demographics

3.1.1 Sex of Household Head.

Figure 3 below shows that 81.7% of households are headed by males and 18.3% are headed by females – one in five households is headed by a woman. This mirrors existing gender relationships within the rural Zambian context. Adoption patterns and trends by gender are established in Section 3.4.1 below.

Figure 2: Sex of Head of Household



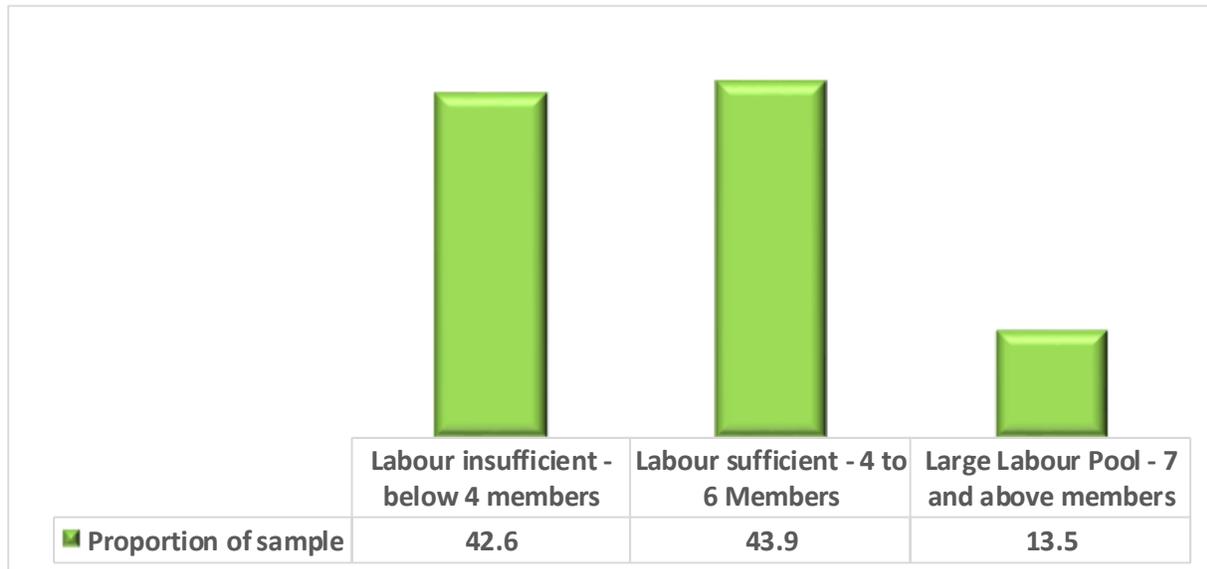
3.2.2 Household Labour Size

Labour restrictions combined with a lack of resources means that some farm families might not be able (assuming they want to) convert CF MT to more plots until later on when the benefits of labour and inputs savings are realised. However, labour constraints affect farming households irrespective of the tillage practices they are doing and not just CF adopters or those wishing to adopt and /or expand their holdings under CF. The categories regarding labour restriction categories are outlined in the bullet points below.

- ✓ Labour insufficient if they have less than four labour active members;
- ✓ Labour sufficient if they have four to six labour active members; and
- ✓ Large labour pool if they have more than six labour active members

As can be seen below in Figure 4, up to 42.6% of the trained households face on-farm labour constraints and fall in the household category where the number of members are below four. Farming families with acute labour constraints might need to hire in labour to carryout key farming operations during the course of the season..

Figure 3: HH available Labour category



Some of these households might also find it difficult to source out and employ outside labour to help with certain farming operations and activities. It is however notable that nearly 60% (57.4%) of the trained farmers have sufficient labour to large labour pools. It is therefore, unlikely that labour is an issue when explaining adoption patterns.

3.2.3 Multiple Trainees within the Household

The CFU holds that it is important to ensure that a household has more than one person trained in the CF practices as well as other technical sessions such as weed control. Both are encouraged to attend training and to subsequently support each other as they try out and eventually adopt the practices. The CFU also encourages

Figure 4: CFU Trainees within a Household



three or more persons from each farming household to attend training if they are going to be actively engaged in key farming operations over the course of the season. This all family approach also ensures that if one person is

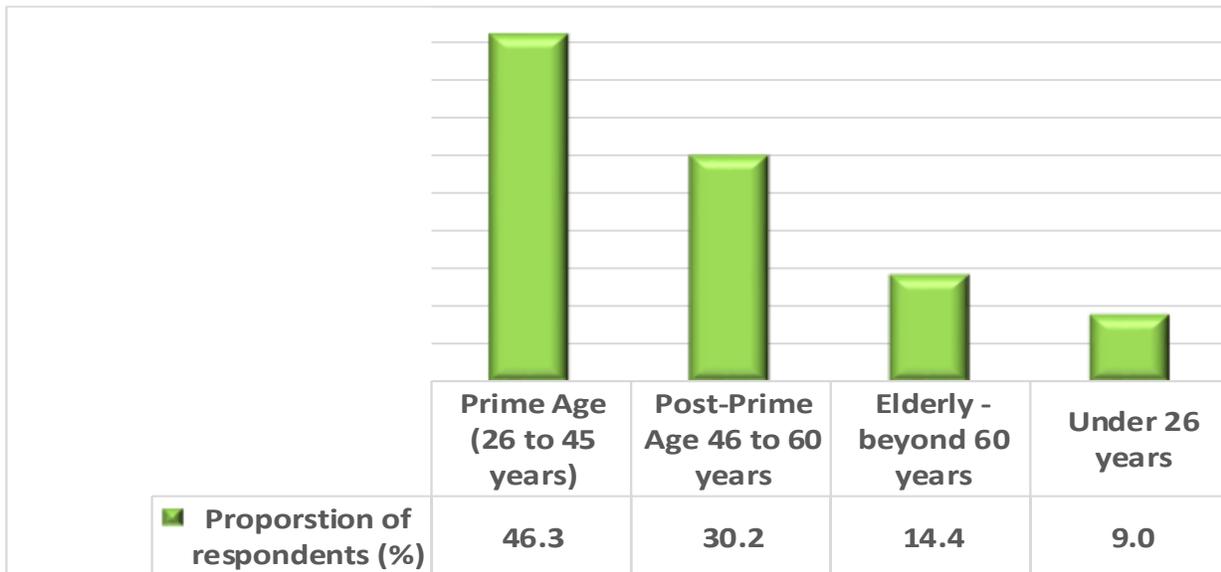
not present for whatever reason(s) during the season, then there is at least one other person capable of managing that operation.

An analysis done on the number of trainees in the household brought to light the occurrence of training of more than one person within the household – usually the respondent and an additional person or persons. Figure 5 above shows the results of the survey. It was discovered over the course of the survey that 58.9% of the households surveyed indicated double trainees comprising spouses only.

3.2.4 Age of trained farmers

Ideally, CF practices technologies are passed from one generation to the next. In general, it is young to middle aged adults who attend training. Figure 6 therefore looks at the age categories of farmers trained by the CFU.

Figure 5: Age of Respondents

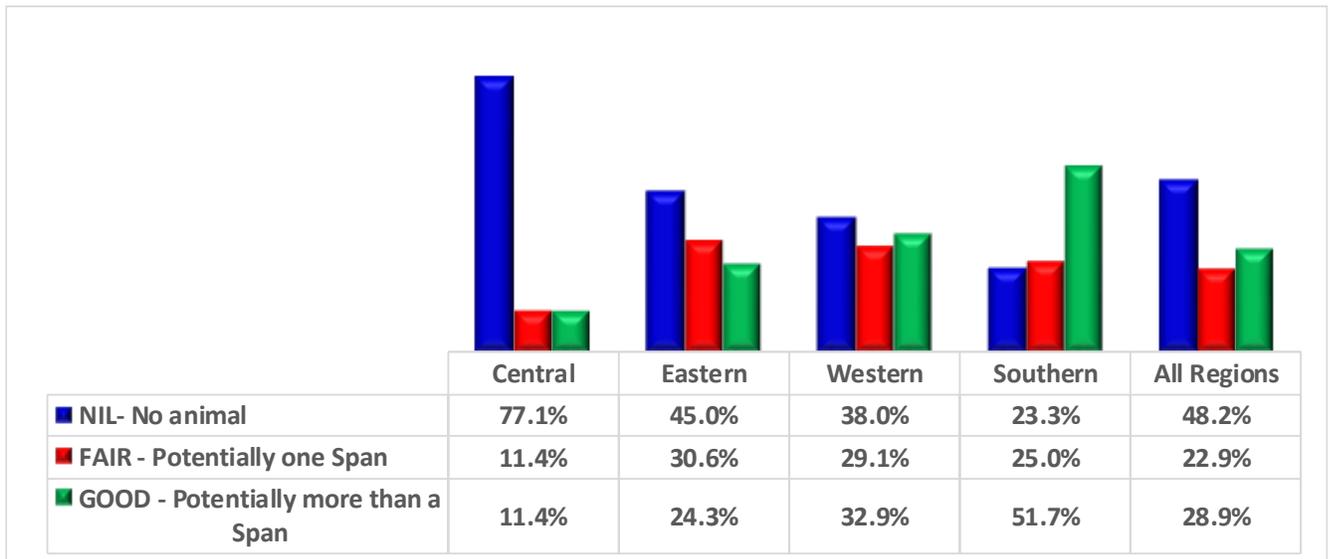


The training appears to be attracting the right population as shown above in Figure 6, where 76.5% of the trained people are within the age group of 26-60 years-old which is made up of the prime age of 26 – 45 representing 46.3% and 30.2% within which the still energetic but post prime age of 46 – 60 year olds fall. This is deemed as the right population to lay the ground work for a generational crossing of farmers who will continue to carry out and expand the CF MT practices. This also appears to be supported by older and more experienced farming members within the communities who have been farming for a relatively longer time. Only 14.4% represented elderly people who are aged 60 and above.

3.2.5 Potential Draft Power in Households

It is a commonly and endlessly echoed assumption that digging CF Hoe basins is more labour and time consuming; however, this comparison is almost always made against animal draft power; making it an unfair comparison for what are obvious reasons. Farmers who own animals are therefore more likely to adopt CF ADP MT for what are also obvious reasons. Farmers who have lost their animals and do not have access to other draft animals might or might not turn to hoe tillage whilst they build up their animal asset base. We therefore felt it important to try and ascertain the level of animal ownership during the survey.

Figure 6: Potential Animals for Draft Power in Households



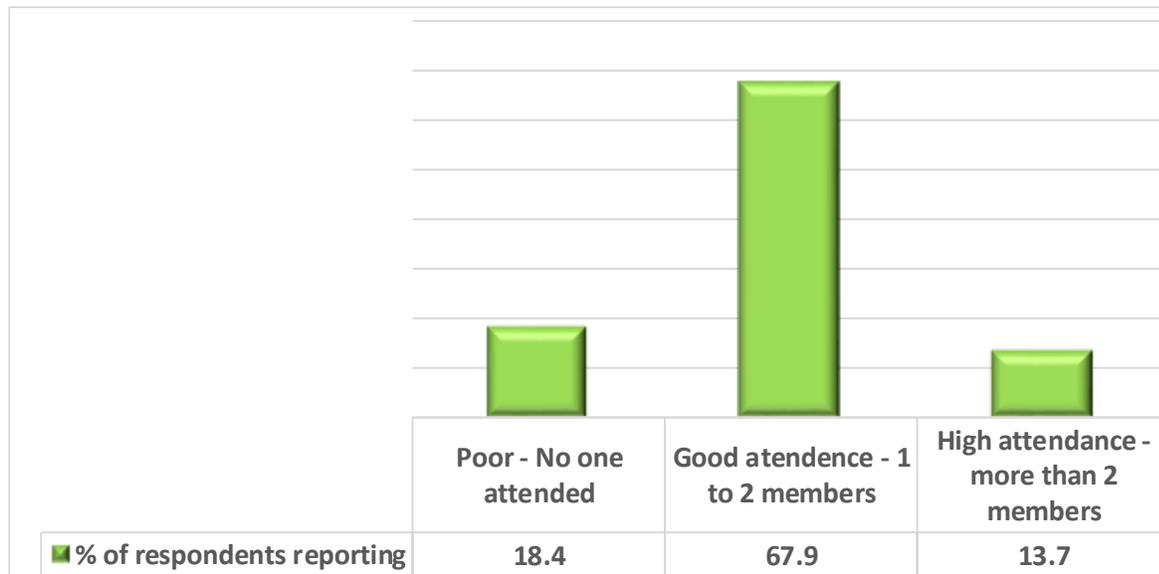
As shown in Figure 7, the survey reveals that 48.2% of the respondents are more likely not to have animals that could be used for draft power. Figure 7 also shows regional difference in ownership of animals. Thus for example, households in the Southern Region are more likely to have animals than those in the Eastern Region. In the absence of a viable household labour force and absence of resources to outsource animal draft power (ADP) and/or mechanised tillage (MT), it would appear that household will have no option but to resort to basins if they wish to adopt the practices. This is not a negative outcome however; as their yields and incomes rise from the adoption of the CF Hoe Mt basins, they can then (as many have done) invest in ADP or mechanised tillage services.

The survey discovered that some of the farmers who previously owned animals have lost them due to various factors including corridor disease and have not been able to replace them in subsequent years. Approximately 22.9% are in a fair position with at least two cattle or donkeys (one span) while around 28.9% are considered good with the potential to own more than a span of animal draft. Farmers who have sufficient working animals at their disposal are more likely to have larger areas of their holdings under CF ADP MT.

3.2.6 Field Days Attendance

The survey also asked farmers concerning field day attendance by members from the respondents' households. It was hoped that, at least for first year trainees, if they have not yet adopted, their resolve to adopt in subsequent years would be strengthened if they attended field days and witnessed first-hand the results of the trainings as others put into practice the same trainings that they had attended but decided for whatever reason(s) not to try out what they had learned during training sessions. This assumption will be tested this coming season.

Figure 7: Field Days Attendance



Field days help *'doubting Thomases'* who would be waiting to see the performance of other trainees and hence very useful to strengthen their resolve to take up CF technologies in subsequent years. Figure 8 shows that only 18.4% percent of the households whose members were trained in 2016 did not turn up for field days. Again, it is hoped and will be tracked how many of those who did attended field days, decide to try out the CF MT practices this coming season.

3.2.7 Does Sex of the trainer Matter

In trying to understand the adoption numbers and what possible barriers there could be, it became important to find out from the trainees whether the sex of the trainer was going to make a difference from the perspective of the trainee and thereby affect adoption. While the majority of respondents (68.0%) held that the trainer's sex really does not make a difference, it was interesting to note that 32.0 % of those surveyed stated that the sex of the trainer was likely to make the training different. The survey therefore sought to find out why even this minority felt that

way. Table 6 shows an analysis of the opinions of respondents. Out of those who said that the sex of the trainer was an important aspect, 69.1 % felt that men were better trainers than women while 16.9 % thought women were in fact better trainers than men. This comes out as mere prejudices as no substantiation of “better in which ways” was put forward. Of more importance, perhaps, were the 8.1 % who held that the training would have been different because they felt freer to interact and ask questions if the trainer were the same sex as them while about 3.7 % gave “gender balance” as the reason why they thought it mattered who trained them (“just so that both sexes were given equal opportunities”).

Table 3: Sex of trainer impact on trainees

Response	Reason	%
Yes (32.0%)	Men are better	69.1
	Women are better	16.9
	Freer to interact with same sex	8.1
	For gender balance	3.7
	Reason not clear	2.2
No (68.0%)	Sex not a factor/same knowledge level	94.5
	Cannot tell/No response	5.5

Overall, most of the respondents said it did not matter who trained them. This is important because while pushing for adoption, it is important to make sure all possible barriers to adoption are addressed otherwise the CSAZ program will continue to spend with lower adoption results. Gender balance is also an important aspect for the program’s donors, DFID and as such, needs to be treated with the importance that we also feel it deserves. This information helps us know the likelihood that adoption will not take place because a trainer if female (or male) is minimal. And although some respondents said that the gender of the trainer mattered, it is highly probable that this is not a factor related to whether a farmer or household decides to adopt.

3.3 ADOPTION

Adoption of the CSA technology is defined by the **tillage practices used to carry out land preparation** and not by some other variable such as crop rotation or mulching. After all, farmers since the Roman times have been rotating crops, and it is believed that farmers have for perhaps the past 3,000 years been using mulch or maintaining crop residues for the reasons we and others also recommend. The Conservation Farming Minimum Tillage practice is what defines and separates an adopter from all conventional farmers and conventional farming practices.

In future seasons we will also track CT, CF and CA adopters, but adoption starts with and is maintained through minimal to zero soil disturbance.

This section will prioritize the tillage practices used to determine whether a farmer adopted or not. Reasons for non-adoption will then be immediately tabled. Data from FGDs and FC interviews will throw light into reason for non-adoption. The section would then proceed to profile the adopters by considering pertinent factors such as gender of HH head, HH labour size, HH ownership of draft power, etc. Other factors such as timeliness in accessing inputs, source of inputs, timeliness in planting, weed management and herbicide usage will also be considered.

3.3.1 Plots owned by Households.

First, the study focussed on the number of plots under the ownership (owned) or stewardship (rented) of the household. The reason was to then later on compare how many plots the household put under a CSA technology as this would show the strength of the HH's belief and trust in the practices. These are plots owned and or rented and that are cultivated by the HH regardless of the tillage method. Table 4 shows survey findings.

Table 4: Number of Plots owned/rented by HHs

Total HH Plots	% of respondents
One to two plots	44.6
Three or more plots	55.4

The majority of HHs (55%) are more likely to have more than two plots cultivated. This bodes well for the programme in areas where farmers have access to more plots or holdings as they are in a better position to try out the practices than farming households with less than two plots. At this point, it is not yet clear whether these plot owners have adopted or not until we get to plots under CF but this gives us an idea that these trainees own land and we can expect some possible adoption. Plot ownership is sometimes determined by what other activities this individual farmer undertakes, in other words, is s/he a 'full-time' farmer or a 'part-time' farmer. The survey did not go into the details of what was the respondent's HH's main source of income but it would suffice to say that can help in understanding the question around adoption.

3.3.2 Adopters of a CSA technology.

The discussion now turns to the much awaited focus on adoption. What proportion of households took up a CSA promoted technology in the current year 1 season? Figure 9 below presents a surface and rather generalised picture

of adoption, without raising whether the adopter is new (started 2016/17 season) or has been using CSA technologies before the current season.

Figure 8: Proportion of Adopters

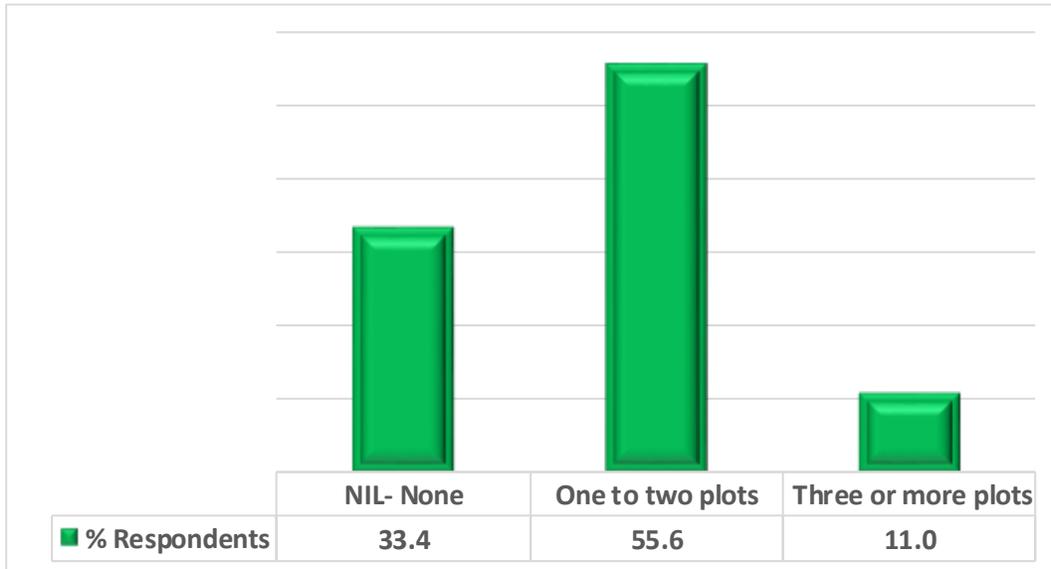
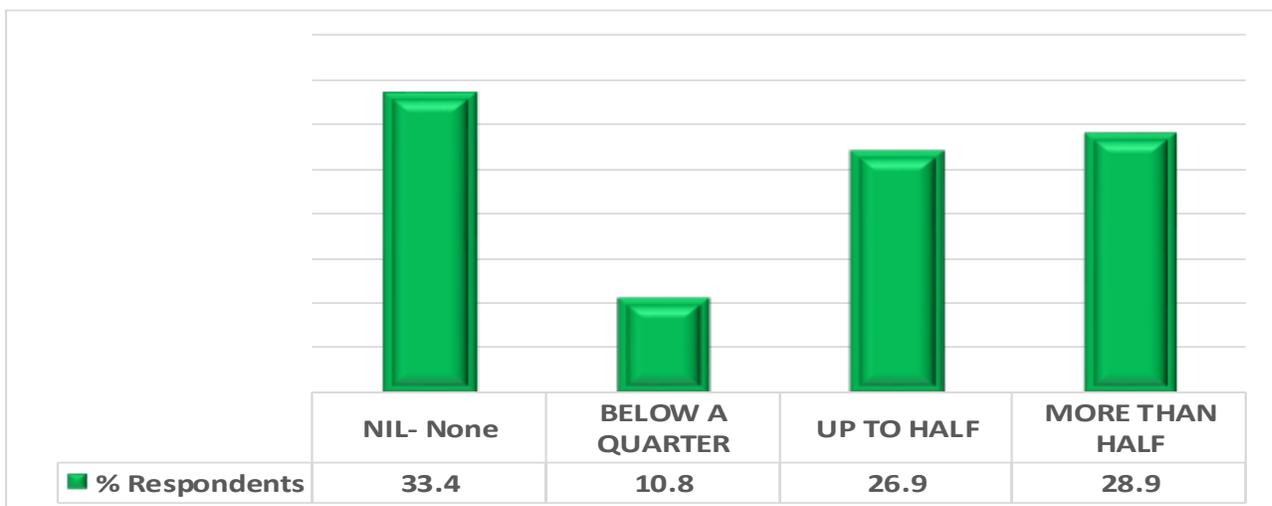


Figure 9 gives the adoption figure as 66.6% (those that chose to put at least one plot under CSA technology). This is understandably very high given the fact that in other studies adoption figures are way below that. But as already noted, this includes farmers **who have been part of previous programmes** and took up the CF technologies **before** the current CSAZ programme. It shall therefore become important later on to distinguish between first year adopters and others that adopted prior to the 2016/ 2017 season.

Figure 9: Proportion of Plots put under CF



As already noted above, the proportion of plots put under CSA technology (total plots put under CF divided by total plots owned/rented) provides an insight into the extent to which a farmer has come to put more hope in the

new technology even as the only available option for the farmer. It is not enough to know that some farmers are actually placing CF on some of their plots but going further to establish which methods occupied most of their land. In the absence of an actual measurement of fields, the respondents were asked to give the number of plots under a CSA technology and this is now being compared to total plots owned/rented by the HH. This does not give exact figures in hectares but rather an indication of which tillage practice the farmer prefers to the other.

In Figure 10, demonstrates that 10.8% of the HHs have less than a quarter of their plots under CF MT, while another 26.9% up to half of their total cultivated HH plots have been converted to CF MT and 28.9% have decided to convert more than half their total plots to the CF MT CSA technologies. Normally, most farmers (and indeed most people in any given endeavour) would not make a first year allocation of his holdings to a technology or practices that was unproven by them. This is especially the case with any sort of agricultural endeavour where resources, time, and effort must be expended. If the practice does not deliver, then there are real and potentially negative consequences on that farming household's food and income security. This shows how these farmers perceive CF and the likelihood to influence and encourage other farmers who are still doubting.

It becomes very important to profile these farmers, to look into previous season's tillage method and try and answer the question of whether those who did not use a CSA technology in the past season were more likely to try and adopt in this current season or not. These then become our **new adopters** since the ones who were already using CSA technologies are simply continuing their adoption. Old adopters are important as a measure of sustainability rather than as a measure of progress with the programme's Log Frame indicators.

Figure 10: Adopters' tillage method used last season

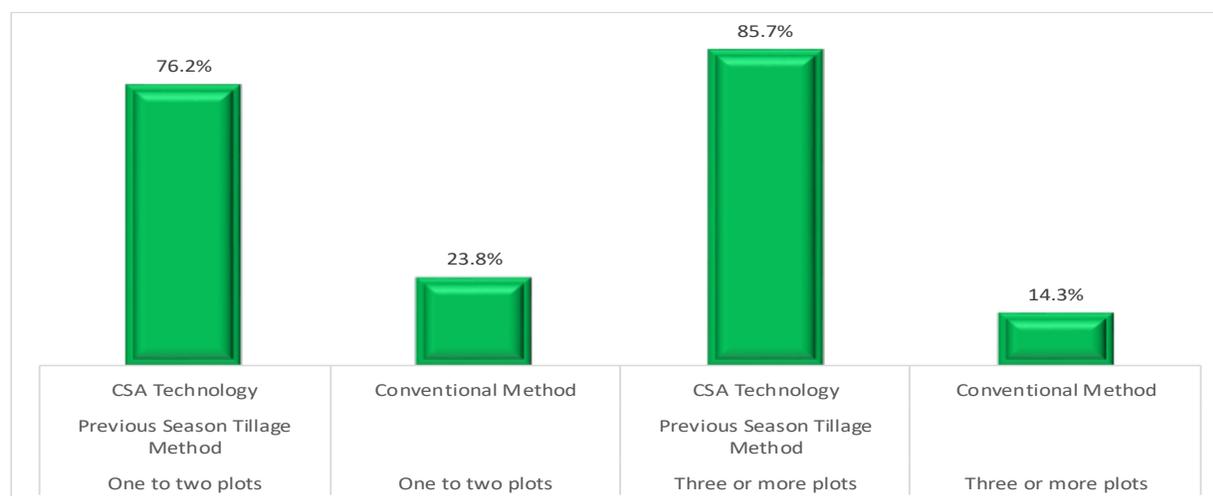


Figure 11 throws light into adoption patterns among farmers. It appears that there is a high probability that once a farmer adopts the CF MT CSA technology they will continue with the practice and not abandon it. This high prevalence of continuing with the adoption is true irrespective of the number of plots put under CF MT. Corollary,

the probability of taking up a CSA technology if one had **NOT** used it in the previous period has been low this season and those with more than two HH plots are even less likely to want to experiment with the new technology. But this is not surprising in the case of those who have been exposed to training for the first time. It is not really anticipated that first year adopters would be phenomenally high. The table below shows this historical precedent across five countries, including Zambia that the CFU has been promoting CF MT CSA technologies.

As figure 11 shows, demonstrates, the majority of first year adopters were CF Hoe MT practitioners. The reasons for this are varied and consistent with CFU’s historical experience in Zambia and elsewhere:

- a. The hoe practice is perhaps more straightforward – no real capital investment is required. One doesn’t even need a Chaka hoe or a Teran Rope to do it, though obviously those tools render the work easier, more accurate, and hence more beneficial. One can just allocate a small plot to test it all out and establish the basins – risk is lower in that sense;
- b. There might not be a TSP (either ADP or Mechanised) in the area, or they might not be available when they are required; and
- c. One has more control over when one starts and stops the whole basin establishment exercise.

CF Mechanised MT represented the smallest number of adoption practice recorded during the survey. CFU expects this number to rise as more and more TSPs, including ADP TSPs enter into the tillage service provision sector

Table 5: Adopters increasing only after first year of training (data from other countries)

In-Country Partner	PY1 Year	PY1 Adopters	December 2015 Adopters
Kenya PAFID	2011-2012	154	24 249
Malawi TLC	2011-2012	614	22 890
REDS Ltd Uganda	2011-2012	2 078	41 376
HRNS TZ	2013-2014	345	5 016
TGT TZ	2013-2014	1 684	11 958
Zambian CFU	1995-1996	0	215 000
Totals	3 339	320 489	

Human behavior change is a difficult undertaking under ideal circumstances. It is far more time consuming and arduous when trying to change the attitudes and outlook of a segment of the population who are by nature very risk averse, and whose overall experience with the majority of development projects is generally negative.

This then takes us into the last step in determining the proportion of **new adopters**. This answers to the first output indicator (Indicator 1.1) in the CSAZ Lofgrame; *Number of farmers sustainably adopting CSA practices following attendance at CFU training courses and Lead Farmer led field days (disaggregated.)*. Figure 12 below shows that proportion.

Figure 11: Proportion of New Adopters

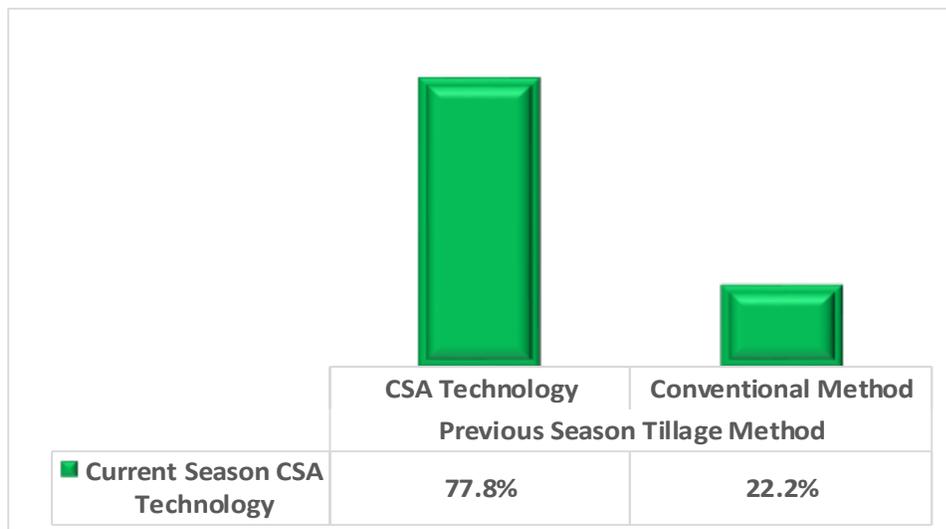


Figure 12 uses data from adopters only. It shows what technology was used prior to the 2016/17 season by those that have used a CSA technology in the current 2016/17 season. Those that used a CSA technology prior to the current season are not new adopters (77.8%). **The new adopters, according to Figure 12 is 22.2% of the CSA adopters farmers trained in 2016.** If as shown in figure 9 above, 66.6% (91,466) of the trained farmers adopted, then 20,305 have taken up a CSA technology for the first time primarily as a result of the CSAZ training.

It could be of interest to also note the sex of the Head of Household among the New adopters. Table 6 below shows that as high as 88.9% of adopting households are likely to be headed by a male head, leaving only 11.1% being mostly likely to be headed by a female head. This however is a reflection of the households and, as shown in section 3.4.1, not to say that female headed households are not likely to adopt.

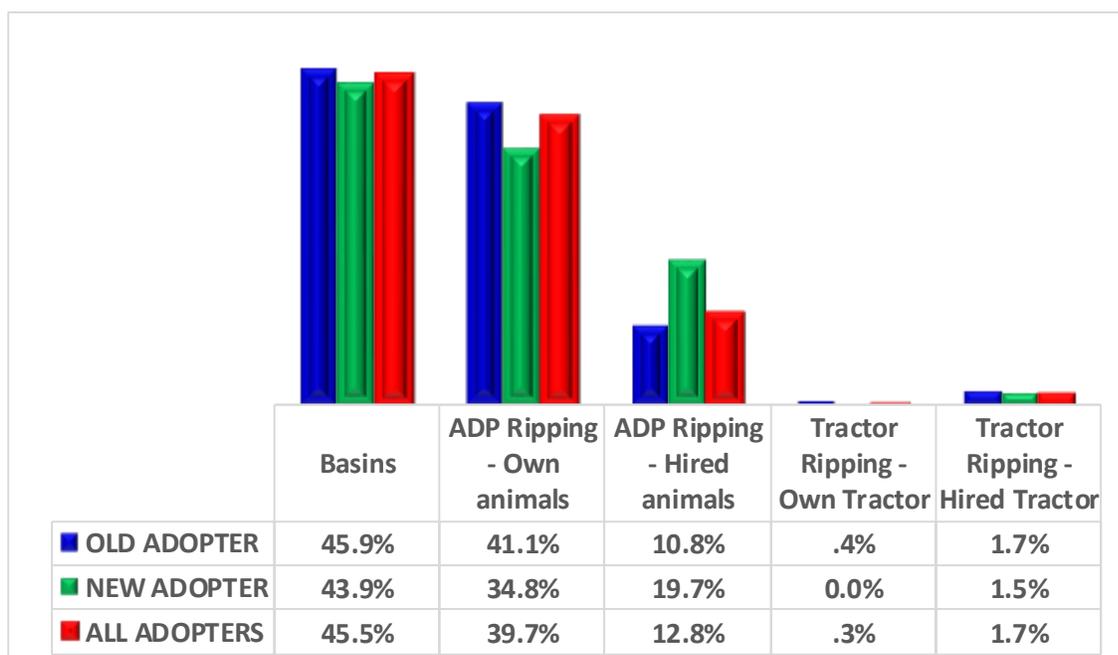
Table 6: Proportion of New adopters by Gender of Head of Household

	OLD ADOPTER	NEW ADOPTER	NEW ADOPTERS
Male Headed	78.9%	88.9%	18,049
Female Headed	21.1%	11.1%	2,256
Totals	100.0%	100.0%	20,305

3.3.3 Tillage Methods Used by Adopters.

Figure 13 shows the type of tillage used by the adopters. Animal ripping (summing own and hired animals) is the most popular (52.5% of adopters) among farmers adopting the CF MT promoted technologies, followed by Basins (45.5%). More needs to be done to promote CF mechanised MT (both hired tractor and own tractor) which still stands at a combined total of only 2.0% of adopters. The fact however, is that Mechanised tillage is a resource (financial) hungry practice and simple rural farmers are still a long way in affording this tillage method.

Figure 12: Tillage Methods employed by Adopters



As done in section 3.3.3 above, we also looked at the gender of the household head and tillage method used. Table 7 shows that among the 20,305 new adopters, 52.4% were most likely to be male headed households and adopted using ADP or mechanised minimum tillage. Again, investigations into whether the sex of the household head affects the choice of tillage methods revealed that there is no evidence to suggest that tillage type is dependent on gender of HH head. This is an issue dealt with in section 3.4.1 below.

Table 7: Gender of Head of Household and tillage method used.

	ADP/Mechanised		Basins	
Male Headed	10,637	52.40%	7,414	36.50%
Female Headed	746	3.70%	1,508	7.40%
Total	11,383	56.10%	8,922	43.90%

3.3.4 Reasons for Non-adoption.

Focus Group discussions as well as interviews with Farmer Coordinators helped in shedding light on the reasons behind lack of adoption. In the first place, the 2016/17 season was a very unique season. Rainfall was heavy and non-stop at times. This led to rapid weed encroachment and CF MT technologies just became difficult for first year adopters. Land preparation may have been done using a CF hoe or ADP MT practices (as in Kalukwembe, Vubwi, Eastern Region) but a combination of delayed access to inputs, too much rains and poor access to herbicides just led farmers to give up and turn over their whole CF plots with ridgers.

A second major reason for non-adoption concerns “myths” about CF adoption. There are myths to the effect that:

- ✓ CF increases weed pressure.
- ✓ Good soil lies under the surface and has to be “brought up” and made accessible to plants by turning the soil over with a plough. Hence would not feel they had cultivated their land if they did not plough.
- ✓ Plants will not do well if a ridger or cultivator are not used, hence you may rip but you have to later on ridge up.

Yet another reason lies in the CFU’s perceived over emphasis on mechanized tillage. Some FCs feel that the CFU should not be placing too much emphasis on mechanized tillage at the expense of ADP. There could in fact be a gain in number of adopters if more efforts are put in the more available animal ripping by ensuring there are rippers available for purchase. As it stands, there has not been a very elaborate effort by the project to avail rippers. In Chisamba (Mpika and Bulemu villages) there are large areas with only two Magoye rippers and where farmers have animals for draft power, they would not easily take up to basins when rippers could have done a more acceptable job.

Basin tillage method seems to be a last resort for new adopters, mostly the marginally resourced households. Some find the Chaka hoe too heavy, while some are discouraged by seemingly successful local conventional farming “models” who tell them that on the contrary the secret behind successful farming is not the “poor person’s” basin but sufficient resources. New basin-would-be-adopters soon have weeds to contend with and are easily convinced that the “basin experiment” is an exercise in futility.

3.4 Investigating Adoption

There is now need to focus on some possible variables that we could expect to be associated with adoption status. In this study, we focus on Sex of HH head, HH labour Size, and ownership of draft power. For the benefit of readers with not much background in statistics, more emphasis will be put on the first association, Sex of HH head.

3.4.1 Sex of HH head.

If being an adopter was not associated with Gender of HH head, we would expect 118 Male heads to be non-adopters and 26 female heads to be non-adopters.

The expected count is what we would observe if there was no association between variable being investigated, that if there was no association between Gender of HH head and adoption status. The test now is: *are the observed counts different enough from the expected counts for the test to be significant, for us to reject the Null-Hypothesis that there is no difference between adoption status and gender of HH head.*

*Table 8: Adopter or not an adopter * Head of Household Cross tabulation*

			Head of Household		Total
			Male Headed	Female Headed	
Adopter or not an adopter	Non-Adopter	Count	119	25	144
		Expected Count	117.6	26.4	144.0
	Adopter	Count	224	52	276
		Expected Count	225.4	50.6	276.0

*Table 9: Chi-Square Tests - Adopter or not an adopter * Head of Household Cross tabulation*

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.138 ^a	1	.710		
N of Valid Cases	420				
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 26.40.					
b. Computed only for a 2x2 table					

a=If that percentage is greater than 20% then the assumption has been violated and we need to take a different course of action. Here, the assumption has not been violated since 0 cells have an expected count less than 5. The minimum is actually 26.40.

The Chi-Score statistic here is 0.138, 1 degree of freedom, and the p-Value is 0.710. We are testing at the 5% level of significance (alpha = 0.05). Now, 0.710 is greater than the alpha value. Our result is not statistically significant and we will retain our null hypothesis which says that **there is no association between the gender of the HH head and adoption patterns, there is no evidence to suggest that adoption is dependent on gender of HH head.**

3.4.2 HH Labour Size.

Here we raise the question whether or not a household's labour size affects adoption status. The Chi-Square table is presented in Table 9 below.

Table 10: Chi-Square Tests - HH Labour Size.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.374 ^a	2	.829
N of Valid Cases	446		

Once more, HH labour size was not associated with a household's adoption or lack of it. The Chi-Square statistic is 0.374. The p-value is 0.829. Hence the result is not significant and we will retain our null hypothesis which says that **there is no association between the household's labour size and adoption patterns, there is no evidence to suggest that adoption is dependent on household's labour size.**

3.4.3 HH Ownership of Potential Animals for Draft Power.

Finally, we investigate the possible relationship between availability of draft power within the HH and its subsequent adoption status. The Chi-Square table is presented in Table 10 below.

Table 11: Chi-Square Tests - HH Ownership Draft Power.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.048 ^a	2	.359
N of Valid Cases	446		

Again, presence of animal draft power in a household was not associated with a household's adoption or lack of it. The Chi-Square statistic is 2.048. The p-value is 0.359. Hence the result is not significant and we will retain our null hypothesis which says that **there is no association between the presence of animal draft power in a household and adoption patterns, there is no evidence to suggest that adoption is dependent presence of animal draft power in a household.**

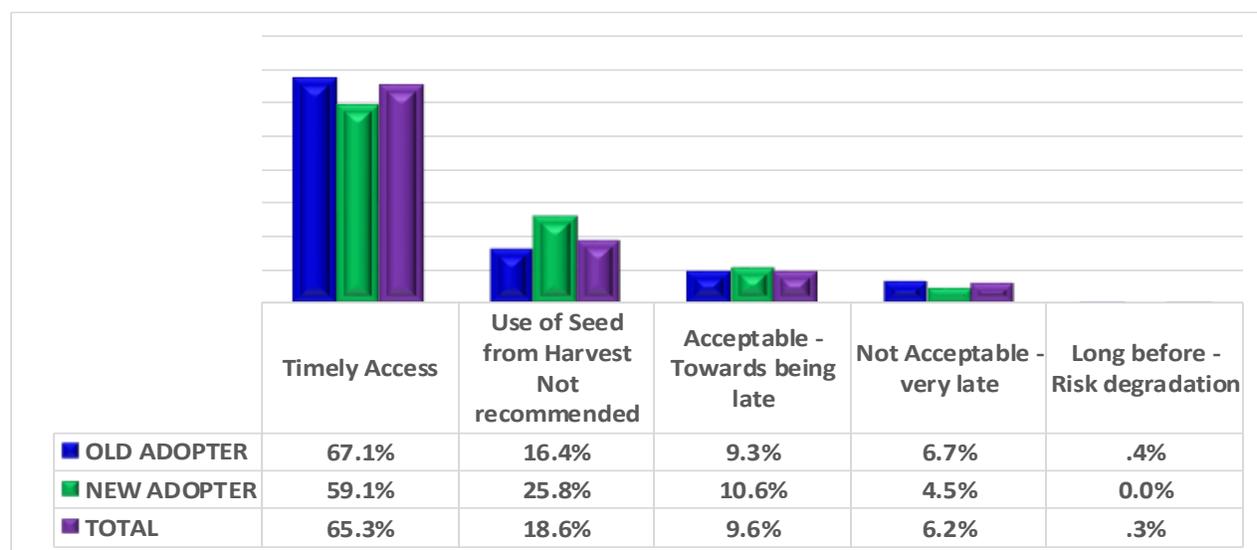
3.5 Other Adoption Considerations

The discussion on adoption will now be wrapped up by focusing on other key issues that are of interest to adoption of CSAZ technologies. These are timeliness in accessing inputs, sources of inputs, timeliness in planting, weed management and herbicide usage.

3.5.1 Timeliness in Accessing Inputs

In order for farmers to optimize their fertilizer it means they needed to have acquired fertilizer prior to the first planting rains. The survey sought to find out when these farmers accessed their inputs from whichever source and tried to determine if they were sticking to what CFU teaches to help them adopt CF and have good results viz yields.

Figure 13: Timeliness in Accessing Inputs

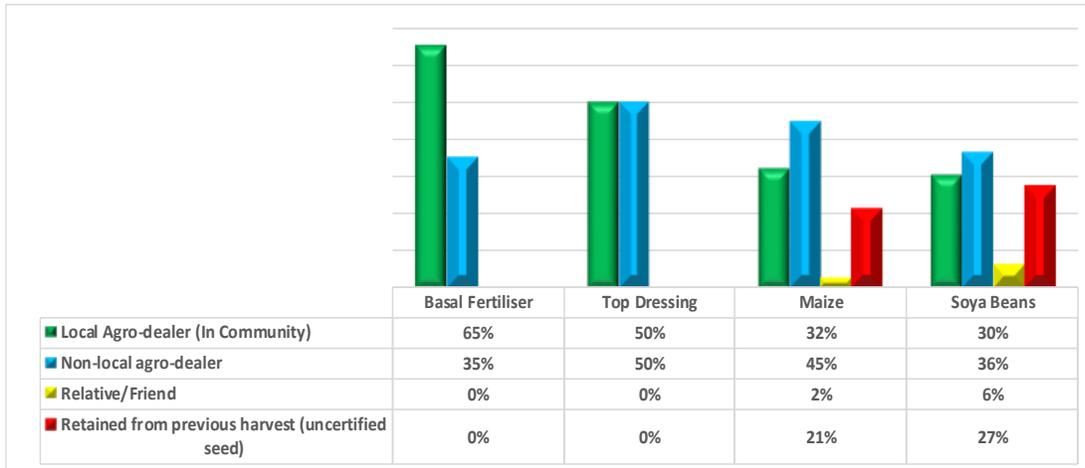


It is therefore encouraging to see from Figure 14 that 59.1% of the new adopters adhered to the CF teaching by accessing their inputs early (between June 2016 and November 2016). Another 25.8% accessed inputs within a reasonably acceptable time period of early December but this could be considered as heading towards being late.

3.5.2 Sources of Inputs

One of the requirements on the log-frame is to report on in-community agents and although this report does not touch on how many they are out there, it helps us see that they exist and how much farmers are relying on them. The list of inputs that farmers purchased and reported was quite varied but for the sake of this study, 4 inputs have been reported on. The item of interest here is the in-community agents and probably recycled seed and the next section focuses on those two.

Figure 14: Sources of Inputs



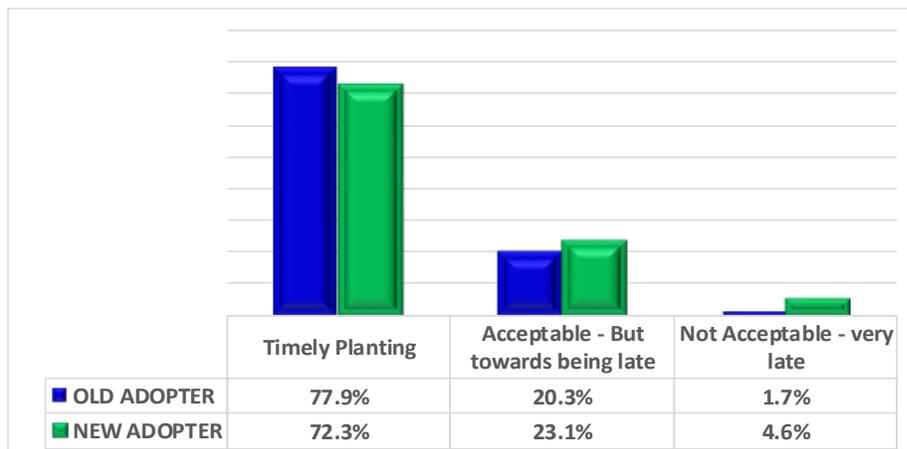
From Figure 15, it can be noted that while local agro-dealers have been the main source for basal and Top-dressing fertilizers, most of the farmers sourced their maize seed from somewhere else other than within their communities, i.e. not from in-community agents. It would be expected that if an input is readily available in the community, then farmers would have sourced from within the community and cut the transport cost. The main reason why in-community agro-dealers do not fare well as a source of maize and soya-beans seed is mainly to do with their availability. It appears there is still more work to be done to mobilise these on time for subsequent cropping seasons.

Discussions with FCs point to the fact that farmers who had hoped to wait for the Government’s Farmer Input Support Programme (FISP) ended up resorting to using seed from their granaries. In several visited areas, the seed, when it arrived came after the middle of January and so some have resorted to keeping it and risk its degradation. The use of recycled seed will certainly risk producing a negative impression on the CSA technologies or any farming practice for that matter because recycled seed does not perform well. For onlookers who are waiting to see if CF works, they would not attribute failure to recycled seed but simply conclude that the technology does not work especially if a next door conventional neighbor who planted hybrid seed has a better crop.

3.5.3 Timeliness in Planting

Over 80 years of agronomic related research has clearly demonstrated that there are significant end yield benefits from timely planting. A nitrogen flush occurs with the first heavy planting rains and this flush is immensely beneficial to farmers especially those who have not acquired their fertilizer on time or who have fertilizer at all. Crops that benefit from that first flush are healthier, more vigorous and are better able to resist weeds, dry spells, pest and diseases better. The flip side to this is that it has been shown that each day that a farmer plants late is a loss in yield – up to 2% per day.

Figure 15: Timeliness in Planting



Again, it is inspiring to see that 72.3% of the new adopters have observed the CFU’s teaching by planting with the first planting rains in their respective areas. This is not very different from the old adopters even though more new adopters (23.1%) than old adopters are more likely to plant after the second week of December and hence towards being really late. The main concern remains with the 1.7% old adopters and the 4.6% new adopters who planted from January 2017 onwards. Some of these were waiting for Government inputs but some simply were simply enticed by rains that kept falling and thought they could still grow more crops.

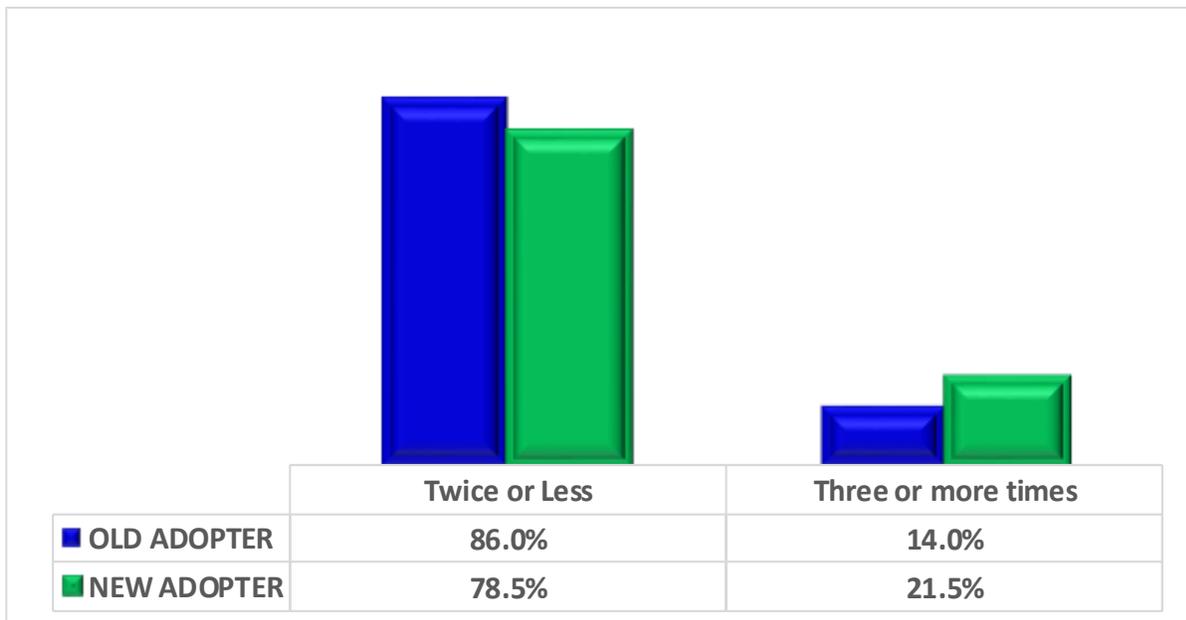
3.5.4 Weed Management and Herbicide Usage.

Number of Times Weeded Plots

Most farmers who have been trained but did not adopt have cited weed pressure as the number one reason for not adopting. They agree that the technology works if only they can get rid of the weeds. A lot of fields have been neglected or ploughed over because of failure to control weeds. Weed control is critical in any crop field regardless of tillage type because it greatly affects yield. All these factors pose a risk to CF seemingly not being effective.

In the FGD mentioned above, the fear for weeds is cited as one of the reasons for not adopting the technology. Weeding frequency was therefore an important question for the respondents in trying to understand how big a problem weed management is. The question was how many times CF household plots had been weeded during the last season in trying to establish if trained farmers were giving this important topic the attention it deserved. Figure 17 shows the results. It is not very clear why farmers weeded their crops on such a few number of times, only 21.5% new adopters are more likely to have weeded three or more times.

Figure 16: Number times CF Plots were weeded



Herbicide Usage

One of the immediate challenges that adopters complain about in CF is the control of weeds. If not well managed, weeds can discourage a farmer from attempting CF and blame their lack of planning on the technology. In trying to control weeds, the CFU introduced herbicide trainings towards the beginning of the season so that farmers have information on weed control before they are overwhelmed by weeds. The CFU places a lot of importance on this such that weed management is a training topic on its own. In this period of trainings however, other methods of weed control are also discussed because sometimes it is appropriate to combine the different methods and farmers like to have choices. They can if they wish use herbicides or not

Herbicide usage could be the solution to those farmers who give weeds as a barrier to adoption. It suffices to say that we have seen a lot of conventional plots abandoned due to weed pressure but it is those same farmers who, when they want to try CF, presume that CF has more weed pressure. Weeds are a problem irrespective of a farmer’s tillage practice and need to be controlled. By this year, 2017, the CFU must have caused about 13,390 farmers (categorized by CF method) to be applying herbicides for the control of weeds on their fields. The survey tried to find out where the program was with regards to that target and the table below describes that.

Figure 17: Proportion of farmers using Herbicides

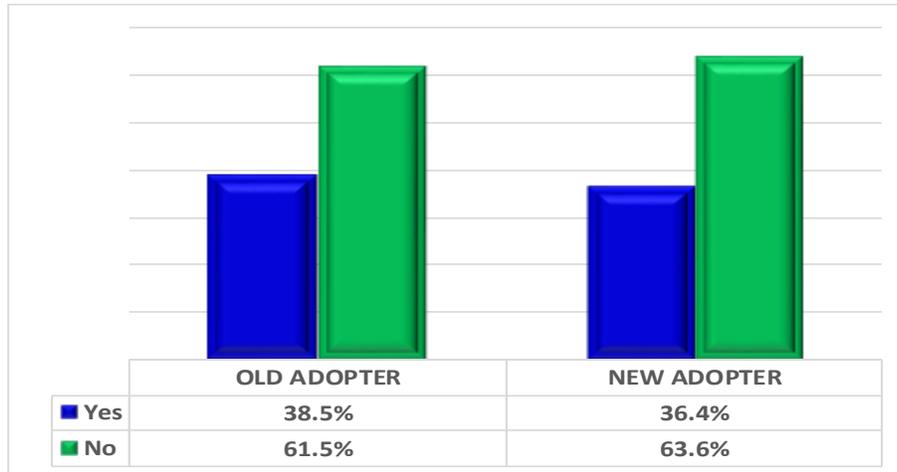


Figure 18 shows that almost 39% (38.5%) of the old adopters used herbicides on their CF plots while only 36.4% (7,391) among the new adopters are likely to have used herbicides. This shows that although some of our adopters are using herbicides, there is still room for improvement. Since the 2017 milestone was 13,390 against an achievement of only 7,391 new adopters. The low percentage (36.4%) of herbicide users could be attributed to several factors. In the first place, the private sector/ agro-dealers have not really moved in sync with the trainings and hence in several places respondents reported that herbicides were not available locally. Secondly, new and small holder farmers are yet to be convinced that it is cheaper to use herbicides than weed mechanically. The survey also discovered a myth around herbicide usage, that herbicides are harmful/poisonous to soil nutrients and would eventually affect crop productivity. This implies that there are still doubts around herbicide usage and hence the teachings have not been well appreciated.

4.0 Conclusions, Lessons Learnt, and Recommendations.

4.1 Conclusions

This subsection focusses on drawing out conclusions that can furnish us with values for indicators to with adoption. With reference to the output indicators in the CSAZ Loframe, from survey findings we can conclude that:

- ✓ **Output indicator 1.1:** Since 22.2% of the trained adopters were **new adopters**, the number of farmers who have adopted climate smart agricultural practices for the first time stands at 20,305 farmers (22.2% of the 91,466 adopters.)¹ This is 102% of the target for Year 1. Farmers have adopted CF MT CSA on at least one of their farm plots. Adoption for year one under the CSA is defined as sustained minimum tillage.
- ✓ **Output indicator 1.2:** From the TSP survey, the recorded number active TSPs in the 2016/17 season was 125 and the average Hectarage per TSP mechanised was 83.24ha. Hence the hectares under MT, CT and CF 10,405 hectares. This has been computed from Mechanised tillage only since in year 1 there has not been efforts to have non-Mechanised tillage plot size measured from the inherited M&E Systems.
- ✓ **Output indicator 1.3:** The number of farmers using ADP and mechanised tillage service. For year one, this will have to be extrapolated from survey findings. Around 54.5% of all adopting farmers pointed out that they used either ADP or Mechanised tillage. This translates to 16,352 farmers against a target of **8,500** farmers. If we, however, focus only on NEW adopters, the dataset shows that up to 56.1% of the new adopters used either ADP or mechanised tillage. This translates to 11,383 new adopters (134% of the targeted 8,500 farmers).
- ✓ **Output indicator 1.4:** Approximately 38.0% of adopters (or 34,757 farmers) used herbicides for weed control purposes. These farmers fall in different categories of climate smart tillage practices and use herbicides at different levels as required and as resources allow them to do so. If, however we focus only on NEW adopters, the figure drops to 36.4% of the **new** adopters (or 7,391 farmers). In comparison with the Year 1 target of 13,390 the target was achieved by 55.2%.
- ✓ **Output indicator 3.1:** The total number of service providers offering mechanized tillage services and ADP tillage services in Year 1 is 125 and this is around 31.3% of the set target of 400 TSPs. Note that this figure is only for Mechanised TSPs as ADP service providers have not been deliberately quantified (an exercise that should be considered for Year 2).

¹ Adopters were 66.6% of the 137,336 trained farmers. This is equal to 91,466 farmers.

4.2 Lessons Learnt

Two major lessons clearly emerge from what has been observed among adopters. These are:

- ✓ Training of farmers is not the panacea to adoption. There is need to create enabling linkages with other critical stakeholders in order to facilitate access to other essentials without which the full potential of technologies in the CSA production chain cannot be unlocked. Such stakeholders include suppliers of rippers, herbicides (and agro-dealers in general), as well as mechanised tillage.
- ✓ To each and every fledgling CSA adopter is stronger and persuasive (and albeit seemingly successful) conventional farmer. *There is need to drum up constant presence and moral support to would-be adopters* as the initial period of adoption can present them with constant threat of failure as they may not have much to show apart from fields overgrown with weeds while the conventional farmer near them boasts of an apparently good crops.
- ✓ Correct identification of intrinsically motivated and capable Farmer Coordinators (Lead farmers) is the key to assuring the constant support observed in lesson two above.
- ✓ Effecting long systemic change and *to scale* required an approach that attacked the problem across a broad front, using multiple long term strategies - a long term (2-4 years) and ***intense*** field based continuum of training, follow up, in-field coaching and feedback, replicated across training periods. Extending CF is an intensive, dirty hands-on, demonstrate, methodical process.
- ✓ The only way new and some old field staff were going to improve their training delivery skills and the way they managed other key field activities such as field days was through constant in-field coaching and follow ups by senior field managers and the CSAZ Programme Manager.

4.3 Recommendations

The survey findings led us to the following recommendations:

1. CFU needs to take necessary steps and increase the number of ripper suppliers and also bring them as close as possible to the farmers. It is not effective programming to have farmers that are willing to adopt and even purchase rippers, but fail to do so because there are not enough rippers suppliers within their proximity.
2. Much as mechanized tillage should continue to be encouraged, emphasis must also be placed on ADP because most CSAZ trained farmers are small scale and although some can hire tractors for ripping, many of them do not have sufficient financial resources to meet the demands of mechanised TSP, and would resort to ADP. The other reason is that there are few Mechanised TSPs but animal draught is more readily available in many areas and in larger numbers.
3. The In-Community Agro-dealers need to be encouraged to have the required inputs (stocks) readily available and in the right amounts way before the season commences. Encourage more spread of the In-Community Agro-dealers through private sector partnerships.
4. A survey similar to the one that was conducted for TSPs can be conducted to check the number of In-Community sales agents (Log-frame target of 160) and find ways of pushing the number up.
5. Plot sizes (Hectarage) need to be established as part of the on-going FC support to farmers and records kept for both plot sizes and quantities of agriculture inputs planted on respective plots. Without this, future computation of yields will remain a thumb-sucking exercise.