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Full Length Research Paper

Smallholder farmers' perceptions on groundnut (*Arachis hypogaea* L.)-based cropping systems: A case study of Chisamba District, Zambia

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The inclusion of legume crops in cropping systems has been shown to improve soil fertility and productivity, but the adoption rate is low among many smallholder farmers. A study to determine the perceptions of the smallholder farmers on groundnut production, use of inputs and cropping systems was conducted in Chisamba District, Zambia. Using a multi-stage sampling technique, 164 farmers from 20 villages within 11 agricultural camps in two agricultural blocks were randomly chosen for the study. Questionnaires were administered to only smallholder farmers who cultivated groundnuts. Results showed that the cropping systems used by smallholder farmers in Chisamba District were crop rotation (90%), mixed-intercropping (5%) and sole-cropping (5%). Groundnut production was mainly undertaken by female smallholder farmers (71%) on land averaging 1.68 ha. However, there was non-significant relationship between gender of the household head and adoption of cropping system ($\chi^2 (2) = 1.726$; $p = 0.414$). Fifty-seven percent of the smallholder farmers perceived the groundnut variety Natal Common to be most suitable for the study area ($\chi^2 (4) = 9.745$; $p = 0.045$). It was concluded that particular traits of varieties affected the perceptions and hence adoption decisions of smallholder farmers in Chisamba District.

Key words: Groundnut production, smallholder farmer's perception, cropping system

INTRODUCTION

Groundnuts are produced virtually throughout Zambia (MAFF, 2000; Mukuka and Chisanga, 2014) but mainly in agro-ecological regions II and III (MAL, 2012) under

rained conditions (Sichoongwe et al., 2014). It is ranked second to maize both in terms of production and area cultivated in Zambia (Ross and Klerk, 2012; Mukuka and

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Shipekesa, 2013). However, there has been a decline in production with the national average yields as low as 642 kg kernels / ha being common (FAOSTAT, 2014). Central Province, Chisamba District inclusive, has seen yields as low as 340 kg / ha (CSO and MACO, 2011). Such low yields deprive smallholder farmers in the District who entirely depend on maize and groundnut for livelihood of their much needed protein and income (Sitko et al., 2011). The low kernel yields have partly been attributed to poor soil fertility caused by inappropriate cropping systems (GART, 2011), and use of low yielding varieties (Mukuka and Chisanga, 2014) which are susceptible to rosette disease and pests (Ross and Klerk, 2012). This has been exacerbated by the collapse of parastatal markets whereby exportation of groundnuts has dramatically reduced in Zambia (Ross and Klerk, 2012).

The yields of groundnuts can be improved by adopting sustainable cropping systems such as crop rotation (Ogunleti et al., 2014) and use of high yielding varieties (MAFF, 2000). The benefit of groundnut-based crop rotation is that the crop can fix up to 35 kg N / ha for the subsequent crops (Bado et al., 2013). Cereal-legume crop rotations improve soil fertility (Thierfelder et al., 2012; Bellwood-Howard, 2014; Ojiema et al., 2014) and consequently increase yields of the succeeding crops (Bonsu and Asibuo, 2013; Khaitov and Allanov, 2014). High yielding varieties such as Musekara Groundnut Variety 4 (MGV4) and Musekara Groundnut Variety 5 (MGV5) have been released in Zambia, but still the adoption levels are low (Ross and Klerk, 2012).

There are a lot of factors that influence decisions of smallholder farmers in adopting agricultural innovations such as crop rotation and high yielding varieties. Some of these factors include lack of credit facilities, non-availability of inputs, risk aversion, limited access to information, farm size, labour constraints and non-availability of market networks (Feder et al., 1985; Asfaw et al., 2012; Jerneck and Olsson, 2013; Franke et al., 2014; Tanellari et al., 2014; Meijer et al., 2015). The adoption process of an agricultural innovation involves learning, perceiving and then based on the perception developed, the farmer either adopts or rejects the innovation (Feder et al., 1985; Schroeder et al., 2013; Meijer et al., 2015). This study focused on the perceptions of smallholder farmers in Chisamba District on groundnut production systems. Understanding why smallholder farmers had certain preferences in their groundnut cropping systems can result in improving yields. It was imperative, therefore, that a study was commissioned to understand the perceptions of smallholder farmers in Chisamba District on groundnut production, use of inputs and cropping systems.

MATERIALS AND METHODS

Description of the study area

Chisamba District is located about 50 km north of Lusaka, in the

Central Province of Zambia. The District covers 2 978.5 km² and is located between latitude 14° 30' and 15° 00' S and longitudes 28°00' and 28°30' E. It is 1 138 m above sea level. The District is in agro-ecological zone II a (AEZ II a) which receives annual rainfall of 800 to 1 000 mm. The temperature ranges from 14.31 to 27.31°C (GART, 2011).

Study design and approach

The study used primary data which was collected directly from smallholder farmers using a structured questionnaire as an instrument of data collection. The study was conducted in two stages. The first stage involved a reconnaissance survey, conducted between 22nd January and 20th April, 2014. Information on smallholder groundnut farmers was obtained with the help of the District Agricultural Officer, Extension Officers and traditional zone leaders. Therefore, the reconnaissance survey helped to refine the questionnaire. The second stage of the study involved using the multi-stage sampling technique for the selection of respondents in three steps. The sampling stratum was composed of number of villages in the camp, total number of households and ideal number of villages selected per camp (Table 1). In the first step, two agricultural blocks (Chisamba and Muswishi) were purposively selected. Then subsequently, proportionate stratification depending on the respective weighting of the households was done. This was followed by random selection of 20 villages (Table 1). The face to face interviews, which included follow ups, were conducted between 26th April and 20th June, 2014. Despite follow ups, only 164 respondents were available in the randomly selected stratum.

Socio-demographic characterisation of the households (hh) and human capital was used to determine the perceptions of smallholder farmers. Questions to capture perceptions of farmers on cropping systems, benefits of crop rotations and information on the traits of varieties such as drought and disease resistance, yield and oil content were asked. The questionnaire also captured information on the perception of smallholder farmers on new varieties, quality of seed and use of fertilizers. New and old groundnut seed varieties packed in plastic bags were shown to farmers to help them remember the varieties they had been planting in the three previous agricultural seasons, namely 2011/12, 2012/13 and 2013/14. The label from inside the plastic bag was concealed and removed systematically before the variety could be shown to the farmer. Statistical Package for Social Scientists (IBM SPSS, windows version 16.0) was used to obtain descriptive and inferential statistics. The Chi-Square (χ^2) was used to determine the test of independence between relationships at $\alpha = 0.05$ (Kothari, 2009).

RESULTS AND DISCUSSION

Household characterisation of smallholder groundnut farmers

Table 2 shows the characteristics of households (hh) in Chisamba District that produced groundnuts. It was observed that 77% of the hh were male headed while 23% were female headed. There were no child headed households in the study area. The age of 34% male household heads ranged between 41 and 55 years. The mean age of male household heads was 42 years old. On the contrary, the age of the majority (35%) of the female household heads ranged between 25 and 40 years old. The mean age of the female household heads

Table 1. Sample design and description, Chisamba District.

Block (sampling stratum)	Camp (sampling stratum)	No. of villages	Total No. of HH	Share of HH (%)	Share of villages (%)	Ideal No. of villages selected per camp
Chisamba	Chisamba Central	24	4250	20.00	4.00	4.00
	Chipembi	25	3920	18.44	3.69	3.00
	Chankumba	56	2621	12.33	2.47	2.00
	Kanakantapa	30	2594	12.20	2.44	2.00
	Ploughmen's	9	567	2.67	0.53	1.00
Muswishi	Bombwe	14	1190	5.60	1.12	1.00
	Chinkokomene	25	1328	6.25	1.25	1.00
	Chowa	27	1673	7.87	1.57	2.00
	Lifwambula	16	958	4.51	0.90	1.00
	Mulungushi	6	526	2.47	0.49	1.00
	Muswishi	19	1627	7.66	1.53	2.00
Total Chisamba district		251	21254	100.00	20.00	20.00

was 35 years old. The younger the age of smallholder farmer the higher the likelihood that the farmer would adopt new agricultural innovations (Sichoongwe et al., 2014). There was a non-significant relationship in this study between age of the household head and adoption of new groundnut varieties or crop rotation or incorporating groundnuts in crop rotation. Age was not a factor in influencing the perceptions and hence adoption decisions made by the farmers in the study area.

The average size of the families in Chisamba District was observed to be 5 members per hh. This was below the average hh size of 5.5 for Central Province and national average of 5.2 members per hh (CSO, 2011). Groundnut production is labour intensive (MAFF 2000) but because the family size provided it, very few farmers (7.6%) perceived labour pressure as a major constraint to groundnut production in the study area (Figure 1). For example, the majority (93%) of the smallholder farmers in the surveyed area took only three days to plant groundnuts on fields averaging 1.68 ha. This example exemplified that family size of the rural poor was critical for hh labour in the District.

In this study, the literacy level of the household head (hhh) was measured by attainment of 12 years of schooling. It was observed that 34% male and 21% female household heads had attained 12 years of schooling. When segregated by block, literacy levels in Muswishi (53%) were higher than Chisamba block (37%). Educated people may easily follow agricultural instructions (Sichoongwe et al., 2014; Ghimire et al., 2015), apply innovations from extension officers (Ojo et al., 2013) and have the ability to understand profits associated with use of improved varieties (Ghimire et al., 2015). It was therefore, expected to find more adopters of legume technology in Muswishi than Chisamba block. However, this was not the case because there was a non-significant relationship between level of education of

the hhh and adoption of new groundnut varieties or crop rotation or incorporating groundnuts in the cropping system in both Muswishi and Chisamba blocks. This means that education was not a factor in influencing perceptions of farmers on adoption decisions.

Farmers' perceptions on groundnut production and risks associated with it

Land allocated to groundnuts was used to determine production in this study. There was a non-significant relationship between gender of the hhh and landownership in both Chisamba ($p = 0.124$) and Muswishi ($p = 0.446$) blocks. The majority (92%) of the hh in the study area owned untitled land. This concurs with Hichaambwa and Jayne (2014) who reported that smallholder farmers (70%) in Zambia owned less than 2 ha of untitled land. The mean land holding size of the hh in the study area was observed to be 4.41 ha.

Smallholder farmers in Chisamba District (46%) produced groundnuts on fields that were less than half a hectare and 40% on land between 0.5 and 1 ha. A larger proportion of land (78%), 1 to 5 ha, was disproportionately allocated to maize production. It can therefore, be concluded that because of this land disproportion, groundnut production in Chisamba District was done at a small scale level. Comparatively, this is in agreement with Girei et al. (2013) who reported that farmers in Nigeria produced groundnuts at subsistence level on farms which were between 0.1 and 1 ha. The results were also in agreement with Simtowe et al. (2012) who also reported that groundnut production in Malawi was mainly on a small scale on land which averaged 1.32 ha.

Experience is measured by length of time the farmer has used an innovation (Feder et al., 1985). In this study, an experienced farmer in groundnut production was

Table 2. Household characterisation.

Description	Frequency	Percent
Male respondents	47	28.7
Female respondents	117	71.3
Male headed households	126	77
Female headed households	38	23
Age of male household head (agehhh)		
< 25 years	0.00	0.00
25 - 40 years	25.00	15.20
41 - 55 years	56.00	34.10
> 55 years	45.00	27.10
Age of female/wife (agefhhh)		
< 25 years	4.00	2.40
25 - 40 years	57.00	34.80
41 - 55 years	50.00	30.50
> 55 years	28.00	17.10
Level of education of male hhh		
No formal education	2.00	1.22
Primary	59.00	35.98
Secondary	55.00	33.54
Tertiary	10.00	6.10
Level of education of wife/female hhh		
No formal education	17.00	10.37
Primary	86.00	52.44
Secondary	35.00	21.34
Tertiary	1.00	0.61
Household Size		
≥ 5 members	158.00	96.34
≤ 6 members	6.00	3.66
Household land ownership		
No	13	7.90
Yes	151	92.10
Mean land holding size (ha)	4.41	
Mean land allocated to groundnuts (ha)	1.68	
Mean land allocated to maize (ha)	3.18	
Household experience in groundnut production		
Less or equal to 5 years	52	31
More than 5 years	112	68.3

hhh, household head; mhhh, male household head; fhhh, female household head; hh, household

determined by five or more years of consecutively growing the crop. Therefore, the majority (68%) of smallholder farmers in the surveyed area were experienced groundnut producers. It was observed that female smallholder farmers were the major (71%) groundnut producers. On the contrary, Girei et al. (2013) reported that groundnut production in Nigeria was dominated by male farmers (57%). The adoption of mainly groundnut

production by male smallholder farmers in Nigeria was attributed to high profits. While in Chisamba, male smallholder farmers perceived maize production to be more profitable. They also perceived maize production as a man's crop because it was the main food crop. In Malawi, men mainly undertook maize production because of traditional predilection and the prominence associated with the crop (Franke et al., 2014).

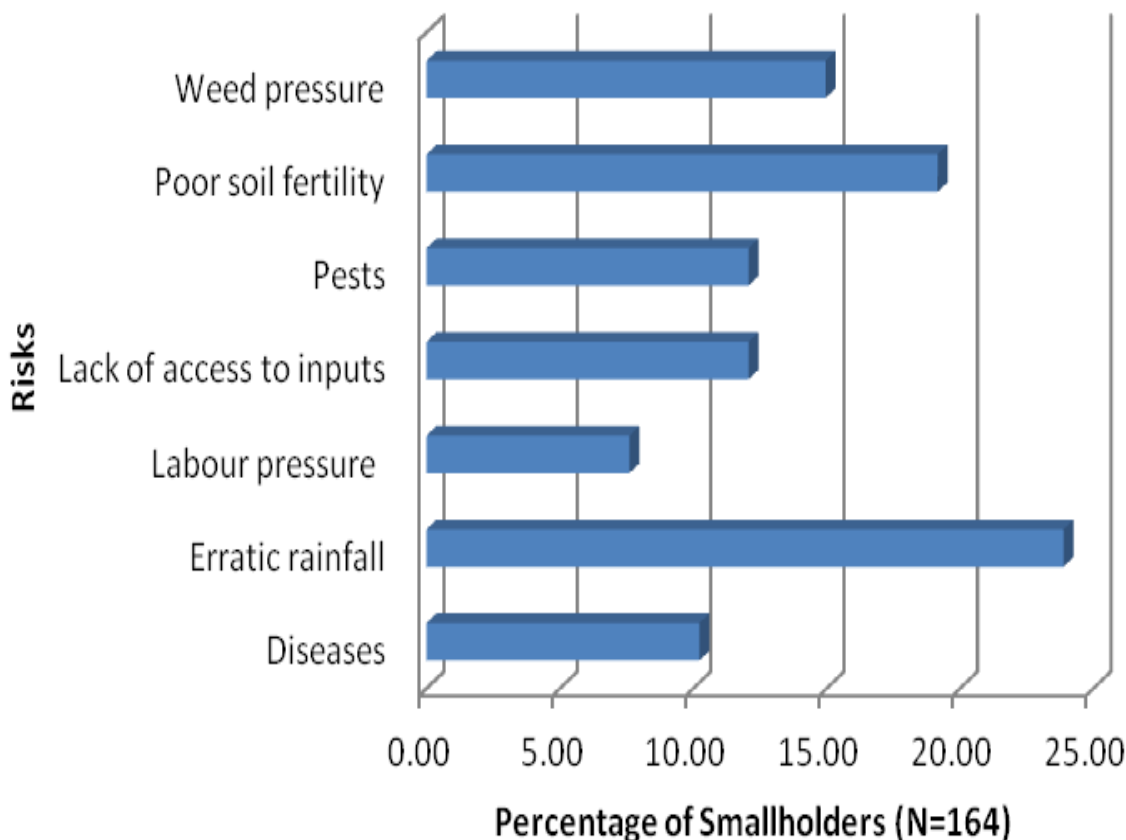


Figure 1. Risk associated with groundnut production in Chisamba District.

The majority (85%) of the smallholder farmers in the District produced groundnuts for both cash and home consumption. This is in agreement with Ross and Klerk (2012) who reported that smallholder farmers in Eastern province of Zambia produced groundnuts for both consumption and cash. Similarly, Ojo et al. (2013) reported that smallholder farmers in Nigeria produced groundnuts mainly for food and cash. The study revealed that 13% of the respondents in Chisamba perceived groundnuts as just a food crop and therefore produced it exclusively for consumption. These farmers disclosed that groundnuts were eaten raw, boiled or roasted. The thirteen percent farmers also said that they ground kernels to powder and added it to meat or vegetables as a sauce or mixed the powder with maize flour to prepare porridge for both infants and adults. It was also observed that 2% female farmers produced groundnuts solely for sale. There were no male farmers who produced groundnuts merely for sale probably because they focused mainly on production and sale of maize.

It was observed that only 2.4% of the male household heads and 3.7% of the female household heads failed to harvest groundnuts in the 2011/12 to 2013/14 agricultural seasons. There was, however, a non-significant relationship between gender of the hhh and failure to harvest groundnuts in the three agricultural seasons ($p =$

0.714). The farmers attributed the failure to harvest to late planting (6%), weed pressure (5.5%) and the ground being too hard (3%). The smallholder farmers disclosed that the major bottle necks in groundnut production in the study area were erratic rainfall (24%), poor soil fertility (19%) and weed pressure (15%) (Figure 1). They revealed that lack of access to inputs (12%) such as quality seeds and fertilisers impeded crop production. The findings were in agreement with Orr et al. (2014) and Ross and Klerk (2012) who reported similar constraints associated with groundnut production in Eastern province of Zambia.

Farmers' perceptions on groundnut varieties and inputs

The farmers in the study area were more familiar with the old groundnut varieties, Chalimbana (12%), Makulu Red (16%) and Natal Common (57%) (Table 3). The farmers' familiarity with growing old groundnut varieties was a major contributing factor to adoption. The farmers have been traditionally growing these three varieties since 1950 (Chalimbana), 1964 (Makulu Red) and 1976 (Natal Common) when they were introduced. The study therefore, concluded that there was low level acceptability of

Table 3. Groundnut varieties grown by smallholder farmers in Chisamba District.

Groundnut variety	Year released*	Yield potential* (t ha ⁻¹)	Adopters (%)
Chalimbana	1950	0.8 - 1.5	12.2
Champion	1998	2.5 - 3.0	0
Chipego	1995	1.0 - 1.5	0
Chishango	2005	2	0
Luena	1998	1.0 - 2.0	0
Makulu Red	1964	2.0 - 2.5	15.85
MGS 2	1988	1.5 - 2.5	0.61
MGV 4	1992	2.0 - 3.0	9.76
MGV 5	2008	1.5 - 4.0	4.27
Natal Common	1976	0.5 - 1.5	57.32

*Source: MAFF, 2000; Sitko et al., 2011; MAL, 2012; Ross and Klerk 2012.

the new groundnut varieties amongst the smallholder farmers in Chisamba District.

The smallholder farmers disclosed that lack of market contracts with seed companies limited the adoption of new groundnut varieties. They explained that the price of a 10 kg bag of MGV 5 and MGV 4 currently is K 188 (\$24.74) which was too expensive for them.

The decision to grow Natal Common ($p = 0.149$), Makulu Red ($p = 0.373$), Chalimbana ($p = 0.535$), MGV 5 ($p = 0.414$) and MGS 2 ($p = 0.492$) in the 2011/12 to 2013/14 agricultural seasons did not depend on the hhh (Table 4). However, there was a highly significant relationship between the hhh and production of MGV 4 ($p = 0.014$) (Table 4). The smallholder farmers' attitude towards MGV 4 was influenced by the existence of a seed growers' club in Muswishi block which was propagating the seed variety. On follow ups to verify the result, the leaders of the seed growers' association explained that they assisted their members to market the surplus kernels. This motivated the adoption of MGV 4.

Therefore, level of education and gender of the hhh may not be the only factors influencing adoption decisions of certain varieties (Table 4). For instance, in this study, the smallholder farmers planted Chalimbana because it was high yielding ($p = 0.006$). The adopters of Makulu Red planted it because the variety was both high yielding and contained higher oil content ($p = 0.008$). The perception of farmers who adopted Natal Common were that the variety was high yielding, drought resistant and early maturing ($p = 0.045$). The smallholder farmers explained that because it was early maturing, Natal Common was planted two times in one agricultural season. The first harvest of January and February was sold as fresh unshelled kernels. While the second harvest of April and May was stored for food, and part of it was sold later in the year as dry shelled kernels. The smallholder farmers interviewed indicated that other varieties were susceptible to pests and drought due to erratic rainfall. They claimed that Chisamba was prone to intra-seasonal dry spells, and varieties like MGV 5 did not

survive the dry spells. It can be concluded, therefore, that particular traits of these varieties were very important in affecting the perceptions and hence adoption decisions of smallholder farmers in Chisamba District. This is consistent with Asiedu-Darko (2014) who reported that farmers in Ghana produced traditional varieties based on taste characteristics.

The smallholder farmers in Chisamba did not use certified seeds. The seed was either sourced from previous seasons (77%) or bought from fellow farmers (14%). Only a few (9%) smallholder farmers in the District managed to purchase certified groundnut seeds. The smallholder farmers reported that they purchased certified seeds from local traders who were agents of local commercial seed companies. There was a highly significant relationship between gender of hhh and use of certified groundnut seeds in Chisamba District ($p = 0.008$). Of the 15 that managed to purchase certified seeds, nine were male smallholder farmers. This means that only 6 out of the 38 female headed households in the study area managed to buy certified seeds. The high cost of certified groundnut seeds limited most (91%) smallholder farmers to recycled seeds from the previous seasons in Chisamba District. This is in agreement with Nzima (2014) who reported that most (67.8%) of the smallholder farmers in Malawi recycled groundnut seeds. The smallholder groundnut producers in Chisamba District revealed that they did not apply manure or inorganic fertiliser to groundnuts. Farmers disclosed that they applied fertiliser to maize only. They said it was too expensive to apply fertiliser to both crops. None of the 164 respondents interviewed applied lime or sprayed herbicides and insecticides to the groundnut field and crop. Therefore, smallholder groundnut farmers in Chisamba District practised low external input agriculture.

Farmers' perceptions on cropping systems in Chisamba District

The three main cropping systems used for groundnut

Table 4. Summary of chi-square tests.

Description of test	Chi-square value	Degree of freedom	p value
Age male household head (mhhh) vs. cropping system	10.684	6	0.099
Age mhhh vs. incorporating groundnuts	2.715	3	0.453
Age female household head (fhhh) vs. cropping system	7.82	8	0.451
Age fhhh vs. incorporating groundnuts	3.638	4	0.457
Level of education mhhh vs. cropping system	8.178	8	0.416
Level of education fhhh vs. cropping system	14.498	8	0.07
Gender hhh vs. cropping system	1.726	2	0.422
hhh vs. incorporating groundnuts			0.284
Experience vs. incorporating groundnuts			0.438
Gender hhh vs. landownership			
Muswishi block - Fisher's Exact Test			0.446
Chisamba block – Fisher's Exact Test			0.124
HHH vs. planted particular variety			
Chalimbana	0.019	1	0.892
Makulu Red	0.629	1	0.428
MG5 2	1.792	1	0.181
MGV 4	5.986	1	0.014
MGV 5	0.040	1	0.843
Natal Common	1.719	1	0.190
Level of education hhh vs. planted MGV 4			
Muswishi - Fisher's Exact Test			0.156
Chisamba - Fisher's Exact Test			0.168
Reason for preference of variety			
Chalimbana vs. high yielding	14.349	4	0.006
Makulu Red vs. high yielding	13.869	4	0.008
MGV 4 vs. high yielding and oil content	9.713	4	0.046
Natal Common vs. drought resistant, early maturing and high yielding	9.745	4	0.045
Gender hhh vs. use certified seeds			
Gender hhh vs. Assert	9.599	2	0.008
	9.421	1	0.002
Does respondent know benefits of crop rotation			
Groundnut incorporation vs. fixing N			0.011
Groundnut incorporation vs. increase crop residues			0.439
Groundnut incorporation vs. disease and pests cycles			0.705
Groundnut incorporation vs. weed and labour pressure			0.697

production in Chisamba District were crop rotation (90%), sole-cropping (5%) and mixed-intercropping (5%). The adoption of the cropping system and incorporation of groundnuts in the cropping system did not depend on either the age or level of education of the household head (Table 4). The experience in groundnut production was also not a factor ($p = 0.414$) in deciding on adopting the type of cropping system the hh used (Table 4). Furthermore, the decision to incorporate groundnuts in the cropping system did not depend on the number of years of experience the smallholder farmers had acquire ($p = 0.438$).

The smallholder farmers incorporated groundnuts in the cropping system because they perceived it to fix nitrogen and improve yields of the subsequent crops ($p = 0.011$). This symbiotic ability of the crop to fix N (Bado et al., 2013) was implicitly understood by most (51%) of the farmers in the study area (Figure 2). Only a few (16%) smallholder farmers associated increase of crop residues to integrating groundnuts in crop rotation (Figure 2). These few farmers indicated that crop residues were important not only for their livestock but also for improving the soil structure in their fields. Crop residues are critical in providing substrates for microbes and

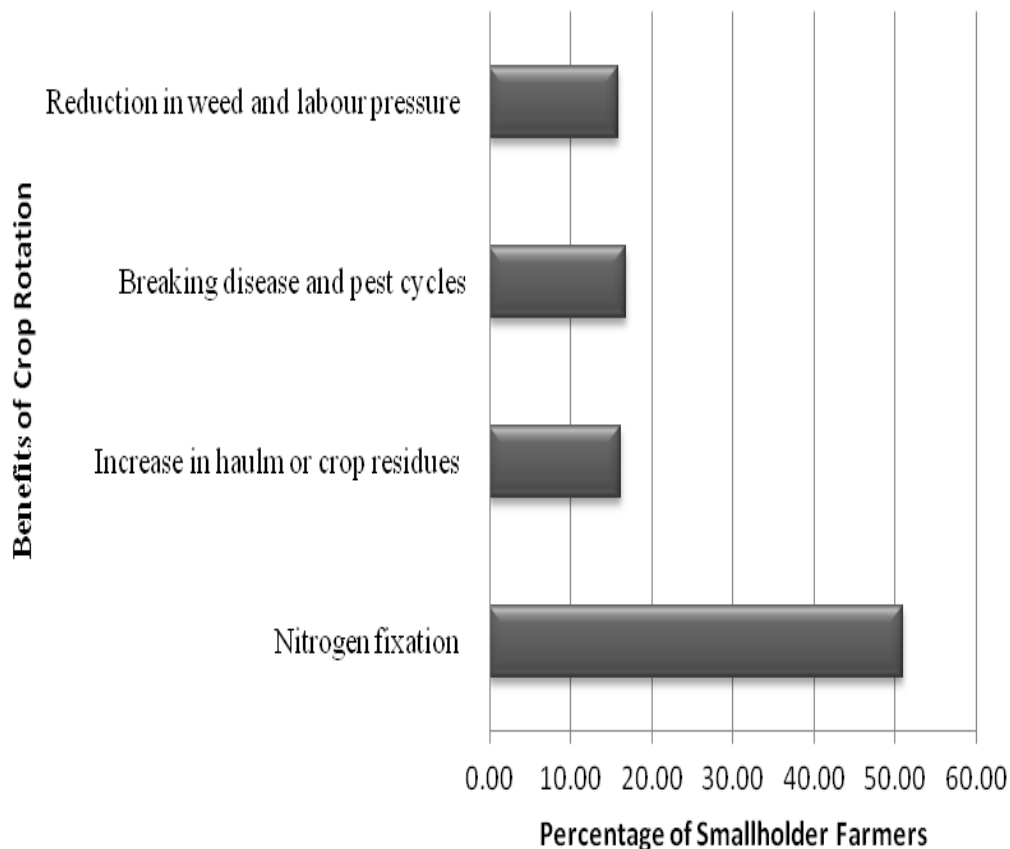


Figure 2. Percentage of groundnut producers who know the benefits of crop rotation in Chisamba District.

consequently improving soil structure (Kamkar and Akbari, 2014).

The study observed that only a small (16%) number of smallholder farmers knew that crop rotation helped in the reduction of weed and consequently labour pressure (Figure 2). Only 17% of the smallholder farmers interviewed associated crop rotation with reduction in disease and pest cycles (Figure 2). These few smallholder farmers in the surveyed area disclosed that when they grew maize on the portion previously allocated to groundnuts, diseases and pests were fewer in both the subsequent maize and groundnuts fields. The study therefore concluded that the acceptability of crop rotation as one of the perceived sustainable technologies in improving both soil fertility and groundnut and maize yields in Chisamba District was based mainly on the ability of the groundnuts to fix N.

Measures to facilitate the adoption of new innovation

The study observed that perceptions were critical in influencing the smallholder farmers' attitudes towards an innovation and consequently adoption decisions. For

example, inputs in this study were perceived to be very expensive and as a result most farmers (91%) recycled their seeds. Another example is how smallholder farmers (57%) perceived Natal Common to be the most suitable variety to harsh ecological conditions of the study area. Therefore, it is recommended that before new innovations are implemented, the external environment, costs and benefits of such innovations, and socio-economic factors are considered together with the perceptions of smallholder farmers. A holistic approach towards implementation of an innovation is recommended.

Conclusion

Groundnut production in Chisamba District is conducted on small parcels of land and at subsistence level. It was observed that groundnut production is dominated by female farmers. The acceptability of new groundnut varieties in the surveyed area is low. The groundnut variety Natal Common was perceived as suitable for the study area as it could be planted two times in one agricultural season. The smallholder farmers in Chisamba District perceived new varieties to be very expensive, and

therefore, recycled seeds. They also perceived fertiliser to be very expensive and therefore, applied it to maize only.

Conflict of Interest

The authors have not declared any conflict of interest.

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Short Communication

Factors determining extension education as a career

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This paper is based on a research study at Banaras Hindu University in India. The title of the research was Career Dynamics in Extension Education. Method of survey research was applied to conduct the study. It was conducted by taking the responses from hundred respondents of Agricultural scientists, academicians and research scholars from different agricultural institutions selected through random sampling method. The objective of the study was to know the factors that influence the career choice of students in Extension Education. Additionally an attempt was made to find out the areas and sectors of Extension students' job placements. The data was analysed through SPSS version 16.0. The statistical tools like mean, frequency, percentage, rank order, and Chi square test were used for data analysis. From the responses of the sample, it was found that the role of teachers and counsellors (65%) along with student's personality (52%), self-motivation (60%), aspiration (65%), job opportunities (55%), family support (55%), own interest and attitude (60%) towards the subject play very important role in choosing a career in Extension Education.

Key words: Career, extension education, factors, motivation, environment, personality.

INTRODUCTION

Extension Education is an applied behavioural science. The knowledge of this discipline is applicable for Agriculture and rural development. It is an education driven organization seeking to significantly enhance human capital and promote lifelong learning in the state. Extension is a pragmatic disseminator of the latest in research and technologies to enhance productivity and expand the economic base. This forms a state-wide network- with a presence in every county-serving to link communities and the general population to intensive research and development resources. Extension addresses both urban and rural social and economic

issues (Seevers and Graham, 2012). The characteristics developed by Sanders (1966) and Prawl (1984) cited in Education through cooperative extension, provide a profile of extension organization and its work. It reveals that extension is an agency of government created by law. It provides services to all people without discrimination to cooperative with federal, state and local governments all having parts in its administration. Being an educational institution with a mission it differs greatly from the common mission of an educational institution. The differences are that it has no fixed curriculum or course of study, confers no degrees and gives no

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Table 1. Perceived factors determining extension education as a career.

S/N	Factors	% of Responses	Rank
1	Own interest	70	I
2	Support of teachers/ counsellors	65	II
3	Student's personality	65	II
4	Aspiration	65	II
5	Educational Environment	60	III
6	Attitude towards Extension Education	60	III
7	Self-motivation	60	III
8	Job opportunities	55	IV
9	Support of parents/ relatives/ siblings	55	IV
10	Motivation	52	V
11	Impact of eminent personalities	52	V
12	Job satisfaction	45	VI
13	Package of salary	45	VI
14	Good communication skill	40	VII

diplomas, operates informally off campus and uses farms, homes and places of business as classrooms, uses instructors with a wide range of subject matter expertise, has a large and heterogeneous audience.

The persons who are engaged in this developmental process belong to the discipline of Extension Education. In this context the discussions on career in Extension Education is an important aspect for the growth and the promotion of the discipline. With this view a study career dynamics of Extension Education was conceived with the objectives to know about the factors that determine the career choice of students in Extension Education. It was also tried to find out the career availability in Extension Education as perceived by the respondents who were the sample of the study.

METHODOLOGY

The study was carried out through survey method of research. The survey method is a device for collecting data or factual information of certain decided characteristics or items of a universe or population. Fowler (1988) defines that "survey as data collection and measurement processes". For this survey, the sample was drawn from Banaras Hindu University, NDRI, IARI, IVRI, ICAR, ANAND Agricultural University and VBSP University of India. The respondents were comprised of extension professionals, non-extension professionals and research scholars of extension and non-extension disciplines.

Suitable interview schedule and questionnaire as per objective of the study were prepared for the necessary data collection. Prior to the final administration of the schedule for obtaining information required for the study, a sample of 20 respondents was taken from different agricultural institutes for testing the instrument. The schedule prepared, was finally tested to know how far it would be helpful in collection of accurate, unbiased and adequate relevant information. About 180 questionnaires distributed among the respondents. Out of which 100 responses were received for the research. The measurements of the selected variables were carried out through developed schedule. The statistical measures which

have been used in this study are frequency, percentage, mean score, rank order and Chi-square test.

RESULT AND DISCUSSION

From Table 1 it can be inferred that there are about 13 factors that contribute deciding Extension Education as a career. Out of 13 factors, it was decided to find out 7 important factors. These 7 factors in order of importance are own interest, support of teachers and Counsellors, personality and aspiration, educational environment, attitude towards extension education self-motivation, job opportunities, support of parents/ relatives/ siblings towards motivation, job satisfaction, package of salary and good communication skill which were ranked as I,II,III,IV,V,VI and VIII respectively.

One's own interest is highly important for deciding a career in life. It was revealed that about 70% respondents are agree with this factor that is why rank I was assigned to it by the respondents. This finding is in conformity with the study of Sukovieff (1989). Personality and aspiration were two important factors that were agreed upon by 65 of respondents which was ranked II for its contribution in deciding a career in Extension Education. The rank III was assigned jointly to Educational environment, attitude towards extension education and self-motivation for taking decision to choose extension education as a career. It is also revealed that sixty percent respondents accepted these three factors as important factor for choosing the extension education as a career. This finding is in confirmative with the study of Borchert (2002) where he found that the factors like environment, opportunity and personality plays a vital role in career choice (Splaver, 1977).

Support of parents' and job opportunities have been placed in rank IV by the respondents. About 55% of the

respondents agreed that support of parents, relatives and siblings and family decides to choose extension as career. It has been also found that parents are the single greatest influence on a student's career selection. It is important for parents to give support and encouragement to explore options available to find the best career fit for their wards as opposed to trying to live out their own unfulfilled career dreams through their children (Qualifax, 2014). From the table we can see that motivation having placed in rank V is another factor that influences to choose extension education as in one's life. About 65 and 60% respondents of the sample opined that attitude and self-motivation respectively are determining factors for choosing extension education as career (Blustein, 1988).

The nature, structure, salary package and job satisfaction in an organisation attracts the people towards a particular sector. As far as extension education is concerned about 45% of the respondents agreed to this with a rank of VI. We know that extension education is an applied behavioural science that is used to improve the farm and home life. It needs a good communication skill to bring change in knowledge and skill of the farmers. From the table it is evident that forty percent of the respondents are in opinion that communication skill is an important factor to determine extension education as career. About 52% of the sample expressed that the impact of eminent personalities encourages the students towards a particular career. The same kind of opinion was also found here in this study for extension education.

Conclusion

High level of competition and lack of sufficient jobs have created pressure among individuals for choosing career in life for survival. Review of literature finds that there are many factors that play as determinants for deciding a career. The paper has highlighted the factors and their rank as perceived by the respondents. Factors like attitude, interests and ambition, cultural and family influences and economic considerations can influence the choice of a career path. Individual's interests, skill, education and job opportunities in a specific area enables a person to take decision on which career can be achieved. The budget of education, pressure of parents, parents' education and organizational climate received low importance by the respondents for determining a career in extension education. Majority of the respondents agreed that chance or luck did not matter for determining or choosing extension education as a career.

Conflict of Interest

The authors have not declared any conflict of interest.

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A person wearing a blue shirt and white boots is using a blue-handled tool to plant a seedling in a field. The background is a blurred green field.

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