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Social and Economic Challenges of Small Scale Arable Farming in Delta Central Agricultural Zone, Delta State, Nigeria

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Abstract
The broad objective of the study was to investigate the interactions between socio-economic challenges and types of small scale arable farming. Simple random sampling technique was used to compose the sample. The sample was made up of 91 arable farmers. Data were analysed by use of percentage, mean, Pearson Chi square test, t test and multiple regression. The types of small scale arable farming identified in the study area were subsistence, commercial/subsistence and commercial. The social factors which influenced types of arable farming were level of education (M = 3.36) and land tenure system (M = 3.36) while the economic factors were credit facilities (M = 3.63), lack of ready market/storage facilities (M = 2.68) and long investment period compared to quick returns on investment like trading (M = 2.63).. An R^2 value (0.907) showed that there was a significant relationship between farm size and selected socio-economic characteristics. There was a significant and negative relationship between farm size and response to land tenure constraints (t = -27.243, p = 0.000). There was significant relationship between types of small scale arable farming and social factors (X^2 =29.92, p = 0.008), and economic factors (X^2 =75.54, p = 0.000). Extension education, credit facilities, and ready markets should be provided to farmers to enable them purchase more land and other inputs for the purpose of expanding the scale of arable farming in the zone.
Keywords: Small scale arable farmers, challenges, types of arable farming, farm size

1. Introduction

1.1 Background Information

Small scale farming is often characterised by small farm size, subsistence and low use of resources. Arene (2008) defined resource poor farmers in terms of land availability, estimated income per farmer, access to credit and capital. Generally, a lot of factors consternate the small scale farmers in the country in a bid to produce food and fibres for mans' use. These factors ramify into environmental, institutional, social and economic challenges. The environmental challenges among others include weather variability or climate change, soil degradation, pollution, erosion, pests and diseases as well as destruction of farms due to road construction, nomadic transhumance, crude oil and electricity lines. FAO (2011) affirmed that the negative externalities of intensive crop production include land degradation, salinization of irrigated areas, over-extraction of groundwater, the build-up of pest resistance and the erosion of biodiversity. Agriculture has also damaged the wider environment through deforestation, emission of greenhouse gases and nitrate pollution of water bodies. Ovwigho (2013) found that road construction and crude oil pipe lines led to destruction of some Fadama farm projects in Delta State.

The institutional factors though intertwined with social factors could be synthesized as ineffective extension services delivery as well as influence of government agricultural policies and programmes on agriculture. Commenting on institutional factors affecting small scale farmers Tschirley and Theriault (2013) noted that the main approach to increasing productivity among farmers by most sub-Saharan African countries was through state controlled distribution of fertilizers and improved varieties at subsidized prices.

In Nigeria Government authorities, international development agencies, Banks, research institutions, universities and NGOs have continued to play formidable role in agricultural development. Several policies and programmes have been implemented to boost agricultural production. These programmes can easily be recapitulated by the conscious observer of development in the agricultural industry. It suffices to mention the Agricultural Development Projects 1975; Operation Feed the Nation 1976; Agricultural Credit Guaranteed Scheme 1977, Green Revolution Programme 1980; Back to Land Programme 1986; Directorate of Roads and Rural Infrastructure 1986; Better Life for Rural Dwellers, Family Economic Advancement Programme; Poverty Alleviation Programme; Poverty Eradication Programme, National Fadama Development Programme, National Economic Empowerment and Development Strategy NEEDS and SEEDS 2004, Millennium Development Goals, MDGs 2000.

The social challenges encompass poor education, inability to innovate, group influence, fatalism, land tenure system, culture and tradition. Ovwigho 2010 found that religious belief, land availability, and medicinal usage influenced small scale production of vegetables. The economic challenges among others include lack of capital,, inputs, land, labour and .resource combination. Ibeawuchi et.al (2010) stated that in Nigeria, about 70-75% of the populations were farmers. Members of the family participated in cultivating family lands with the wealthy ones engaging in outright purchase from others or on lease to produce food and fibre. Generally, the people were

poor and most of them wee small scale farmers who produced majority of the food. They were said to be resource poor and practiced small scale farming (0.1-2 ha).

1.2 Statement of the Problem

Small scale farming is characterised by small farm size, subsistence and low level of production. Ozowa (1997) found that most Nigeria farmers operated on small scale. He remarked that judging by international standards whereby all farms less than 10.000 hectares were classed as small, then 94.37 percent of all farm holdings in Nigeria must be classified as small scale farms while the remaining 5.63 percent or 1.7 million were medium scale holdings. Afolabi (2010) and Okuneye (1989) noted that over 80 percent of the farming population in Nigeria were small holders who produce a substantial portion of the food requirements.

The foregoing juxtaposes the fact that the small farmers occupy a crucial position in agricultural production domain of the country. It could be asserted that without the small scale farmers there would be scarcity and high costs of food. The few large commercial farms dotted over the country cannot produce enough food for the populace. There is a gamut of literature on the challenges or constraints of the small farmers. Many of the studies including Eze et. al. (2011), Umeh et. al. (2013), Odoemenem and Adebisi (2011).and Ibeawuchi et. al. (2010.) did not examine the relationship between farm size and socio-economic characteristics of farmers as indicants of low productivity. This vindicates the need to explore the inherent relationship between types of small scale arable farming and socio-economic characteristics for the purpose of identifying the limitation to increased productivity in small scale arable farming. To this end, the study has been designed, to investigate the interactions between socio-economic challenges and types of small scale arable farming in the central agricultural zone of Delta State, Nigeria. The specific objectives were to:

i. describe the types of farming practiced by small scale arable farmers in the study area;
ii. Identify the social and economic factors affecting arable crop production;
iii. examine the relationship between farm size and socio-economic characteristics;
iv. deduce the difference between farm size and response to land tenure constraint; and
v. ascertain the relationship between types of small scale arable farming and influence of social and economic factors.

2.0 Materials and Methods

2.1 Description of the Study Area

Delta central agricultural zone is made up of two ethnic groups : Urbobos and Isokos. The Urhobos are the largest ethnic groups and consists of eight Local Government Areas. These are Ethiope east, Ethiope west, Sapele, Okpe, Udu, Ughelli south, Ughelli north, and Uvwie. The Isoko ethnic groups have two Local Government areas named Isoko south and Isoko north. The Urhobos and Isokos have climatic, soil, linguistic and cultural similarities. The major indigenous occupation of the people is farming and fishing. The land is low lying and inter-laced with streams and rivers.

2.2 Sampling Technique and Sample Size

Simple random sampling technique was used to compose the sample. The sampling frame was made up of 457 registered arable farmers. Fifty percent of the Local Government Areas which corresponded to five were randomly selected from the Urhobo and Isoko ethnic groups. The selected Local Government Areas and number of registered arable farmers were Ughelli south (83), Ethiope east (113), Sapele (87), Uvwie (37) and Isoko north (137). Twenty per cent of the farmers were randomly selected from the Local Government Areas. The sample, therefore, consisted of Ughelli south (17), Ethiope east (23), Sapele (17), Uvwie (7) and Isoko north (27). This gave a sample size of 91 arable farmers.

2.3 Measurement of Variables

The variables of the study were type of farming, farm size, social and economic constraints and socio-economic characteristics. Types of farming were labelled 1 for subsistence, 2 for subsistence/ commercial, and 3 for commercial. Farm size was measured by number of plots (100 ft by 50 ft). This was converted to hectares by using a factor of 0.05 hectare which is an equivalent of one plot. Social and economic factors influencing small scale arable farming were measured by a four-point Likert type scale. Five statements were constructed each for both social and economic factors (Tables 2 and 3). The scores for social and economic factors were added up for each respondent to make up the total score. Educational level was measured by the number of years equivalent to the formal qualification attained by the respondent. No formal education was scored 0. Farming experience and age were measured in years. Cosmopolitan attitude was measured by the number of times the respondent left the village in the last year (2013) to seek agricultural information. Ownership of house was measured by dichotomous response - personal (1) and hired (2). Type of labour was measured by family labour (1) and hired labour (2).

2.3 Conceptual Framework of Analysis

The conceptual framework of the study is depicted by Fig. 1.

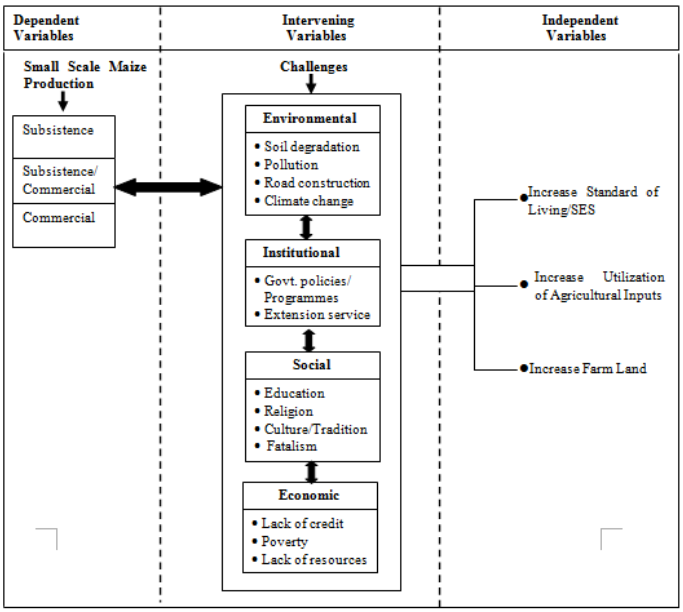

Fig. 1: Conceptual framework of analysis

In this study, small scale arable farming was classified into subsistence, subsistence/commercial, and commercial. In the case of subsistence farming the farmer does not produce for sale. In subsistence/commercial the farmer produces for sale and consumption.. Commercial small scale farming involves production solely for commercial purposes. Figure 1 depicts that small scale farming is influenced by environmental, institutional, social and economic factors. Depending on the severity of these factors the farmer could be well off economically, able to purchase farm inputs, increase his farm holdings and vice versa. The study dwelt only on the social and economic factors influencing small scale arable farming.

2.4 Method of Data Collection and Analysis

Data were collected by use of structured questionnaire. The questionnaire consisted of demographic characteristics, type of farming (subsistence, subsistence/commercial and commercial). Data were analysed by use of percentage, mean, Pearson Chi square test, t test and multiple regression.

3.0 Results and Discussion

This section presents the results and discussion of data

3.1 Types of Small Scale Farming

Data collected on types of farming were presented in Table 1. Three types of small scale arable farming-subsistence, subsistence/commercial and commercial were identified.

Table 1: Types of small scale arable farming

S/N	Types of Small Scale Farming	Frequency	Per cent
1	Subsistence	12	13.2
2	Subsistence/Commercial	58	63.7
3	Commercial	21	23.1
	Total	91	100.0

The predominant type of small scale arable farming was a combination of subsistence and commercial farming (63.7%). This was followed by commercial small scale arable farming (23.1%) and subsistence arable farming (13.2%). The three types of farming have serious implication on the economic survival of the small scale farmer. In the case of small scale commercial farming the motive is profit maximisation. Arable farming involves the production of annual or field crops such as maize, sorghum, millet, rice, cassava, yam and potato on fertile arable land. Akinsanmi (1994) identified four types of farming practices predominant in tropical agriculture namely: hunting and gathering, basic subsistence agriculture, peasant farming and plantation or estate agriculture. Other types of farming encountered in agriculture include plantation agriculture, poultry farming, fish farming, snail farming, dairy farming and vegetable farming

3.2 Social and Economic factors Affecting Small Scale Arable Farming

The results on the social and economic factors influencing arable farming were presented in Tables 2 and 3 respectively.

Table 2: Social factors influencing small scale arable farming

S/N	Statement	Mean	Remarks
1	Religion plays a fundamental role in arable farming	1.08	Disagree
2	Changing societal value system influences arable farming	1.20	Disagree
3	Level of education positively influences small scale arable farming	3.36	Agree
4	Extension contact/farmers' groups affect level of arable farming	1.37	Disagree
5	Prevailing land tenure system reduces the availability of land for arable farming	3.36	Agree

Based on the mean responses in Table 2, the respondents agreed that level of education (M = 3.36) and land tenure system (M = 3.36) were social factors influencing small scale arable farming. The level of education had positive influence on small scale arable farming while the prevailing land tenure reduces the availability of land for small scale farming. Religion (M = 1.08), changing societal value system (M = 1.20) and extension contact/farmers' groups had little or no influence on arable farming.

Lack of education among farmers and land tenure system has remained a major challenge in expanding arable farm production in Nigeria and some other developing countries. Household assets, household characteristics, and location characteristics played important roles in explaining participation in nonfarm activities. The educational level of adults in the household affects income levels. Education of both males and females significantly increases earnings from high-return activities: one additional year of male education leads to 16 percent more income from high return nonfarm activities, while one additional year of female education brings 11 percent more income (Micevska and Rahut, 2008). Land tenure systems in Africa has often led to land fragmentation and limits potential farmers from investing in farming (Akinsanmi, 1994; Eze et.al, 2011). For the small scale farmers to live above poverty he must seek educational improvement and overcome the obstacles posed by land tenure systems. It is only the wealthy farmers that can purchase large expanse of land for farming without undergoing the rigour of the communal land tenure systems.

Table 3: Economic factors influencing small scale arable farming

S/N	Statement	Mean	Remarks
1	Lack of credit affects level of arable farming	3.63	Agree
2	Lack of ready market/storage facilities prevent people from investing in arable farming	2.68	Agree
3	The long investment period compared to trading discourages many people from arable farming	2.63	Agree
4	Inadequate labour supply prevents people from arable farming	1.42	Disagree
5	Lack of land is a limitation to arable farming	1.43	Disagree

In Table 3, the respondents agreed that lack of credit facilities (M = 3.63), lack of ready market/storage facilities (M = 2.68) and long investment period compared to quick returns on investment like trading discourages involvement in small scale arable farming (M = 2.63). The respondents disagreed with inadequate labour supply (M = 1.42), and lack of land (M = 1.43) as factors affecting small scale arable farming in the study area. Lack of land was not a problem but the availability was hindered by land tenure system and high cost.

The mention of lack of credit facilities, lack of ready market/storage facilities and long investment period as factors affecting small scale farming is indicative of low level of agricultural development and lack of interest in farming amongst the citizenry. One of the problems confronting small-scale enterprises including farmers in Nigeria was inadequate capital. Credit was a basic tool for providing the needed capital for acquiring resources at the right time and in an efficient manner. Small scale farmers are classified as resource poor farmers because of poor resource base available to them (Ojo, 1998; Odoemenem and Adebisi, 2011; Ibeawuchi et. al. 2010; Olagunju. and Adeyemo, 2007; Rahji, 2000).

On lack of ready market and storage facilities, Berg and Kent (1991) stated that an important factor affecting agricultural productivity in Africa was poor market access. They explained that many small scale farmers who rely on agriculture as means of livelihood sell most of their farm produce soon after harvest to either meet immediate cash needs or avoid high grain storage cost. Olaitan (1984) noted that any farmer who hoped to profit from farming must be prepared to delay gratification until his farm starts to yield fruits. He remarked that it takes several years to realise profit from agricultural enterprises especially plantation crops. Today, many youths in the country have abandoned agriculture in search of quick money yielding income generating activities such as transportation, casual or hired labour and trading.

3.3 Relationship between Farm Size and Socio-economic Characteristics of Respondents

The data on the relationship between farm size and socio-economic characteristics was analysed. An R^2 value (0.907) showed that there was a significant relationship between farm size and socio-economic characteristics. This meant that the independent variables (level of education, farming experience, age, cosmopolitan outlook, ownership of a house, sources of labour, and household size) explained and could predict the farm size of small scale arable farmers up to 91 per cent. The coefficients of variables in the equation were shown in Table 4.

Table 4. Multiple regression coefficients between farm size and socio-economic status

S/N	Variables in Equation	Std. Error	*T*	Significance
1	Level of education	0.006	3.34	0.001*
2	Farming Experience	0.006	- 4.72	0.000*
3	Age	0,002	-2.94	0.004*
4	Cosmopolitan outlook	0.006	6.19	0.000*
5	Ownership of a house	0.027	0.429	0.669
6	Sources of labour	0.036	2.756	0.007*
7	Household size	0.011	-1.118	0.267

The socio-economic characteristics that were significant and positively correlated with farm size were level of education (t = 3.34, p = 0.001), cosmopolitan outlook (t = 6.19, p = 0.000), and sources of labour (t = 2.756, p = 0.007). Farming experience (t = -4.72, p = 0.000) and age (t = -2.94, p = 0.004) were significant and negatively correlated with farm size. Ownership of a house (t = 0,429, p = 0.669), and household size (t = -1.118, p = 0.269) had no significant relationship with farm size. A subsistence small scale farmer could have an inherited house or a house built with income from other sources other than farming.

Education and age play a vital role in agricultural productivity. According to Eze et.al. (2011) many small scale farmers have poor formal education. These categories of farmers often practiced traditional farming. They also found that majority of the respondents (33%) were elderly farmers between the ages of 60-69 years. This was the age range when farmers in the study area usually relinquish their land holdings through land tenure by inheritance to their children particularly the male heirs. This practice has often led to continuous land fragmentation Farmers' age showed a negative relationship with the farmer's productivity. The older farmers had more experience in farming but their farm sizes were smaller than the younger farmers. Household size showed a direct relationship with productivity and was not significant (Eze et.al, 2011). In this study household size was not significant. Farm size, labour, and capital were factors which significantly increased output of sweet potato (Onaiah et.al., 2007). Cosmopolitan behaviour had a significant relationship to farm size of small scale arable farmers. Cosmopolitan farmers were widely travelled and sought agricultural information to improve their level of production.. A person with a good cosmopolitan outlook was one whose interest and experience was broader than his local community (Ekong, 2003).

3.4. Differences between Farm Sizes and Responses to Land Tenure Constraint

The difference between the farmers' farm size and response to land tenure constraint was compared by use of t test (Table 5).

Table 5: Farm size and response to land tenure constraint

Variables	**Mean**	**Std. error**	***T***	**Significance**
Farm size (ha)	1.058	0.386	- 27.243	0.000
Responses to land tenure				

There was a significant and negative relationship between farm size and response to land tenure constraints (t = -27.243, p = 0.000). This suggested that there was an inverse relationship between farm size and influence of land tenure system on arable farming. Farm size is greatly influenced by the system of land tenure prevalent in an area. Under the individual tenure system and inheritance method of land acquisition fallow length periods are either reduced or no more practiced. Large-scale cropping and animal production are difficult without sufficient land. With rapid population growth and enforcement of land tenure systems, fragmentation of land becomes rampant, which reduces farm holdings and thus reduce agricultural productivity. Land tenure problems remain unsolved, and constrain the efforts of the farmers in adopting innovations (Eze et.al 2011)

3.5 Relationship between types of small Scale Farming, Social and Economic Factors

The relationship between types of small scale arable farming, social and economic factors was found by the use of Chi square test (Table 6)

Table 6. Chi square test between types of farming system and total score on social and economic factors

Type of constraint	X^2 Value	DF	Cramer's V	Significance
Total score on social constraint	29.92	14	0.405	0.008
Total score on economic constraint	75.54	22	0.64	0.000

The relationship between type of farming and total scores of the respondents on social and economic factors shown in Tables 2 and 3 were found. There was significant relationship between types of small scale arable farming and social factors (X^2 =29.92, p = 0.008). There was also a significant relationship between types of small scale arable farming and economic factors (X^2 =75.54, p = 0.000). The economic factors had more profound influence on the types of small scale arable farming. The types of small scale arable farming measured were subsistence, subsistence/commercial and commercial. The types of arable farming and factors influencing arable farming varied among small scale arable farmers. Thus this study has filled the gap between types of small scale arable farming and socio-economic factors influencing arable farming in the study area.

4.0 Conclusion and Recommendation

Types of small scale farming identified in this study were subsistence, commercial/subsistence and commercial. The major social factors influencing arable farming were level of education and land tenure system. The economic factors influencing arable farming were lack of credit facilities, lack of ready market/storage facilities, and long investment period. The long investment period discourages many potential farmers from investing in arable farming. There was a significant relationship between farm size and socio-economic characteristic. There was a significant and negative relationship between farm size and response to land tenure constraint. There was significant relationship between types of small scale arable farming, and social and economic factors. Extension education, credits, and ready markets should be provided to farmers to enable them purchase more land and other inputs in order to expand the scale of arable farming in the zone

References

Afolabi, J. A. (2010). Analysis of Loan Repayment among Small Scale Farmers in Oyo State, Nigeria. *Journal of Social Science*, 27(2): 115-119

Akinsanmi, O. A. (1994). *Senior Secondary Agricultural Science.* Malaysia: Longman

Arene, C. J. (2008). Comparative Economics of Maize and Rice Production among Resource-poor Farmers in Anambra State of Nigeria. *African Development Review,* 4 (1) : 102 - 113

Berg, E. and Kent, L. (1991). The Economics of Cereal Banks in the Sahel. Consultancy Report Prepared for USAID. Bethesda, Maryland, USA: Development Alternative Inc.

Ekong EE 2003, *Introduction to Rural Sociology*, Dove Educational Publishers, Uyo, Nigeria

Eze, C. C., Konkwo, S. O. Orebiyi J. S and. Kadiri F. A. (2011). Land Tenure System Farm Size, Innovation and Agricultural Productivity In South-east Nigeria. Paper Presented at the 85th Annual Conference of the Agricultural Economic Society held at Warwick, 18th - 20th April 2011

Food and Agriculture Organization, FAO (2011). Save and Grow: the Challenge From: www.fao.org/ag/save-and-grow/en/1/index.html.

Ibeawuchi I.I., . Obiefuna, J.C. Ihem, E. Nwosu, F. O. Nkwocha, V. I. Ofor M. O and Ezeibekwe I. O. 2010. Constraints of Resource Poor Farmers and Causes of Low Crop Productivity in a Changing Environment. *Researcher,* 2 (8): 68-72

Micevska, M. and Rahut, D. B. (2008). Rural Nonfarm Employment and Incomes in the Himilayas. *Working Paper* No. 205. New Dehli: Indian Council for Research on International Development

Odoemenem, I. U. and Adebisi, V. (2011). Sustainable Agriculture for Small Scale Farmers in Niger State, Nigeria. *Journal of Sustainable Development in Africa,* 13 (2) : 225 - 235

Ojo, M. O. (1998). Some Implications of Government Economic Policies for Financing and Development of Agriculture in Nigeria. In: Okorie, A. and Ijere, M. O. (eds). *Readings in Agricultural Finance*. Lagos : Longman

Okuneye, P. A. (1989): Shift in Agricultural Production and Effect on Health by year 2000. *Rural Development in Nigeria,* 3 (20): 20-25.

Olagunju. , F. I. and Adeyemo, R. (2007). Agricultural Credit and Production Efficiency of Small Scale Farmers in South - eastern Nigeria. *Medwell Agricultural Journal,* 2(3) : 426 – 433

Olaitan. S. O. (1984). *Agricultural Education in the Tropics: Methodology for Teaching Agriculture.* New York : Macmillan

Onaiah, M. O. , Enya, V. E. , Angba,, O. A. , Odey. S. O. (2007). Analysis of the Effects of Farm Size, Labour and Capital Resources on Sweet Potato Output in the Central and Northern Senatorial Districts of Cross River State. *Journal of Agriculture, Forestry and the Social Sciences,* 5 (1) : 16-20

Ovwigho, B. O. (2013). Monitoring and Evaluation Report for Fadama III Project Delta South Senatorial District, Delta State, Nigeria. Asaba : Delta State Fadama III Project

Ovwigho, B. O. (2010). Social Factors Affecting Vegetable Production A Case of Vegetable Production in Isoko north Local Government Area of Detta Srate Nigera. *Natural and Applied Sciences Journal,* 11(2); 210- 215

Ozowa, V. N. (1997). Information Needs of Small Scale Farmers in Africa: The Nigerian Example. Consultative Group on International Agricultural Research, CGIAR Newsletter 4 (3): 1-3

Rahji, M. A. Y. (2000). An Analysis of the Determinants of Agricultural Credit Approval/Loan Size by Commercial Banks in South Western Nigeria. *Nigeria Journal of Development Studies*, 1 : 6-25

Tschirley, D. and Theriault, V. (2013). On the Institutional Details that Mediate the Impact of Cash Crops on Food Crop Intensification: The Case of Cotton. A Paper Presented at the Agricultural and Applied Economics Association's Joint Annual Meeting, Washington, DC, August 4-6, 2013.

Umeh, J. C. , Ogah, J. C. and Ogbanje, C. (2013). Socio-economic Characteristics and Poverty Among Small-Scale Farmers in Apa Local Government Area of Benue State, Nigeria. A Paper Presented at the International Conference on Food and Agricultural Sciences held at Singapore between 5 th – 6th October, 2013, pp. 106 - 111