

CHALLENGES AND PROSPECTS OF GINGER FARMING IN SRI LANKA WITH SPECIAL REFERENEC TO PLOGAHAWELA DIVISIONAL SECTRATARIAT DIVISION

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ABSTRACT

Ginger has been one of the important minor commercial crops in Sri Lanka for decades. It has also been a welcome supplementary source of income among rural households, especially in the wet zone of the island. The objective of the study is to examine the challenges and the prospects experienced by the ginger famers currently in Sri Lanka. The necessary information for the study is collected from both primary and secondary sources. Research findings suggest that the marketing issues including price fluctuations, land ownership related issues, unavailability of quality seeds, scarcity and high prices of fertilizer and other inputs, lack of scientific knowledge on farming and post harvest handling and the inefficient extension services are the major challenges of ginger faming. At the same time there are such prospects as high profitability, less workload for farmers and small scale friendly crop cultivation, high attractions among the new generation for the cultivation and natural resistance to diseases. High potential in alleviating the rural poverty, promoting the cultivation as a major minor export crop, minimum environmental implications and ability to cultivate as a supplementary source of income while fully engaging in another job or livelihood are the major conclusions coming out of the study.

Key words: Ginger farming, minor crops, poverty alleviation, and marketing issues.

INTRODUCTION

Ginger is a popular commercial crop not only among Sri Lankan's but also among South Asians and Europeans from the ancient times for various purposes. Ginger has been one of the important minor commercial crops in Sri Lanka for decades. It has also been a welcome supplementary source of income among rural households, especially in the wet zone of the island. It is widely cultivated in Kurunegala, Kandy, Kegalle, Gampaha and Nuwaraeliya districts. It is also known as a primary crop, a crop which can be cultivated in one's own lands for household uses. Even though the ginger is utilized in day to day household's utilities the potential towards cultivation of ginger is not relatively significant. Ginger market in Sri Lanka consists of imported ginger, especially from India and China. In general, the demand theory indicates that the increasing number of buyers increases market demand for the given product, but local farmers are reluctant to cultivate more even when demand for ginger is high. It is said that ginger rhizome produces multiple results and as it is popular among local farmers the input output ratio is 1:10 and it has already been proven. Another aspect is that ginger is usually cultivated as an intern crop or the second crop in most of the lands in Sri Lanka and rarely cultivated as the major crop, which states that ginger basically brings the secondary income for most of the farmers in Sri Lanka while earning their major income. Having required soil and other climate conditions along with inherent atmosphere for ginger it is expected to produce more in a Sri Lankan context therefore. But the problem arises is that the tendency to cultivate ginger is becoming poor and therefore import volume of the same is becoming higher. The introduction of recent industries especially like soft drinks industry in Sri Lanka provides further insight for developments in ginger farming. Usually ginger cultivated in Kurunegala, Dambadeniya and Polgahawela areas are basically collected for Soft drinks industry by soft drinks manufacturers. Export sector also provides opportunities for local farmers to cultivate ginger in Sri Lanka. Even though there are various reasons to cultivate ginger, the recent tendency to cultivate ginger in Sri Lanka is becoming poor. This study therefore basically focuses on this significant matter.

Ginger as a listed minor export crop (MEC) reports a decline in growth in 2017 compared to 2016 basically due to unusual pattern of rain fall, dry weather conditions, increased of cost of production and frequent price fluctuations. However the import volume of ginger is also reported as increased in 2017 as well. The speciality of the incident is that except ginger and few other crops the other listed minor crops in Sri Lanka have increased. However the increase of imported ginger volumes makes an adverse effect on local ginger farming. Ginger cultivation indicates an increase of volumes of harvest throughout the time from the recent past. But increased volume of imported ginger while ginger has been listed as minor export crop in Sri Lanka indicates that either ginger harvest derived is not sufficient or there are issues associated with local ginger to survive in the local market against imported ginger (CBSL, 2017). These series of observations made researcher to study further about the ginger cultivation in Sri Lanka.

Researcher has focused these facts with respect to one of the main geographical areas called Polgahawela, Sri Lanka where ginger cultivation is largely observed. As per Department for Agriculture Development in the area the annual number of farmers registered to ginger cultivation that will be therefore getting entitled for ginger seeds subsidiary has reported decline.

In addition to that the most ginger farmers in kurunegala district especially in Dambadeniya, Polgahawela, Kuliyapitiya and katugampola are not happy with the ginger cultivation and reluctant to grow ginger were observed during the initial field visit of the survey.

Therefore the main research question of the study is to focus on challenges of ginger cultivation and prospects available and to be identified for a better future of the same.

GINGER CULTIVATION

The crop ginger has been grown in tropical Asia since ancient times. References say that the origin of ginger is uncertain, but in most of records as it is indicate as India. As it is suspect the potted ginger plants were transported through maritime trade routes of the Indian Ocean and South China Sea in the 5th century AD and before. Records indicate, especially Hindu Epic Mahabharata written in 4th century BD, ginger was really popular among South Asians and used in meals in both dried and fresh forms. Not only for meals but also ginger was really important in Indian ayurvedic medicine in their traditions. Proving multiple uses of ginger was also used as flavouring for buttermilk drinks as it is discussed in Monalisa Literature in the 11th century Ad. Regardless of religion where Muslims also strongly consumed ginger to prepare meat dishes and drinks using ginger pesters. Ginger is again important as an export crop or an article and as it is mentioned ginger was exported from India to Roman Empire 2000 years ago and mostly consumed because of its medicinal and cookery properties.

Popularity of ginger further discussed in 13th and 14th centuries together with black pepper, as a result Arab carried ginger and plants on their voyages to East Africa to plant. Reports say as it is found that the one pound of ginger was equivalent to the cost of a sheep during this period in England. E. Geta and A. Kifle , (2011), have mentioned that Ethiopia has started the ginger cultivation under sub optimal condition with rain water often less than 1500 mm annually at relatively lower temperature.

LITERATURE REVIEW

The New Growth theory

Theory explains the idea that the technological change has not been delivered to the developing countries as expected for the development. Romer (1986), Lucas (1988), and Aghion and Howitt, (1992) contributed to the New growth theory. The theory further explains that the economic growth through the increase of returns of scale can be derived by focusing on the knowledge than focusing on labour and capital. The theory intension is to weight on innovation and knowledge creation process for sustainable development.

The Trade Theory

The international trade theory basically developed throughout the Theory of absolute advantage by Adam Smith, Ricardo's Theory of comparative advantage to Heckscher online theory (Modern theory) to general equilibrium theory.

Theory of Absolute Advantage

According to Adam Smith, the given nation should need to continue with the production what is been specialized throughout the time, in term of efficiency. Absolute advantage according to Adam Smith was low cost of production.

Ricardian theory of comparative advantage

The comparative advantage is basically defined in terms of opportunity cost of producing the commodity with comparing to other commodity produced. Therefore countries should incur minimum opportunity cost than the other country to benefit comparative advantage.

Ginger is cultivated in India, china, Japan, Indonesia, Australia, Nigeria and west Indies Islands where India and China are in the front in terms of production and consumption. As one of the market surveys carried out by Aburacker, (2011) has shown the Kerala as the largest state contributes towards ginger and the volume is 33% as it is accounted out of total ginger production in India. According to Aburacker, ginger is available in the form of oil, oleoresins, grand ginger and fresh ginger. Light colour ginger has relatively higher value at the market from the history and dark ginger has more heat and as it is mentioned which is for favoured for extraction purposes. But fresh ginger is very much popular as a vegetable. This article further says that Nigeria cultivates the largest area which accounted as 55% approximately, in the world. India also provides significant contribution but productivity of ginger in India is relatively poor. Further Aburacker has made the following recommendations in order to improve the ginger cultivation and the industry.

1. Introduce high yielding varieties in ginger
2. Supply planting materials in time
3. Reduce the yield gap
4. Introduce short duration varieties
5. Popularize fresh ginger processing
6. Encourage cultivation of organic ginger
7. Strengthen agriculture research

According to specialty Crops for Pacific Island Agro forestry (<http://agroforestry.net/scps>) Farm and Forestry Production and Marketing Profile for Ginger by Hector Valenzuela, there are 25 varieties of ginger all over the world depending on the size of rhizome, flavour, aroma, pungency, colour and fibber content. As it is noted that the key problem of ginger production is that it takes relatively long period of time like 10 – 12 months from planting to harvest. On the other hand increasing the degree of competition from china creates a challenge for small scale producers of ginger in the world arena. Therefore all the other farmers may have to find niche markets to sell their harvests. Bacterial wilt infection possibility would be another problem for ginger cultivation so that all farmers should need to be keen on exact technical practices.

Parthasarathy et al (2008), maintains that the changing climate conditions directly affect the production volume of ginger and the growing speed hence quality of ginger. Production volume is therefore highly sensitive for changes in climate conditions with special reference to India, Kerala region.

Rahman, (2009), pointed out that the problems in ginger cultivation where the study focused on Methods used in ginger cultivation with especial reference to Indian ginger hub Northeast region. As it is discussed most of farmers are still depend on traditional methods and natural resources. But continuous usage of land with no proper developments may tend to decrease the level of productivity of ginger. As it was reported decreasing rhizome yield from 1:8 from 1:4 (seed rhizome to harvest rhizome). According to survey report more farmers about 60% in SIKKIM commented that wilt and soft rot as major limiting factors in ginger cultivation. In ASAM 30% yield loss was due to rhizome rot and that has become the major challenge in organic farming. This has lead to give up ginger cultivation among farmers.

Technical Bulletin, (2011), states that ginger should not be rotated with crops like Belle, Yam, and banana, Turmeric or Tomatoes since they are also the main host of root knot nematodes.

Mushin, (2012), has mentioned that the increasing demand in industrialized countries for natural products has created a large demand for various types of essential oils. Developing essential oil industry therefore has opened opportunities for certain crops which were not strongly demanded at the world arena. Therefore local suppliers in Sri Lanka have focused on new plants such as coleus, sandalwood, ginger and turmeric etc. Therefore ginger has potential to increase its production within the country since export of essential oils reported slow growth recently.

National Committee Post Harvest Technology and Value Addition (NCPHT & VA) Sri Lanka council for Agricultural research Policy (SLCARP), National priorities in post Harvest & value Addition Research in Agriculture, (2011-2015), states that ginger as one of the prioritized crops and following objectives are suppose to be reached as it is set by a legal body in National Agricultural Plan in 1999 as follows,

1. Income and employment generation
2. Generation of foreign exchange rate
3. Economic efficiency
4. Satisfaction of Future domestic needs
5. Satisfaction of nutritional requirement of low income groups.

This further provides reasons to cultivate ginger and to encourage ginger farmers in local context since increasing ginger cultivation cause to derive various economic results.

Samaratunga, (2003), has mentioned that the expanding supply chain through food city concept island wide has a significant impact on spices market in Sri Lanka where this enables to overcome certain problems that farmers had regarding the market.

Angles et al (2011), has analyzed that both domestic and world prices influence the volume and direction of turmeric industry. It is also mentioned that liberalization and globalization had a significant impact on Indian turmeric industry and that was luckily positive. It further suggests that government intervention in this regard is highly important. India, Indonesia, Nepal, Nigeria, Bangladesh, and Sri Lanka etc export ginger therefore more focus should be paid on export earnings through price stabilization. Price instabilities are possible due to changes in domestic and world prices and changes in foreign exchange rates. Therefore strategies and policies should be formulated to protect farmers and to maintain a monopoly among all other countries of the world trade. It further indicates that the following actions should be taken to protect the turmeric industry with respect to ginger.

1. More focus should be paid to increase turmeric production and its productivity
2. Farmers should be given awareness programmes in order to enhance the quality
3. Information about international markets should be properly conveyed to local farmers in an effective manner, in order to enhance technological practices to protect the industry.

R.K Yadav et al (2004), state that ginger as the main cash crop of eastern region of India which supports livelihood and to improve standards of living of ginger farmers and yield of rhizome is relatively higher in the same region. Farmers in this region find some marketing problems regarding the local market, since the local market is not in a position to buy such a large quantity therefore there is a necessity to find some new markets to sell or else the ginger output should be converted in to various forms of ginger depending on the market demand such as ginger oil and ginger powder which are very popular in developed countries. Their findings further focus on major problems in production with especial reference to North Eastern region as follows.

1. Shifting cultivation
2. Land Tenure System
3. Small Land Holdings
4. Non availability of quality planting materials and other inputs
5. High rain fall
6. Lack of funds.
7. Low fertilizer and pesticide usage
8. Problems of processing and marketing
9. Losses due to faulty storage methods and diseases like rhizome rot
10. Lack of trained professional with sound knowledge in post harvest technologies
11. Lack of improved production technologies and management practices.

Geta and Kifle, (2011), have also pointed out that ginger cultivators faced with various issues due to storage, marketing and production of ginger. Framers faced with keeping the fresh ginger as one of the major issues since fresh ginger has higher

demand at the market. However farmers still use traditionally accepted methods, enjoying relatively fair price is also rare depending on ginger availability at the point of collecting harvesting and some malpractices by intermediaries. It is also shown that farmers have no chance to determine the price of their production but traders. Price instability is therefore uniform for the ginger output. The ginger as a spice is grown in Sri Lanka from the ancient times especially by small households as the source of income, however Sri Lanka is leading cash crops exports via cinnamon and ginger numerically Sri Lanka Rupees Million 6,098 was the spices export income in 2001, equivalent to 1.4 percent of total export income of Sri Lanka. It is also encountered that all families in Sri Lanka are consuming ginger with the mean quantity of 600 grams per month. (Takeda, Saliya, Muthuramn, M.Rahaman & Kawet; 2007)

RESEARCH OBJECTIVES

The main objective of the research is to examine the prospects and challenges faced by ginger cultivators in Sri Lanka. The specific objectives of the study are to identify contributory factors for ginger cultivation, to identify issues experienced by ginger cultivation and to study strategies to promote ginger cultivation on sustainable manner in Sri Lanka.

SCOPE OF THE RESEARCH

This research is only focusing on ginger cultivation in Sri Lanka. The term ginger cultivation in this research refers to ginger cultivation for commercial purposes. The commercial purposes are referred as in the cultivation of ginger for market purposes with the objective of earning economic returns. The ginger cultivation is discussed with respect to its challenges and Prospects with an economical point of view but not from the agricultural point of view without paying more attention on technical aspects of ginger cultivation. The research is focused on ginger cultivators but not focusing on other parties connected to the ginger cultivation.

METHODOLOGY

The data for the research were basically collected through literature review and formal secondary data sources including print and electronic media. Primary data were collected through focused group discussion with a designed questionnaire based on the conceptual framework determined. The population of this research is all ginger farmers and their farming lands in the Polgahawela Divisional Secretarial Division, Sri Lanka. The population consists of ginger farming for commercial purposes only. Therefore ginger in this research is defined as a commercial crop and the definition of ginger farmer in the research are individuals those who cultivate ginger for the market or for commercial purposes, in other words to earn an economic return at the end. Ginger is cultivated in various volumes within the area at least 1/8 perches of land. Therefore individuals cultivate ginger at least for 1/8 acres minimum for commercial purposes will be considered for the research. Indirectly the subsistence ginger cultivation is excluded from the discussion. The area of divisional secretarial Polgahawela is consists of eighty four (84) gramasewa divisions including one hundred and eighty two (182) farmers within Polgahawela and Pothuhera areas. Therefore the population of the study is basically drawn with respect to gramasewa divisions within which the divisional secretarial is administrated. All the ginger farmers cultivate ginger for commercial purpose and those who have registered with the department of export agriculture annually

The probability sampling techniques adopted for the research since the population reflects varieties with respect to the ginger cultivation such as varieties with respect to, land size and the ownership of lands, cultivation depending on the water source for ginger, level of education of ginger farmers, the output volume or the size of the harvest etc. out of the probability sampling techniques the stratified sampling technique is adopted since overall population can be seen within the sample depending on determinants mentioned above. The sample is selected by gathering ten (06) gramasewa divisions where the maximum number of ginger farmers' registration for the year is reported according to the Department of Export Agriculture in Pothuhera and Polgahawela. Both Pothuhera and Polgahawela Department of Export Agriculture administrated in Polgahawela divisional secretarial division. It is also decided to determine the sample according to stratified method under random sampling but the relatively higher number of ginger farmers was used as the sampling technique as it is more important for the research in order to check the variety with the stratified samples. The questionnaire was based on the following determinants. (i) size of the land area cultivated and the ownership of the land, (ii) marketability and the market mechanism, (iii) the cost of production, (iv) seeds and fertilizer related problems; (a) prices of seeds and fertilizer (b) availability of seeds and fertilizer, (v) government intervention towards the ginger cultivation, (vi) the natural environmental factors, (vii) formal knowledge and the technical knowhow available for ginger among farmers, (viii) import volume of ginger.

ANALYSIS METHODS

Data analysis is designed with the help of mixed method of analysis since both quantitative and qualitative data are supposed to be collected. The reason to select the mixed method is to properly evaluate various aspects of data collection which consists of numerical as well as non measurable data in terms of numbers.

The data collected were analyzed according to correlation analysis with respect to quantitative analysis. The data collected on ginger cultivation were identified as the dependent variable for the correlation analysis. The cultivated information in the questionnaire was about land area cultivated, the ownership of land, type of the land, duration of cultivation and reason behind ginger cultivation. Each question in the cultivation information was equally weighted in order to derive an average for each and every farmer to construct the correlation along with the selected independent variable discussed in the conceptual frame work. Questions of each and every independent variable were equally weighted to derive the average value for each and every farmer. These equally weighted average values between cultivation information and each independent variable were taken to construct

the correlation. There was no proper method to determine weight for each and every determinant. Therefore the equal weight was decided to determine the average for calculation. The correlation was derived through the SPSS statistical package.

FINDINGS

Table 1 Correlation between Marketability & Ginger Cultivation

		Cultivated	Marketability
Cultivated	Pearson Correlation	1	.031
	Sig. (2-tailed)		.808
	N	64	64
Marketability	Pearson Correlation	.031	1
	Sig. (2-tailed)	.808	
	N	64	64

Source: Surveyed Data

The existing weak positive relationship (backed by $r = 0.031$) between ginger cultivation and the marketability indicates the changes and improvements needed to be positioned in rural sector, at least farmers to find buyers with minimum interference of intermediaries for price transparency instead of selling the whole harvest to one and only seller in the area.

The gap between local and imported ginger is fairly clear. The difference is seen in between 250 LKR to 450 LKR from 2008 to 2010. However modern cultivation techniques used and relatively a large area of cultivation are major for enhancing productivity and minimizing cost of farming. Relatively less area of farming, being a secondary crop has no much priority has been received and higher prices for fertilizer and labour are key for higher cost of farming lead to higher prices at local market scenario.

The weak positive relationship ($r = 0.064$) between ginger cultivation and Seeds and Fertilizer reveal various findings as per the surveyed data. Basically the seeds available in the local market at rural level are not up to the expected quality and no proper mechanism to seek seeds. The shop located in the village sells seeds and the farmer who had the good harvest will be the seeds ginger for the next immediate cultivation among other farmers. Price of seeds ginger was sometimes higher than the selling price of ginger sold to the same market.

There is no fertilizer exactly recommended for ginger farming as in the case of other crops as per the views of farmers surveyed. Trial and error fertilizer brings sometimes good results but might not applicable for the second time since ginger is a sensitive crop. Prices of fertilizer available in the market are also expensive as per the data collection.

Table 2. Correlation between Seeds & Fertilizer and Ginger Cultivation

		Cultivated	Seeds and Fertilizer
Cultivated	Pearson Correlation	1	.064
	Sig. (2-tailed)		.615
	N	65	64
Seeds and Fertiliser	Pearson Correlation	.064	1
	Sig. (2-tailed)	.615	
	N	64	64

Source: Surveyed Data

The farmers those who have registered for ginger farming in accepted lands except paddy fields are entitled for ginger subsidiary. But majority was willing to cultivate ginger in paddy fields due to higher yield expectation. Government interference towards price certification at the point of harvesting was highly concerned. Therefore correlation coefficient indicates the degree of support and recognition needed for better yields of ginger.

Table 3. Correlation between Government involvement and Ginger Cultivation

		Cultivated	Government
Cultivated	Pearson Correlation	1	.127
	Sig. (2-tailed)		.318
	N	64	64
Government	Pearson Correlation	.127	1
	Sig. (2-tailed)	.318	
	N	64	64

Source: Surveyed Data

Table 4. Correlation between Extension Services and Ginger Cultivation

		Cultivated	Service
Cultivated	Pearson Correlation	1	-.081
	Sig. (2-tailed)		.525
	N	64	64
Service	Pearson Correlation	-.081	1
	Sig. (2-tailed)	.525	
	N	64	64

Source: Surveyed Data

Perception towards extension services available for ginger is not good due to negative experiences of ginger farmers. Though the agriculture officers being appointed are technically qualified but the services offered to promote ginger cultivation needed further improvements. However institutional support from government end was not up to satisfactory level. The consultancy needed with respect to cultivation methods, fertilizer usage and prevention steps needed for pests controlling were highly expected. The negative coefficient is because of the types of questions raised at the questionnaire and most of them were answered with negative perceptions of farmers.

ISSUES OF GINGER CULTIVATION

The competitive imported ginger price, land ownership, marketability issues, issues relating to finding healthy seeds and fertilizer at affordable prices and extension services related are determined as major issues. The poor involvement of youth to the ginger cultivation is another issue for the survival. Natural price mechanism and its impact on price of crops at harvesting due to excess supply is also applicable for ginger as well. Apart from the qualitative analysis the statistical analysis further proven that the correlation between ginger cultivation and government services related to cultivation, marketability, extension services available for ginger cultivation and seeds and fertilizer as $r = 0.127$, $r = 0.031$, $r = -0.081$ and $r = 0.064$ respectively. The negative correlation indicates for extension services are due to negative comments and answers regarding existing services available to farmers.

PROSPECTS OF GINGER CULTIVATION

The following prospects were identified as main among findings. Ginger cultivation is popular and ranked as the secondary crop cultivated in parallel with coconut and paddy. Ginger can be cultivated to earn an additional income to farming household while contributing to minimize cost of cultivation of the major product. Ginger is renowned as a profitable crop among farmers due to higher yield ratio (input output ratio). However there are farmers who earn profits in ginger cultivation. China and India are market leaders for ginger in the world have proven the relative profitability of the same. Natural conditions required for ginger cultivation such as nature of land required, climate conditions required and organic fertilizer required together available within all the areas of cultivating ginger in Sri Lanka.

STRATEGIES TO PROMOTE GINGER CULTIVATION

The immediate strategies should be focused on marketability, government support and extension services available and the import procedures of ginger. Ginger requires properly designed marketing strategy to avoid traditional selling methods. Government intervention to ginger cultivation should be further enriched in terms of subsidiary for ginger, cultivation related facilities provided such as technical knowledge required for ginger, recognition offered for the cultivation and steps taken to

protect and uplift the cultivation. Government intervention towards import procedure of ginger should also be revised with the objective of safe guarding the local ginger.

CONCLUSION

This study was focused on Challenges and prospects of ginger farming in Sri Lanka as a case study with special reference to Polgahawela divisional secretariat division. Based on the theoretical aspects and literature support the research findings conclude that ginger farming as a supplementary crop require more attention for improvements. The data analysis clearly indicated that there are challenges as well as prospects of ginger cultivation. Formulating strategies based on prospects to overcome challenges are suggested in the study. Government policy formation and implementation are essential to avoid issues identified especially drop in market prices due to natural market forces at the point of harvesting. In addition having market influence for seeds ginger and fertilized is highly expected for the promotion of ginger farming. However enhancement of service quality in extension services should be lead through policy decisions to share and improve technical knowhow among farmers and to convert them further to scientific practices to minimize wasters and to derive an optimized output. Opening export avenues for ginger is a key responsibility and tariff controls should be implemented to influence imported ginger for the sake of local ginger farmers.

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