



## Agronomic status of Sesame/Thala (*Sesamum indicum* L.) cultivations in dry regions of Sri Lanka

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### Abstract

A farmer interview (n=251) was conducted in five Sesame growing districts in dry regions of Sri Lanka (Anuradhapura, Ampara, Hambanthota, Mannar, and Puttalam) to identify the agronomic aspects of Sesame cultivation. A pre-tested questionnaire was used to collect data and the Index of Qualitative Variation (IQV) was calculated to describe and compare the variation within and among the distributions of nominal variables. Results showed that Sesame was mainly grown in Yala season (March to August) of Sri Lanka as a secondary crop to maintain the agricultural lands for primary crops grown during Maha season (November to February). Many farmers were not aware on the Sesame cultivars developed by the Department of Agriculture and had received limited advice on cultivation practices. White seeded Sesame was mainly grown in Hambanthota (South Eastern) while black seeded Sesame was more common in Puttalam and Mannar districts (North Western) of Sri Lanka. Farmer's selection of Sesame variety was mainly based on the availability of seeds. Sesame was mainly cultivated in small scale (<5 ha) in all the study areas and the production was less than 1t/ha. Application of fertilizer or insecticides during crop growth was rarely recorded and weedcides were often used only during land preparation. Sesame is currently an underutilized crop grown in marginal lands utilizing minimum human resources and agrochemical inputs. High potential for expansion of Sesame cultivation in Sri Lanka on degraded dry lands as 'organic by default' was exhibited with dedication of farmers engaged in small scale crop cultivation in the dry zone of Sri Lanka.

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## Introduction

Sesame (*Sesamum indicum* L., Family Pedaliaceae), is the major oil seed crop in Sri Lanka since ancient times (Weeraratna and Weerasinghe, 2009). Sesame has high therapeutic and nutritional values (Anastasi *et al.*, 2015, Jayaweera, 1982), and it has been recognized as a good source of high grade oil with a great proportion of unsaturated fatty acids, proteins and antioxidants (Bahrami *et al.*, 2012, Elleuch *et al.*, 2007, Were *et al.*, 2006). According to Hegde (2012) and Eskandari *et al.* (2015), Sesame seeds contain greater oil content than that of other oilseeds. Sesame seeds contain 37 to 63% of oil and 17-32% of protein (rich in sulphur containing amino acids) and 80% of Sesame oil is composed of unsaturated fatty acids (Hegde, 2012). The quality index (the ratio between unsaturated fatty acid to saturate fatty acid) for edible oil in Sesame varies from 83-87% in seeds (Wei *et al.*, 2015). Analysis of oil composition has resulted in 30 to 53% of oleic acid and 33 to 52% of linoleic acid as major unsaturated fatty acids (Wei *et al.*, 2015). In addition, Sesame seeds are rich in minerals (calcium, iron, phosphorus) and vitamins (vitamin A, thiamine, and riboflavin) (Weiss, 2000). Owing to its high quality, Sesame is also referred to as the “Queen of oil seed crops” (Deepthi *et al.*, 2014). Sesame seeds are mainly used for extracting oil, confectionary industry, culinary and medicinal purposes, hence, over the last decade the demand for Sesame has increased by nearly 80% (Hansen, 2011) and a significant rise in the international market for Sesame seeds has been recorded (Olowe and Adeniregun, 2011, Boureima *et al.*, 2012).

According to the statistics obtained from the Grain Legumes and Oil Crops Research and Development Centre (GLOCRD) and Department of Census and Statistics in Sri Lanka, total extent under Sesame cultivation remains around 13, 120ha at present. Out of 25 districts in the country, Sesame is grown at different scales in 23 districts of which 14 belong to the dry zone.

Sri Lanka is an agricultural country with nearly two thirds of its total land belonging to the dry zone which experiences less than 1750 mm annual rainfall with a dry spell in months from May to September.

Owing to the changing climate it had already experienced severe drought conditions in the recent past (Gunda *et al.*, 2016). Adverse drought events forecasted to occur in the dry region challenge country’s food security in the coming decades. Studies conducted on Sesame in other countries had proven that it prefers fairly high temperature and limited soil moisture (or low rainfall) for satisfactory yields (Bahrami *et al.*, 2012, Fazeli *et al.*, 2006, Fazeli *et al.*, 2007). The dry regions which would not provide satisfactory yields to other crops could provide suitable niches for Sesame. In this regard search for agronomic practices of farmers involved in sesame cultivation is vital.

Comprehensive studies on Sesame cultivation are limited in Sri Lanka except for the experiments conducted by GLOCRD for deciding the best sowing dates for existing Sesame cultivars and studies to select quality germplasm for breeding programmes recorded more than 20 years ago (Pathirana, 1993). In order to fill the void of information the present study was carried out as a core activity of a comprehensive project that intended to quantify and predict drought responses of Sri Lankan grown Sesame subsequent identification of drought tolerant cultivars.

Sesame is recognized as a crop cultivated mainly in the Yala season (minor rainy season from March to August) under rain-fed conditions (Abeyasinghe, 1974, Gunasena, 2001, Rajapaksha, 1998). Seeds of recommended varieties and instructions for sesame cultivation such as land preparation, fertilization, weed management, and disease management are available for farmers’ access at the Department of Agriculture, Sri Lanka (Department of Agriculture, 1998).

However, questions such as: How much are farmers are aware of this information? How much of this information is accessible to peasant farmers? To what extent do the farmers adhere to these instructions? and What are the perspectives of farmers and agronomic practices in reality? have not been understood. Therefore, the present study focused on identifying current agronomic aspects of sesame

cultivation in the dry regions of Sri Lanka and was designed to fulfil the following objectives: (i) to understand why farmers in dry regions of Sri Lanka are interested in growing Sesame, (ii) to identify the varieties/cultivars of Sesame they prefer to grow, (iii) to understand the factors that encourage or discourage cultivation of Sesame in Sri Lanka, and (iv) to determine the degree of Sesame production and dedication of farmers towards cultivation of Sesame in Sri Lanka.

## Materials and methods

### Study areas

Based on the annual Sesame production over the last 35 years five districts in the dry zone of Sri Lanka from different agro-ecological zones (AEZs) were selected. These included Anuradhapura, Ampara, Puttalam, Mannar and Hambanthota districts that represented AEZ, DL<sub>1</sub>- DL<sub>5</sub> (Table 1).

The areas represented a total of 20 different Agricultural Instructor Divisions (AIDs). Accordingly, a total of 251 farmer samples were chosen.

### Data collection

A questionnaire based survey was employed to collect data from farmers on agronomic aspects of sesame cultivation in Sri Lanka. A pre-tested questionnaire with open and closed-ended questions was used. Face to face farmer interviews were conducted to reveal details on cultivars grown, specific reasons for cultivar selection, seasons of growing, factors affecting cultivation, extent, yield, use of agrochemicals, famers' experience in Sesame cultivation, dedication for cultivation, and reasons for yield loss. The interviews were conducted for the two crop growing seasons in dry zone of Sri Lanka, the Maha season (major rainy period from November to February) in 2011 and Yala season (minor rainy period from March to August) in 2012.

**Table 1.** Sampling details for in-depth information analysis on agronomic practices of Sesame cultivation in Sri Lanka.

AEZ <sup>a</sup>	Annul Temperature (°C)	Annual rainfall (mm)	Soil type	No. of AIDs <sup>b</sup>	Annual Sesame production <sup>c</sup> (t)	Sample size for farmer interviews
DL <sub>1</sub> Anuradhapura	Min: 21 - 24 Max: 30 - 44	>775	Reddish brown earths	6	3310	52
DL <sub>2</sub> Ampara	Min: 21 - 24 Max: 30 - 44	>900	Noncalci brown soil	3	30	39
DL <sub>3</sub> Puttalam	Min: 21 - 24 Max: 30 - 44	>575	Latosol and Regosol	4	343	53
DL <sub>4</sub> Mannar	Min: 21 - 24 Max: 30 - 44	>575	Saline and alkali soil	2	34	54
DL <sub>5</sub> Hmbanthota	Min: 21 - 24 Max: 30 - 44	>500	Reddish brown earths with gravel	5	669	53
Total						251

<sup>a</sup> AEZ - Agro-ecological zone,

<sup>b</sup> AIDs - Agricultural Instructor Divisions of Department of Agriculture, Sri Lanka

<sup>c</sup> Production data for the year 2012

Sources: Department of Census and Statistics, 1979-2014; Panabokke, 1996

### Statistical analysis

Data obtained for each aspect given above were subjected to Descriptive Data Analysis using SPSS Software version 22 (IBM company, New York, U.S.) and Graph Pad Prism 6 (Graph Pad Software, Inc, CA). The Index of Qualitative Variation (IQV) was calculated to study the variation within a distribution as described by Frankfort-Nachmias and Leon-Guerrero (2014).

### Results AND discussion

As majority (87%) of the sampled population depended on farming as their major occupation, the modal income source for each agro-ecological zone was "farming". Zone DL<sub>5</sub> was the only individual zone where nearly 2% of interviewees were also involved in other business. Comparison of the Index of Qualitative Variation (IQV) for agro-ecological zones DL<sub>1</sub> (0.53), DL<sub>2</sub> (0.21), DL<sub>3</sub> (0.49), DL<sub>4</sub> (0) & DL<sub>5</sub>

(0.35) showed moderate variability in income sources among interviewees in DL<sub>1</sub> and DL<sub>3</sub>. Besides farming or engaging in business, some interviewees [DL<sub>1</sub> (23%), DL<sub>2</sub> (7%), DL<sub>3</sub> (20%), & DL<sub>5</sub> (11%)] were employees of government/private sector or worked as labourers during off growing seasons.

In all the regions, more than 90% of the sample population were engaged in mix cropping systems which included crops such as Paddy, Mung Bean, Corn and Black gram. However, in DL<sub>1</sub>, DL<sub>3</sub> and DL<sub>4</sub>, 2, 6 and 2% respectively, farmers were merely depending on Sesame cultivation as the only source of income. The IQVs varied from 0 to 0.2 for each zone indicating that choice for growing Sesame in these regions was limited.

In DL<sub>1</sub>, DL<sub>2</sub>, DL<sub>3</sub> and DL<sub>4</sub>, Sesame was mainly grown as a Yala crop. In Hambanthota district (DL<sub>5</sub>), it was a Maha crop especially grown to discourage dwelling of Elephants in their croplands. It was revealed that farmers clear their agricultural lands eliminating all shade trees and cultivate Sesame to effortlessly spot the arrival and dwelling of elephants. Farmers in other regions cultivated Sesame during Yala season to keep the farming lands free from weeds until the arrival of Maha season to proceed with primary crops with better local markets such as Mung Bean, Corn and Black grams are grown. Some farmers (DL<sub>1</sub> (21%), DL<sub>2</sub> (44%), DL<sub>3</sub> (42%), DL<sub>4</sub> (35%) & DL<sub>5</sub> (40%)) grew Sesame for domestic consumption while only few farmers [DL<sub>1</sub> (52%), DL<sub>2</sub> (7%), DL<sub>3</sub> (28%), & DL<sub>5</sub> (30%)] cultivated Sesame as a cash crop.

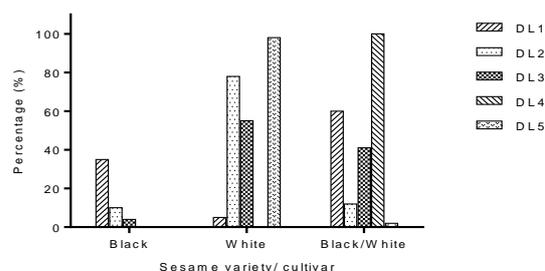
Over 80% of the interviewees were not aware of the local cultivar/variety names of Sesame as they recognized Sesame by the colour of the seeds (colour of the testa). Idal (branched and produce only a single capsule in a leaf axil) and Pokuru (unbranched and produce clusters of capsules in an axil) were two local races occasionally mentioned by the farmers and both produced white colour seeds. According to Fig. 1, white seeded Sesame varieties were mostly preferred among farmers in DL<sub>2</sub>, DL<sub>3</sub> and DL<sub>5</sub>. Black seeded varieties were only popular among the farmers in DL<sub>1</sub>

whereas none of the interviewees in DL<sub>4</sub> showed any preference. There was a considerable variability in variety selection among the farmers in DL<sub>1</sub> (IVQ=0.78), DL<sub>3</sub> (IVQ=0.79) compared to that of the farmers in DL<sub>2</sub> (IVQ=0.46).

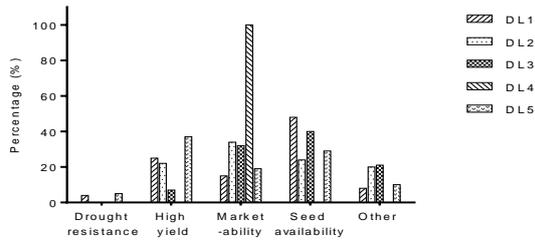
Selection of a Sesame variety was based on its yielding capacity, marketability, availability and the quality of seeds. The modal reason for variety selection considerably varied with respect to the agro-ecological zone except in DL<sub>4</sub> (IVQs were 0.8, 0.9, 0.9 and 0.9 for DL<sub>1</sub>, DL<sub>2</sub>, DL<sub>3</sub> and DL<sub>5</sub> respectively) (Fig. 2). Majority of the farmers in DL<sub>1</sub> (48%) and DL<sub>3</sub> (40%) considered the availability of the seeds whereas the farmers (38%) in DL<sub>2</sub> were interested on marketability of the harvest.

In DL<sub>2</sub>, 41% of farmers believed white seeded cultivars produce high yield and had chosen white seeds for growing. All the interviewees in DL<sub>4</sub> made their selection considering the marketability and selected either white or black seeds. Majority of the farmers (37%) in DL<sub>5</sub> were much likely to choose white seeded cultivars as they had produced high yield.

Farmers (29%) also depended on availability of seeds and 19% of them selected white seeds as they have a great demand in local areas. Taste, medicinal value, oil content and resistance to pest attack were the other aspects they have considered. Drought resistance was also a selection criterion for few farmers in DL<sub>1</sub> and DL<sub>5</sub> (4 and 6% respectively).



**Fig. 1.** Farmer's survey for preference of cultivated Sesame seed colour in agro-ecological zones; DL<sub>1</sub>, DL<sub>2</sub>, DL<sub>3</sub>, DL<sub>4</sub> and DL<sub>5</sub> of Sri Lanka. The survey was carried out in Maha season in 2011 and Yala season in 2012 on 251 farmers.



**Fig. 2.** Factors that encourage farmers on Sesame variety selection in agro-ecological zones; DL<sub>1</sub>, DL<sub>2</sub>, DL<sub>3</sub>, DL<sub>4</sub> and DL<sub>5</sub> of Sri Lanka. The survey was carried out in Maha season in 2011 and Yala season in 2012 on 251 farmers.

Although, no evidence was observed to decide that white seeded cultivar was superior to black seeded cultivar or vice-versa with respect to these characteristics, some farmers believed that white seeded Sesame cultivars were better while others

believed that black seeded cultivars were superior. Even though the farmers were not aware, *Uma*, *Malee*, *MI<sub>1</sub>*, *MI<sub>2</sub>*, and *MI<sub>3</sub>* are the varieties improved and recommended by the Department of Agriculture, Sri Lanka (Department of Agriculture, 1998) with an intention to provide high yields (Table 2).

During early 70s, farmers favoured white seeded varieties for the high percentage of better quality oil (Abeyasinghe, 1974), however, later, *Malee* (brown seeded Sesame) was found to contain a greater percentage of oil (53%) and comparatively a higher yield (Department of Agriculture, 1998). *Malee* variety is also believed to tolerate stem and root rot disease (Department of Agriculture, 1998). Besides, no information was available on drought resistance or susceptible characteristics of Sesame cultivars grown in Sri Lanka.

**Table 2.** Important seed related characteristics of improved Sesame varieties/cultivars found in Sri Lanka.

Variety	Seed colour	Days taken to harvest	Expected yield (kg/ha)	Oil content in the seeds (%)
Uma	White	70-75	1600	50
Malee	Brown	80-85	1800	53
MI <sub>1&amp;2</sub>	Black	80-90	900	45
MI <sub>3</sub>	White	85-90	1000	49

Sources: Abeyasinghe, 1974; Department of Agriculture, 1998.

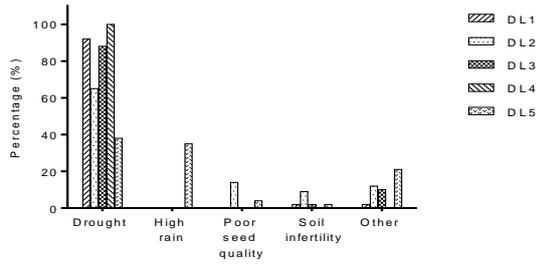
As revealed by the farmers, diverse factors affect Sesame cultivation in Sri Lanka and among them drought events, heavy rain, soil infertility and poor quality of the seeds were the key factors (Fig. 3).

Modal limiting factor mentioned in all regions were drought conditions experienced at various stages of the crop growth. Among the farmer population, 6% mentioned that raining is essential at least twice during the crop growth and 3% believed that 3 raining events is required for better harvest.

However, few other farmers (3%) stated that monthly rain events during the Sesame season are essential. There was a great variability among the causative factors revealed by farmers in DL<sub>5</sub> (IVQ=0.9). Drought periods during Yala season, as well as usual heavy rain during Maha season have said to be equally impeded Sesame cultivation in DL<sub>5</sub>. Despite poor seed

quality and soil infertility, farmers reported about few diseases that were partly responsible for less yield. However, they were not aware on the type or cause of the disease. Phyllody, Leaf spots, Bacterial wilt, *Fusarium* wilt, Southern blight, Charcoal rot, stem and root rot and Cotton root rot are the common diseases responsible for damaging Sesame cultivation (Abeyasinghe, 1974, Pathirana, 1993).

Damages caused due to feeding on leaves by Deers, Goats, Cows, or on pods by Parrots, Doves, Peacocks, and Monkeys or trampling down by Elephants, were also among other limiting factors as revealed by farmers. Grasshoppers, aphids, plant bugs, leaf miners, bollworms are the common pests reported in Sesame cultivation (Abeyasinghe, 1974). Beside, pests, and diseases, seed shattering due to pod dehiscence are also responsible for severe yield losses (Pathirana, 1993).



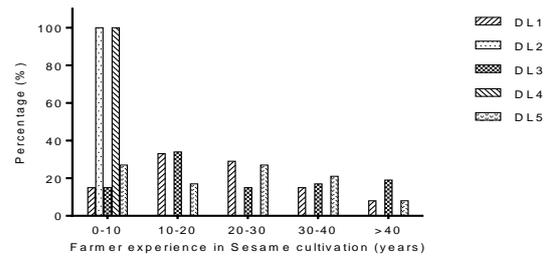
**Fig. 3.** Factors that discourage farmers on Sesame cultivation in agro-ecological zones; DL<sub>1</sub>, DL<sub>2</sub>, DL<sub>3</sub>, DL<sub>4</sub> and DL<sub>5</sub> of Sri Lanka. The survey was carried out in Maha season in 2011 and Yala season in 2012 on 251 farmers.

Sesame was grown as small scale cultivation and 90% of the farmers maintained a land < 5ha. Among the sample population, 25% was growing Sesame in *Chena* lands. However, more than 98% of the farmers in AEZ obtained a yield less than 1 t/ha while 78% obtained a yield less than 1t/ha (Table 3). The average Sesame yield obtained by the farmers varied from 0.156t/ha to 0.310t/ha although yield of 0.9 to 1.8t/ha is generally expected from a well-managed Sesame cultivation (Department of Agriculture, 1998).

**Table 3.** Sesame yield obtained by the farmers (per cent values) from the cultivated lands in agro-ecological zones: DL<sub>1</sub>, DL<sub>2</sub>, DL<sub>3</sub>, DL<sub>4</sub> and DL<sub>5</sub> in Sri Lanka.

Agroecological Zone	Percentage (%) of farmers obtaining Sesame yield (t/ha)		
	0 - 1	1 -2	2 <
DL <sub>1</sub>	100	0	0
DL <sub>2</sub>	95	5	0
DL <sub>3</sub>	98	0	2
DL <sub>4</sub>	100	0	0
DL <sub>5</sub>	96	0	4

As per the responses of interviewees, samples in DL<sub>1</sub>, DL<sub>3</sub> and DL<sub>5</sub> included farmers who have been with Sesame cultivation for more than four decades while entrance of new farmers into Sesame cultivation was noted in DL<sub>2</sub> and DL<sub>4</sub> (Fig. 4). In Mannar (DL<sub>2</sub>) and Ampara (DL<sub>4</sub>) districts which were under the influence of the Civil War for over 25 years, many farmers re-settled in these areas, had commenced Sesame cultivation. Re-settlers in DL<sub>4</sub> have been allocated 2 Acres each for commencing crop cultivation and Sesame has been their priority crop at present.



**Fig. 4.** Famer experience in cultivating Sesame in agro-ecological zones; DL<sub>1</sub>, DL<sub>2</sub>, DL<sub>3</sub>, DL<sub>4</sub> and DL<sub>5</sub> in Sri Lanka. The survey was carried out in Maha season in 2011 and Yala season in 2012 on 251 farmers.

Degree of farmer dedication was quite satisfied having 77% of them describing their dedication as "very good" as they made daily visits to agricultural lands where other crops also have been cultivated. It was revealed that many other farmers visit at least their Sesame cultivations weekly or monthly while there were few farmers (3%) who visited the lands only for harvesting.

Although application of fertilizer increases the Sesame yield, traditionally Sesame is not fertilized as it is deep rooted and scavenges for its nutrient requirement. A mixture of 50kg/ha of Urea, 120kg/ha of Triple Super Phosphate and 60kg/ha of Mureate of Potash is recommended for basal application and the top dressing, 60 kg/ha of Urea is to be applied four weeks after planting (Department of Agriculture, 1998). Similarly, in order to obtain a better yield, weeding is recommended two and four weeks after planting (Department of Agriculture, 1998).

In addition, Department of Agriculture has recommended various control measures for common diseases of Sesame. Nevertheless, out of the sampled farmers (n=251), only 19 farmers (0.07%) had applied fertilizers (Urea) for Sesame cultivation, 0.06% had applied insecticides (Malathion or Marshal 20) to recover from diseases. Application of various Weedicides (Glycosate, Power Mate, Gramoxone, Paraquate, Round up, D Dash) was recorded among 50% of farmers in all agro-ecological regions at the stage of land preparation for Sesame cultivation i.e before Sesame seeds were sown.

This practice of cultivating crops without using agrochemicals either for domestic use or local market, is described as 'organic by default' or type of 'uncertified organic farming' (Parrott *et al.*, 2006). Hence, Sesame cultivation in tropical countries is organic by default (Olowe *et al.*, 2009).

Furthermore, the farmers expressed willingness to continue with Sesame cultivation provided that both improved and quality Sesame seeds are available. Lack of improved cultivars has also been identified as a major drawback for Sesame cultivation in Sri Lanka (Pathirana, 1993). Except for Rice, attention has been paid for very few crop varieties for improvement (Weeraratna and Weerasinghe, 2009) and therefore, it is necessary to pay attention to develop Sesame varieties (with regard to high yield, tolerant to diseases and other growth limiting factors, and suitable for various localities), and make seeds readily available for a reasonable price.

Farmers were also keen to access information and instructions related to Sesame cultivation from the Department of Agriculture, Sri Lanka. Similar to Food Crop Promotion Programmes implemented expand Rice, Maize, Mung beans, Cow pea, Ground nut, Millet, Chilli, and Onion, Sesame crop promotion programmes can be introduced to encourage Sesame farmers by providing seeds, instructions and incentives.

In addition, farmers insisted on the need of establishing a stable local market for the harvest. At present, farmers have been unable to sell their produce at a reasonable price commensurate with the cost of production. Selling price of Sesame ranged from Rs.110.00 to Rs.150.00 while market price remained between Rs.300.00 to Rs.350.00. Therefore, direct manipulation of the government in arranging an efficient marketing structure is essential to minimize the influence of the middlemen and ensure continuation of Sesame cultivation. In addition, development of various agro based industries (confectionary, culinary, cosmetic, and animal feed) that use Sesame seeds and oil would directly encourage Sesame farmers.

This will support subsistence for farmers, create tremendous employment opportunities and contribute to alleviate rural poverty in dry regions. Increased awareness on assorted values of Sesame among public may also expand the consumers and thus stabilize the local Sesame market. Value added food productions from Sesame can be promoted at 'Hela Bojun Hal' (Local Food Stalls) established at district level by the Department of Agriculture.

The global organic Sesame market has shown an increasing trend with an annual rate of 50% (Olowe *et al.*, 2009) and Peru, Nicaragua, Turkey, Mexico, Uganda, China and El Salvador have been the main countries of international market (Augstburger *et al.*, 2000). Compost manure, bone meal, plant extract and green manure are the main sources of organic fertilizers applied in these countries. And also, Bee-keeping practices in the vicinity are reported to increase Sesame yield by enhancing cross pollination (Augstburger *et al.*, 2000). In addition, crop rotation with legumes stimulates growth of mycorrhiza in soil while biological methods such as use of a wide range of plant extracts (i.e. Neem, Garlic, *Annona*, Chilli, Pepper, Onion and *Ricinus*), are recommended to prevent from diseases and pest attacks in Sesame fields (Augstburger *et al.*, 2000). Moreover, dressing seeds with hot water, cultivating on appropriate sowing date, disposal of diseased plants, and selection of resistant varieties are excised as regulation measures to prevent from diseases.

Accordingly, a yield from 0.350t/ha to 0.8t/ha could be expected from organically cultivated Sesame lands (Augstburger *et al.*, 2000). Similar approaches can be attempted by Sesame farmers in Sri Lanka to switch from 'organic by default' farming practices to 'certified organic farming' and cater for the global organic Sesame market. Use of improved varieties will further increase the yield and ensures continuous supply of the produce.

The intensity of land use for crops in dry zone in Sri Lanka is limited due to numerous factors such as the variability in rainfall pattern, excessive water loss due

to evapotranspiration and low water holding capacities. Only 48% dry lands are effectively used for crop production (Weeraratna and Weerasinghe, 2009). Sesame can be suggested as a suitable crop for cultivating in many marginal lands, as it is said to survive water limited conditions, thrive well without much input of agro-chemicals.

Sesame is also a great soil constructor, retains and improves moisture levels sufficient for next crop and reduces soil blow in eroded lands (Langham *et al.*, 2008). Therefore, Sri Lanka inherits a great potential to expand Sesame cultivation and increase the level of Sesame production in the country. This will lessen the need of importing and reduce the annual importing cost which had increased by 13 times during last five years (FAO, 2016).

#### Conclusion and recommendations

Currently, Sesame is as an underutilized crop grown in small scale mainly in the marginal lands of the Dry zone as a secondary Yala crop. It utilizes minimum agrochemical inputs and human labour for crop management. It will be important to characterize the Sesame varieties with regard to oil content, drought and disease resistance and make aware the farmers to select the best suitable cultivar for their locality. Scientific studies to investigate the vegetative and reproductive behaviour of Sesame plants in response to raining events (water availability) are also important to establish the relationship of its growth or yield incorporating drought sensitivity or resistance. An increased awareness on values of Sesame crop, its global demand, country's potential and eco-friendly cultivation practices, availability of locally improved Sesame varieties and marketing strategies will also encourage farmers to engage in Sesame cultivation and strengthen Sesame production in Sri Lanka.

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