*Original Research Article*

# A STUDY ON THE IMPACTS OF FERTILIZER CRISIS ON PADDY CULTIVATION IN FIVE SELECTED DIVISIONAL SECRETARIAT DIVISIONS OF TRINCOMALEE DISTRICT DURING MAHA 2021/22




## ABSTRACT

Rice is one of the most important cereal crops in the world. With the population growth, farmers have to increase the paddy production to meet the existing as well as future demand. Fertilizer is the major input in rice production.Growth and yield traits of rice are affected by improper and imbalanced application of plant nutrients. Hence, suitable practice of adequate rate and timing of fertilizer application is needed to increase the rice yield. In May2021, Imports & Exports (Control) Regulation No 07 of 2021 was issued banning importation of chemical fertilizers, pesticides & herbicides in Sri Lanka. Low fertility of paddy soil was created the need for adequate and constant supply of chemical fertilizers in paddy cultivation which is a major threat to production and endanger national food security and economy of Sri Lanka especially in the major cropping season of Maha 2021/22. Therefore, a questionnaire survey was conducted to investigate the impact of fertilizer crisis in major paddy cultivating Divisional Secretariat divisions of the Trincomalee district. Random sampling method was used to select respondents for the survey and the collected data were statistically analyzed by SPSS version 26.0 software. The results revealed that majority of the farmers experienced 50% yield reduction compared to last cropping season ofMaha 2020/21 in the entire five DS divisions. The seedling stage was highly affected during fertilizer crisis in paddy cultivation in all five DS divisions.Further the cost of production in paddy cultivation was increased more than 50% during fertilizer crisis than cost involved in Maha 2020/21. Potential for organic manure production is very poor meanwhile majority of farmers are interested to adopt the sustainable farming system of Integrated Plant Nutrient System by the judicious application of chemical and organic fertilizers received in a subsidy basis according to present Government's fertilizer policy which emphasizes 70% of inorganic fertilizers and 30% of organic manure application to improve sustainability in paddy cultivation in the country.


**Key words:** Chemical fertilizer, Integrated Plant Nutrient System, Organic matter, Paddy cultivation, Subsidy, Yield

## INTRODUCTION

Rice (*Oryza sativa* L.) is the most important food crop in Sri Lanka. It is the single most important crop occupying 34% of the total cultivated land area in Sri Lanka. In Trincomalee district, paddy cultivation is taking place during both Maha and Yala seasons. The Maha season

provides about 70 percent of the district annual rice production.The Yala season provides about 30 percent of the district annual rice production. The average rice production per net hectare (kg) in Trincomalee is 157,272.0 in Maha 2019/20 and 108,222.0 in Yala 2020[1].

Fertilizer is the major input in the crop cultivation. Aisha (2007) mentioned thatusage of chemical fertilizers causes the numerous hazardous effects to the environment. Continuous fertilizer application is essential for every season due to the fertilizers easily lost to environment through the leaching and volatilization where they will pollute the environment [2]. However, using chemical fertilizers can precisely provide the elements required by a crop. As these elements are readily available in highly soluble forms, they are easy for the plants to absorb. As formulation of chemical fertilizers are defined and controlled, crop planning with conventional fertilizers is much easier[3].

Even though excessive use of pesticide and other agrochemicals is very common in Sri Lanka due to lack of knowledge among the farmers about its detrimental effects, it severely hit the balanced eco system. And it was the main reason behind the sudden increase of fertilizer consumption per unit of arable land in 2018 - 2020 from 138.3kg/ha to 300kgha$^{-1}$ in Sri Lanka. This made the Sri Lankan agricultural systems environmentally and economically unsustainable and compromised food safety. In this regard, on May 6$^{th}$, 2021, the Imports and Exports (Control) Act, promulgated the "Imports and Exports (Control) Regulations No. 07 of 2021 (regulation), effective its publication in the Sri Lanka Gazette (No. 2226/48 of May 6, 2021), the Sri Lanka government completely restricting and banning the import of fertilizers and agrochemicals to justify the right of Sri Lankan to a "non-toxic diet" and save foreign exchange that country spent each year importing agrochemicals [4,5]. The ban on chemical fertilizer is a threat to food security which endanger national security and economic crisis. [6,7].

The lack of organic fertilizer productive capacity, coupled with the absence of a formalized plan to import organic fertilizers instead of chemical fertilizers with determines price causes the yield reduction in paddy production[6].Earlier the average paddy production in Sri Lanka is about 4 t/ha, and this is likely to be reduced if inorganic fertilizers, such as urea, are not applied at correct times.As a result of the sudden ban, overall food production in Sri Lanka in the last harvest season was lower than last year [7].Besides fertilizer crisis caused a huge impact on the paddy cultivation especially in Maha 2021/22 season in Trincomalee district.

Government intended to promote 100% organic farming to maintain eco-friendly agriculture for healthy lives. If it continues to prevail, local crop production including paddy production will decrease.Most of the agricultural crops cultivated in the island are hybrid varieties which heavily dependent on chemical fertilizers for expected high yields. It is customary in policy formulation and implementation to look at relevant cases in other countries or in this country[5].Therefore, it is essential to analyze the impacts caused by fertilizer crisis during Maha 2021/22 on paddy cultivation and livelihood activities of farmers in Trincomalee district.This study aimed to investigate the impacts of fertilizer crisis on paddy cultivation during Maha 2021/22 in selected 5 DS divisions of Trincomalee district.

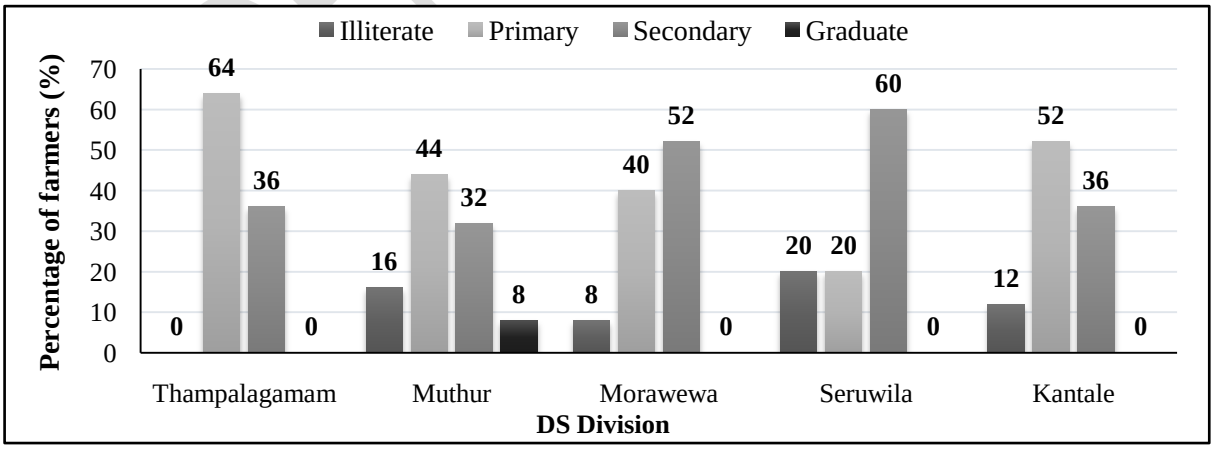
## MATERIALS AND METHODS

Five Divisional Secretariat divisions were selected for the survey where paddy is intensively cultivated under major irrigation schemes. These Divisional Secretariat divisions includes Kantale, Muthur, Thampalagamam, Seruwila and Morawewa. Random sampling method was used to select the sample farmers from the particular divisions. From these selected Divisional Secretariat division 25 farmers were selected from each division as samples. Primary data were collected from farmers through pretested ended questionnaires and interview at their door step in the study areas. The survey was carried out from December 2022 to January 2023.Close ended questionnaires were designed for interviewing paddy farmers in Kantale, Muthur, Thampalagamam, Seruwila and Morawewa DS divisions.Questions were arranged to get the following information such as personal details of the farmers such as name, age, gender, no of family members. Primary data required for this study were collected from the selected respondents through personal interviews using questionnaires at door steps. Further, details of farming, details of paddy cultivation, effect of fertilizer crisis on paddy cultivation, cost of production after fertilizer crisis and reason for the crisis and suggestion for improvement were also interviewed.Before the commencement of data collection, the questionnaires were pretested to assess the suitability of the prepared questionnaires. Changes were done to enable easy recording of responses from farmers. Secondary data were gathered from District Secretariat, Department of Agrarian Development, Department of Agriculture, Publications of Department of Census and Statistics and Internet websites. The collected questionnaires were checked for completeness and data were analyzed using Microsoft Excel version 15 and SPSS version 26.0. The yield reduction percentage from last season was calculated by the following equation.

$$\text{Yield reduction (\%)} = [(\text{Last season yield} - \text{Achieved yield}) / \text{Last season yield}] \times 100$$

## RESULTS AND DISCUSSION

### 1. Demographic Details of the Respondent




#### 1.1.Educational level of farmer

**Figure 1. Percentage distribution of farmers based on educational level**

In the present survey, the sample farmers were categorized into four groups with respect to literacy status as per mentioned in Figure 1. The small percentage (1.6%) of farmers had tertiary level of education (graduated) meanwhile, 44.0% of the farmers completed primary education also 43.2% completed secondary education and 11.2% of farmers were illiterate comparatively in all 5 DS divisions. It may due to low income of farm families forced them to share family burdens. Cary and Barr (2002) stated that, the educational level of the farmers plays an important role in the adoption of any new technology[8].

### 1.2.Experience in paddy cultivation

According to the results shown in figure 2.majority of farmers in all DS divisions are well experienced in paddy cultivation for minimum 11 to 20 (32.8%) and 21 to 30 years (29.6%). Also, there are lower percentage (2.4%) of farmers who have 0 to 5 years of farming experience and around 14.4% of farmers have more than 30 years of experience in rice cultivation. Rather than traditional experiences and knowledge, considerable number of farmers attended special training programmes on paddy cultivation especially in Kantale DS division, 32% of farmers have attended the innovative training programmes conducted by Government too.

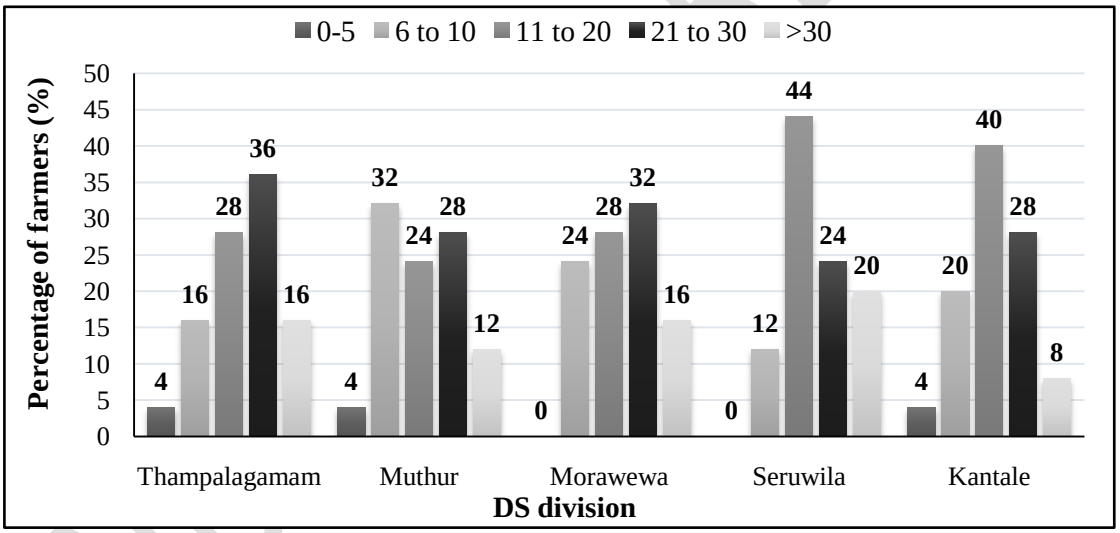
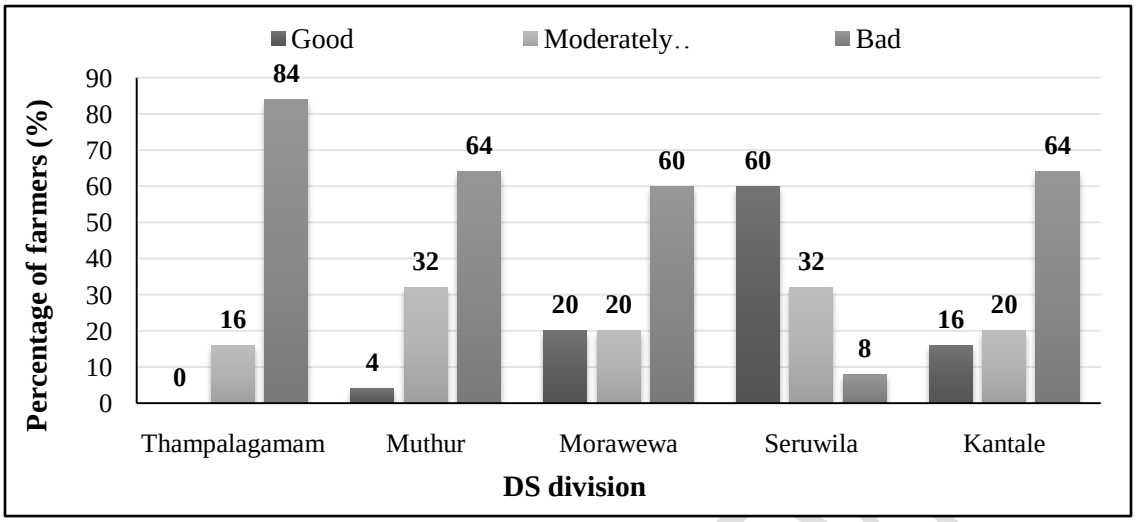



**Figure 2. Percentage distribution of farmers based on experience in paddy cultivation**

Rice has been cultivated in Sri Lanka for well over 2000 years [1]. Hence, farmers have traditional knowledge and experience in paddy cultivation from their ancestors. Hanis*et al.* (2015) mentioned that Farmers' knowledge and experiences on climate change, natural resources management,local farmer innovations and indigenous knowledge could be captured in order to perform well in the agricultural activities[9].




**1.3.Extension services**

**Figure 3. Percentage distribution of farmers based on extension services provided**

As per the figure 3. showed that 60% of farmers in Seruwila DS division said that the extension services were good in terms of conducting government training programmes, women agriculture extension programme, young farmer club activities, Agri business counselling etc. However, majority of farmers (56% in all DS divisions averagely) stated that the extension services were very poor especially during the fertilizer crisis. It indicates that the majority of the extension services provided with respect to conventional farming practices. Most of the farmers requested that they need compensations from sudden risks and conventional fertilizers in subsidized prices.

Only few farmers requested training programmes on quality organic manure production and some of the farmers said that they don't require any extension services from government due to lack of skilled personnel. The needs of the increment of the extension services to the sustainable farming methods must be promoted. Patcha*et al.* (2017) examined that active and comprehensive supporting extension services playing a key role in fostering the sustainable production of rice and helping to ensure local food and cultural security[10].It is also proved by Bangkim*et al* (2021)that Agricultural Extension Servicesare needed to improve farming knowledge that helps in increasing crop production and the technical efficiency of paddy farmers[11].

## 2. Details of farming

### 2.1.Adoption of Government fertilizer policy in Maha 2021/2022

Sri Lanka's fertilizer usage intensity is close to the median range among its regional peers. Hence, government completely banned inorganic fertilizers from May 2021[7]. Government supports and policies are the important factors for the transition to organic farming[12].

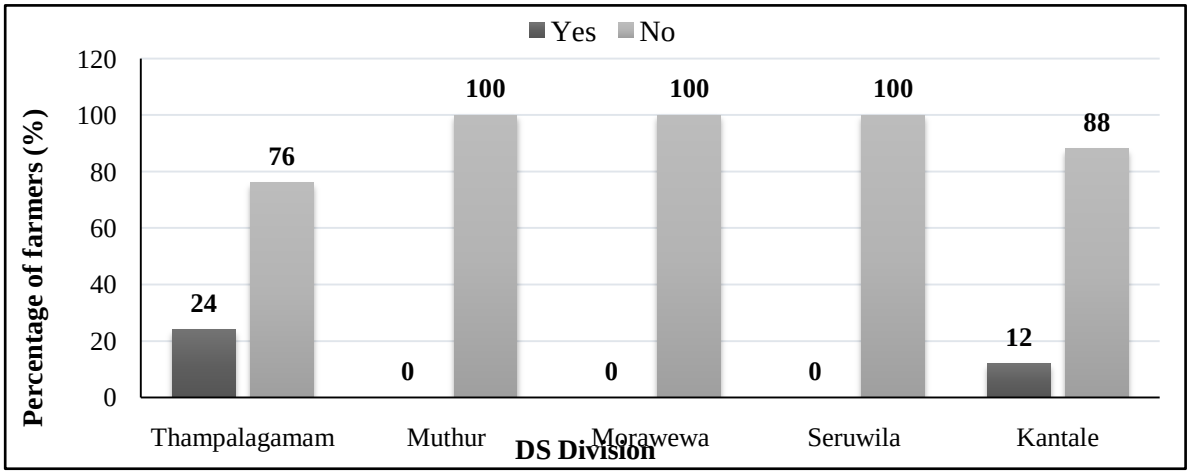



**Figure 4.Percentage distribution of farmers based on adoption of government policy in Maha 2021/22**

According to the figure 4. only certain percentage of farmers like 24% and 12% followed government policy in Thampalagamam and Kantale DS divisions respectively. Majority of farmers in all DS divisions managed the negative impacts of fertilizer crisis in paddy cultivation by purchased inorganic fertilizers from older stocks. Also, lower percentage of farmers utilized organic manures provided by government during the crisis in addition to inorganic fertilizers from their older stock and not used from their own organic manure production units. Very few numbers of farmers in each DS division involved in quality compost making by using available raw materials and adopted sustainable farming practices from different countries through social apps. These proved that farmers completely rely on the chemical fertilizers for higher paddy yield as it has huge market demand and high productive capacity. These results are supported by the Herath and WijekoonandRandunu et al., [13,7].

## 2.2.Potential for organic manure application in Trincomalee district

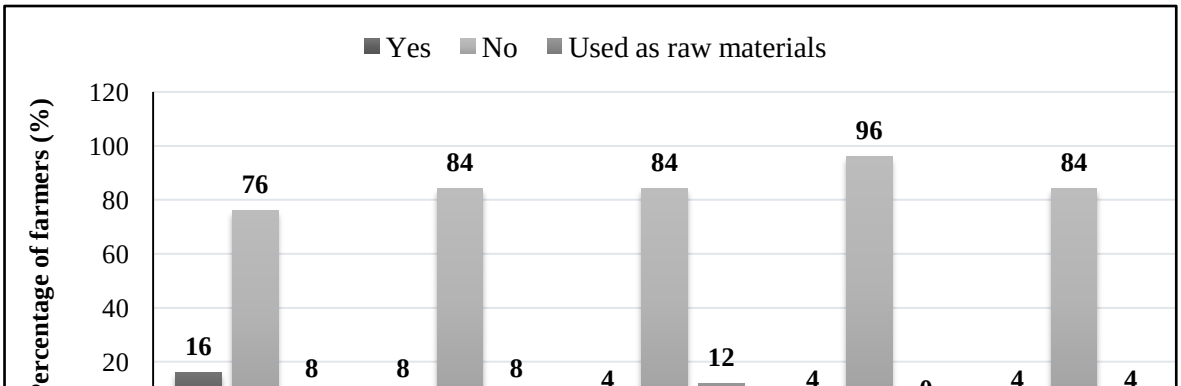


**Figure 5.Percentage distribution of farmers based on potential of organic manure application in Trincomalee district**

Figure 5. showed that around 86% of farmers in Trincomalee district did not use the organic manures due the unavailability of own compost production units. About 16% of farmers in Thampalagamam DS division have compost units at their home. Meanwhile other farmers used only raw material for the paddy cultivation from their livestock farms especially Morawewa DS division, 12% of farmers used raw materials in their paddy cultivation. Also, more than 80% of farmers in all 5 DS divisions were not interested in compost production. Besides 20% of farmers in Thampalagamam DS division interested in production and utilization of organic manures. However, produced compost was very low in the N% (<1% to 1-2%) due to low addition of N enrich composting materials. This contained a bulk quantity of sand and caused the paddy lands with solid ditches and tight structure due to low solubility.

However, 100% of farmers in all 5 DS divisions mentioned that lack of productive capacity was the primary reason for non-adoption of complete organic fertilizers. Around 87% of farmers felt that production of compost is the most tedious process ever and around 50% of farmers stated that application of organic fertilizers caused high labour charges and involved in high transportation cost and other costs like collection of raw materials from out stations and composting tools and machineries. Moreover, farmers also mentioned that limited availability of quality raw materials, timely unavailability of organic manures for major cropping seasons, required bulk quantity of compost and other organic sources for the particular land area[14]. Therefore, the government had decided to purchase an alternative fertilizer called "Nano-N" from India. During fertilizer crisis in Maha 2021/22, 89.6% of farmers in all DS division used Nano N fertilizers. However almost 100% farmers were dissatisfied with the performance of Nano N fertilizers. This is due to reduced crop yield and quality, caused health hazards like wounds and bad odors during application. The results revealed that a minimum potential for the organic manures application in paddy cultivation in Trincomalee district.

### 2.3.Reasons for adoption of conventional urea fertilizers in paddy cultivation

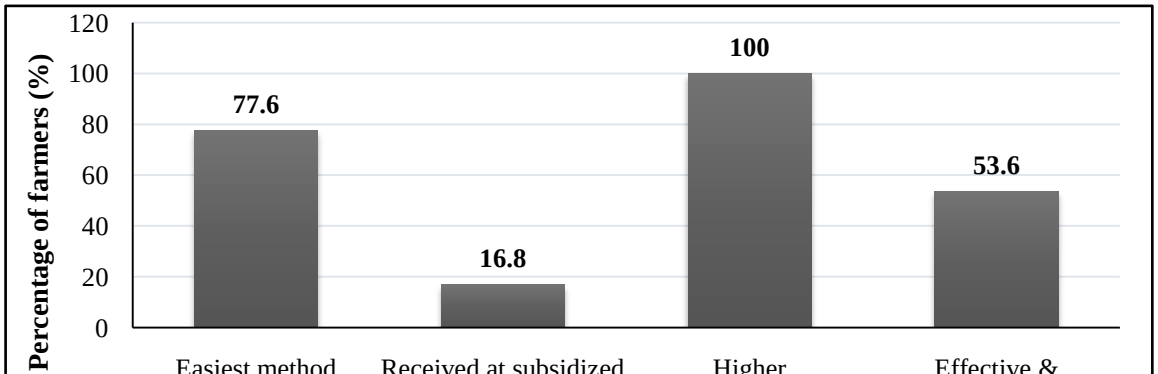


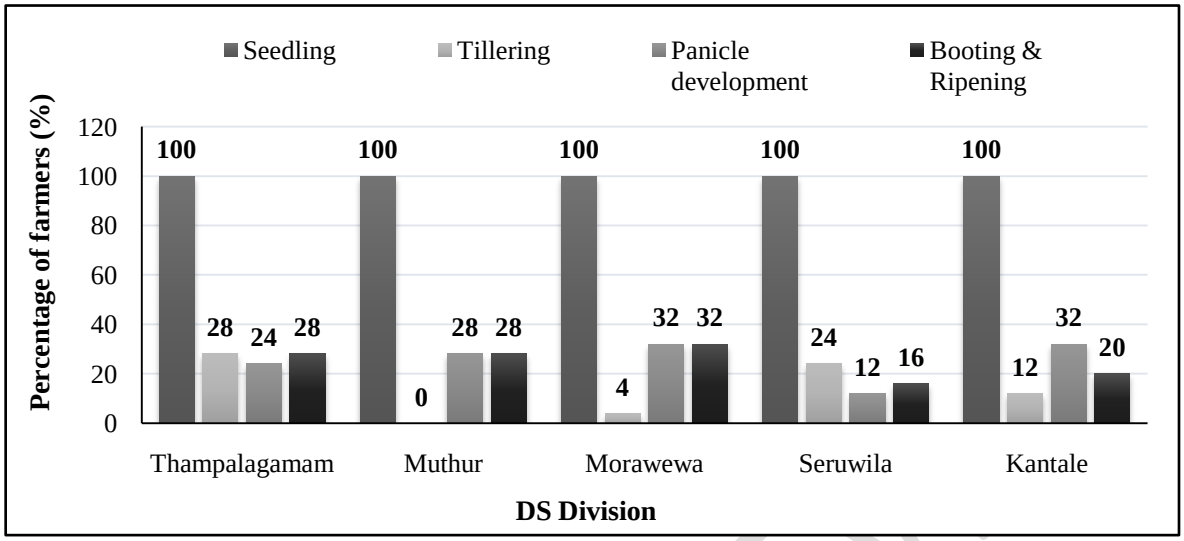
**Figure 6.Percentage distribution of farmers based on reasons for adopting conventional fertilizers in Trincomalee district**

Analyzing the status of the current level practices is important to find out the reasons for not adopting the organic fertilizers and interest on inorganic fertilizers usage. As mentioned in figure 6, majority of farmers in entire DS divisions adopted urea and other inorganic fertilizers for higher productive potential. More than half of the farmers used for its effectiveness and efficiency. About 75% of the farmers felt it is easy to use chemical fertilizers in paddy cultivation than organic based cultivation. Further, 16.8% of farmers said that they are doing inorganic fertilizers-based farming due to its lower market prize and also received at subsidized price. It is also evident that 80% of farmers bought subsidy fertilizers from Agrarian service centers.

However, 44% of farmers in Seruwila DS division purchased inorganic fertilizers additionally from retail shops as they had lower market prices and to get higher production per unit area. These results revealed about the highest adaptability of paddy farmers for chemical fertilizers and the potential in paddy cultivation in Trincomalee district. Furthermore, only 4% of farmer in Thampalagamam DS division mentioned that they had a mild illness during the application of inorganic fertilizers like headache. In remaining DS divisions, 100% of farmers had no issues in the application and utilization of conventional fertilizers.

Urea is badly needed by smallholder farmers in some of the hardest to reach and most vulnerable areas to help them recover from the recent economic shock and shortage of adequate fertilizers. It is also evident that a secular increase in contribution of total factor productivity to output growth has been observed by using chemical fertilizers. Jeevika *et al*. (2022) stated that the contribution of fertilizer to the output has always been positive though it was more pronounced. The results underline the positive and significant roles played by the chemical fertilizers positing the possible effects [15].

### 3. Effect of fertilizer crisis on paddy cultivation in Maha 2021/22




**3.1.Effect on different rice growth stages during fertilizer crisis**

**Figure 7. Percentage distribution of farmers based on affected rice growth stages during fertilizer crisis**

The growth stage of the rice during the fertilizer crisis also determines the yield reduction of paddy. Each stage of rice development stage has its specific nutrient requirement. Negligence of these needs may lead to substantial high yield losses[16]. According to the figure 7, 100% of farmers in all DS divisions stated that seedling stage is the primary affected stage during fertilizer crisis. N is highly essential for the vegetative growth of plants especially during early stage of plant growth and development.

Tillering in rice is an important agronomic trait for number of panicles per unit land area as well as grain production [17, 18]. 13.6% of farmers in all 5 DS divisions recorded that number of tillers per plant was also affected in all DS divisions due to inadequate inorganic fertilizers. About 25% of farmers in entire DS divisions proposed that panicle development stage had the significant reduction in number of panicles. N, P, and K fertilizers affect the number of panicles. Panicle per $m^2$ differs with regard to nutrient management practices[19, 20]. About 25% of farmers mentioned that booting and ripening stages affected severely due to inadequate fertilizers. N, P, and K fertilizers affect the number of grains per panicle.

**3.2.Effect of fertilizer crisis on paddy Yield**

Fertilizer is the major input in rice production. Growth and yield characteristics of rice are affected by nutrients. Practice of adequate rate and timing of fertilizer application can increase the rice yield[21]. Nature of crop damages in terms of % yield reduction during fertilizer crisis was classified into 4 categories viz. <25%, 26-50%, 51-75% and 76-100%. Figure 8. explained that majority of farmers in all DS divisions faced 26-50% of yield reduction during fertilizer crisis which were highly closer to 50%. About 16% of farmers observed 51-75% of yield

damages and 4.8% of damageswithin 76-100% in average and very few numbers of farmers faced yield reduction less than 25% in entire DS divisions.

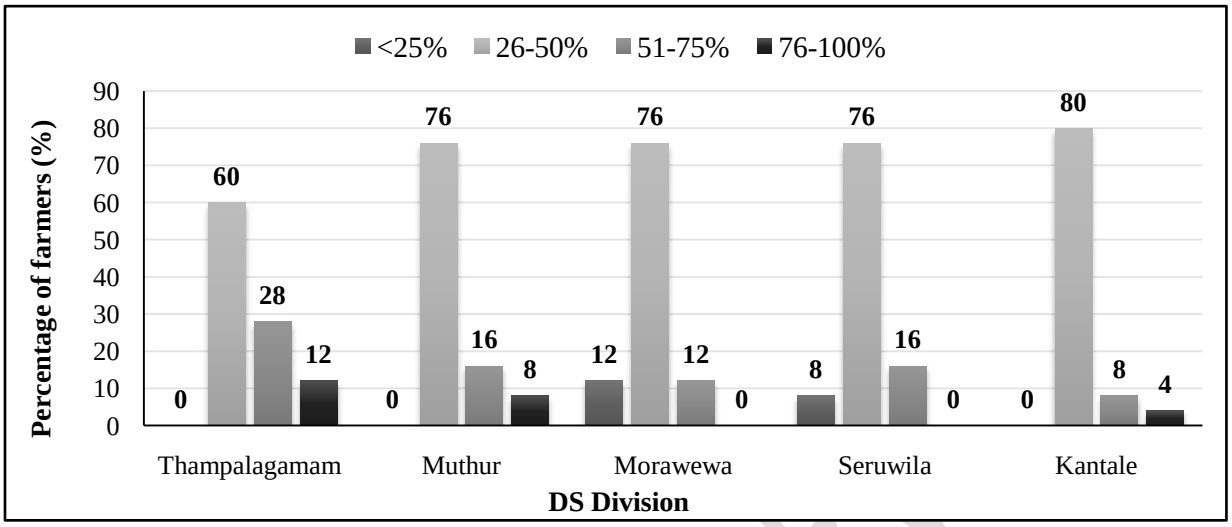



**Figure 8. Percentage distribution of farmers based on the % yield reduction during Maha 2021/22 in paddy cultivation**

Long-term fertilization can effectively improve crop yield, soil fertility.Bisht and Chauhan (2020) proposed thatto increase agriculture production and maintain soil fertility, the application of chemical fertilizers is indispensable. However, insufficient or unnecessary application of fertilizer does not guarantee consistently growing yields, which can result in low efficiency of nutrient usage[22].

### 3.3.Effect of fertilizer crisis on paddy Production

As mentioned in above figure 9, majority of farmers received 50% reduction in paddy production during fertilizer crisis in the major cropping season Maha 2021/22 in all five DS divisions compared to paddy production before fertilizer crisis in Maha 2020/21 in Trincomalee district and also there is a significant difference at 0.01 probability level on paddy production due to inadequate chemical fertilizer application. The yield reduction from last year (Maha 2021/22) was higher in Kantale DS division followed by Thampalagamam, Seruwila, Muthur and Morawewa DS divisions.

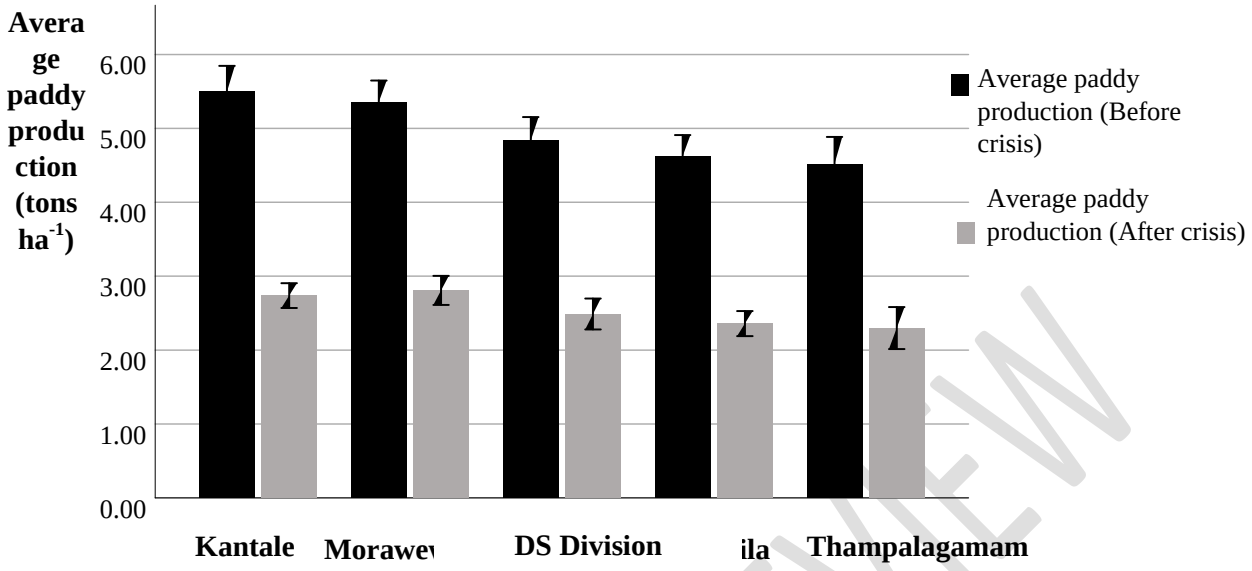



**Figure 9. Average paddy production before and during fertilizer crisis in the study area**

As confirmed by Ekanayake (2015) and Ranathilaka andArachchi (2019)introduction of high yielding varieties was the major factor, which contributed to increase in paddy production in the country. For that, successive governments provided support to stimulate paddy production by way of fertilizer subsidy schemes[23, 24].In Trincomalee district also majority of farmers (more than 90%) used improved varieties.Ekanayake(2015) pointed out that farmers had not been using correct amount of fertilizer to maintain N: P: K ratio of the field especially when urea was subsidized[23]. Therefore, the soil is highly used to chemical fertilizers and lost its native fertility. Hence a sudden withdrawal of inorganic fertilizers severely hit the yield. In addition, lower crop nutrient especially during the critical stages of rice plant growth increases the incidence of crop insects and disease and hence, grain yield is reduced[21].It was also confirmed by Department of Agriculture, (2022) that paddy production of Trincomalee district in Maha 2020/21 was 140,021.79Mt, however the paddy production during fertilizer crisis in Maha 2021/22 was80,214.92Mt. It was estimated that 57% yield reduction observed in Trincomalee district[1].

### 3.4.Quality of plant and yield attributes

All the farmers in 5 DS divisions expressed some common characteristics of the growth and developmental features of plant and panicle and grains which they observed during fertilizer crisis such as low germination, yellowing of leaves, weakening of stem, chaffy grains, low grain weight, shattering of panicle and uneven maturity of the panicle. Potassium deficiency causesgreater lodging, higher level of unfilled grain and lower grain weight. Hence inadequate application of major nutrients obviously caused yield reduction in paddy more over when the soil fertility is too lower in same condition, it rapidly increases the severity of yield reduction[25].

Furthermore, chemical fertilizer is necessary for optimal growth and grain production in rice farming. N fertilizer promoted the accumulation of protein, decreased the accumulation of amylose in grain, and enhanced gel consistency of brown rice. Appropriate N fertilizer management could increase micronutrient contents in grain and improve nutrition quality of rice [16]. Dose of K fertilizer increased the quality of rice yield but an increased dose provides improved meaningful results[25].

Though, few number of farmers in Thampalagamam, Morawewa and Kantale DS divisions stated that low shattering percentage and bulging of grains were observed. These poor-quality grains impacted on the marketing of the harvest. Anyhow, the private sectors of Sri Lanka purchased harvested paddy at higher prices which were comparatively greater than the previous one. This prevented most of the farmers to encounter in a heavy loss.

**3.5.Effect of fertilizer crisis on cost of production during Maha 2021/22 in paddy cultivation**

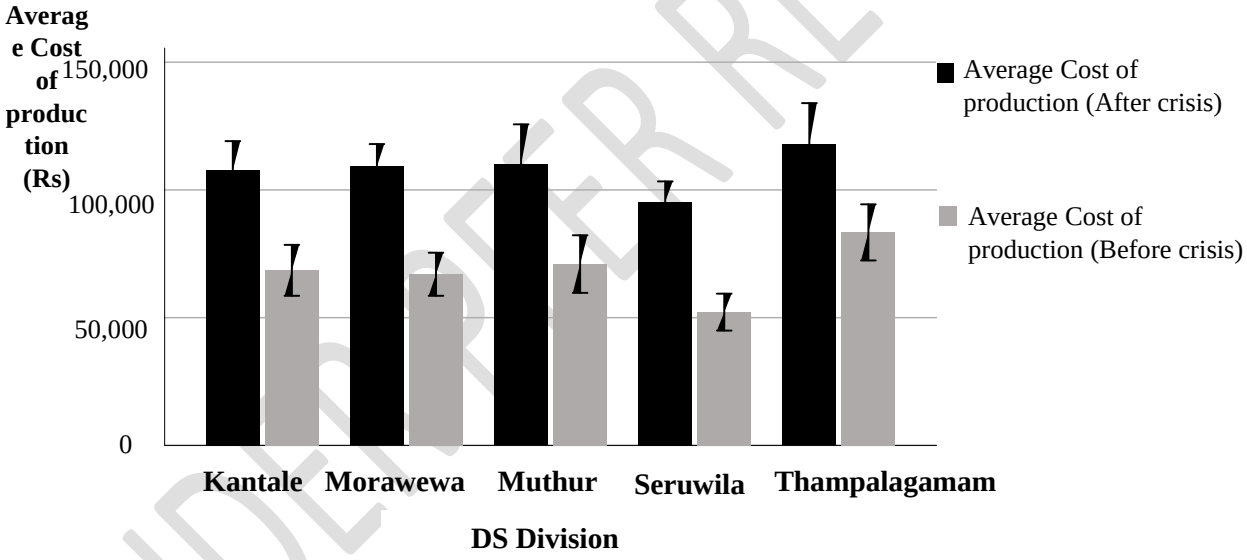



**Figure 10. Average cost of production before and during fertilizer crisis (Maha 2021/22) in paddy cultivation**

As showed in figure 10. cost of production was significantly increased (0.05 probability level) during fertilizer crisis (in Maha 2021/22) widely in all 5 DS divisions. Cost of production was increased more than 50% than cost involved before fertilizer crisis in Maha 2020/21 in all DS divisions except Thampalagamam where closer to half percentage (41.2%). High cost of production was experienced in Seruwila DS division where it was increased up to 82.8%. This was mainly due to purchasing of inorganic fertilizers especially urea from black markets at higher prices which was ranging from Rs. 35,000 – 50,000/ 50kg bag. These major inorganic

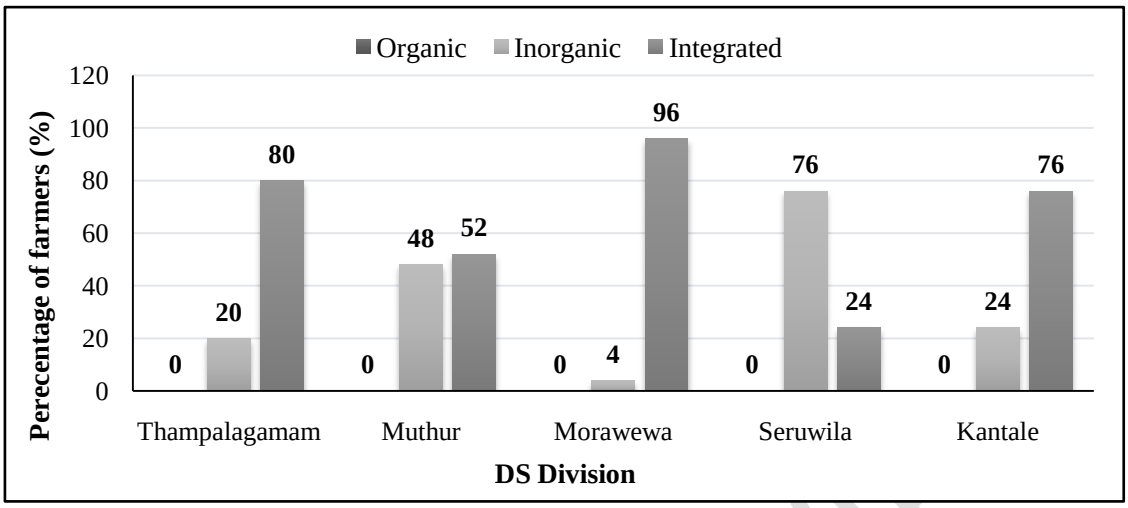
fertilizers such as urea, TSP and MOP were provided at subsidized price of Rs.500.00/50kg bag before the fertilizer crisis. Farmers received subsidy fertilizers up to 5 Acres of paddy cultivation. However presently Government provides urea at Rs.10000/50kg bag and MOP at Rs.19500/50kg bag and no TSP provided yet according to current policy. Though it is far lesser than present market price.

Furthermore, considerable number of farmers partially adopted fertilizer policy which means they also engaged in compost production in addition to used inorganic fertilizers purchased from older stock. However, due to low and limited availability of quality raw materials like animal manures, farmers needed to collect the raw materials from neighboring areas or outstations. This caused high transportation costs. Also, some of the farmers who have the other occupations like government jobs required labours for the preparation and application of organic manures. Anyhow, higher prices for harvested paddy during that particular season of paddy cultivation (Maha 2021/22) by private sectors somewhat prevented farmer. But they did not get the enough profit like before fertilizer crisis due to adoption of non-cost effective and inefficient method of fertilizer practices. It was revealed that majority of farmers faced net loss (maximum 96% of farmers in Morawewa DS division) and low percentage of farmers received net profit who partially adopted government policy and involved in the production of organic fertilizers. This proved that the combined use of organic and inorganic manures provided most cost-effective way in paddy cultivation.

### 3.6.Government initiatives to overcome the fertilizer crisis

Due to the unpredictable ban of chemical fertilizers, the paddy cultivation became standstill. A complete organic farming requires minimum time interval for the preparation of organic manures with the limited availability of raw materials for a huge acreage of paddy lands in the district as well as in the country or with the improved technologies can enhance the organic manure production without exploiting the existing resources. Therefore, it requires a period of time for its reclamation by the application of organic sources[21]. These obstacles reflected in the paddy yield and hit country's GDP severely. Further government faced several objections through protests and eventually Government officially got back from 100% organic farming. Furthermore,present fertilizer policy was recommended by Department of Agriculture by using 70 percent chemical fertilizers and 30 percent organic fertilizers for the 2022/23 Maha Season.

As per the figure 11. majority of farmers have preferences in the sustainable farming system namely, Integrated Plant Nutrition System (IPNS). Almost 96% of farmers in the Morawewa DS division highly preferred IPNS. However, 76% of farmers in Seruwila DS division had more preferences in application of inorganic fertilizers than organic fertilizers even though they provided in free basis due to high labour charges and other costs of productions. Meanwhile the paddy farmers who preferred this IPNS also not interested to produce their own organic manure production. They accepted due to government enforcement & free availability of organic fertilizers.




**Percentage distribution of farmers based on preferences in the Integrated Plant Nutrient System**

With the application of NPK fertilizer and the application of organic fertilizer, it is expected to improve the nutrient adequacy for rice plants, so that crop yields will increase. The balanced use of fertilizers improves crop productivity and soil fertility in a sustainable manner without any environmental damage[14]. Rice growth and yield traits are affected by the integrated use of manure and inorganic fertilizers. Farmers should use a combination of organic fertilizers and reduced inorganic fertilizers to increase rice yield and protect and improve soil health. Balanced and proper amount and timing of fertilizer application is an effective approach to increase the growth and productivity of rice and ensure environmental sustainability[16].

### 3.7.Suggestions for improvement

Eventually, some suggestions for improvement and to avoid these types of heavy losses by fertilizer crisis were received from the farmers. Farmers expected that the Government should be given the appropriate effects on the private property of those whose investments are affected. Farmers mentioned that the Government should give advance notice to make necessary adjustments to minimize losses before taking such critical decisions in future. Further, gradual reduction and recommended application of inorganic fertilizers are always better and the holistic way for a sustainable paddy cultivation practice in Trincomalee district. In addition, farmers felt that the present fertilizer policy (inorganic: organic as 70%:30%) is far better than the complete banning of chemical fertilizers and Government can spend money for the continuous supply of quality organic manures instead of spending more for importing a whole inorganic fertilizer as they have low interest on own compost production with adequate nutrient availability. Meanwhile other farmers expressed some suggestions like enhancing knowledge through standard government training programmes in quality and enriched organic manure productions and methods of application, value added and super compost productions, regular soil testing procedures and make close and easy contacts with extension officers.

## CONCLUSION

The findings of this survey highlighted that the impact of fertilizer crisis during Maha 2021/22 on paddy cultivation in five DS divisions of Trincomalee district. From the study it could be concluded that majority of the farmers got around 50% yield reduction than last cropping season 2020/21 Maha in entire DS divisions. The yield reduction from last year (Maha 2021/22) was higher in Kantale DS division followed by Thampalagamam, Seruwila, Muthur and Morawewa DS divisions. The growth stage of the rice was influenced by fertilizer application. In this regard, seedling stage was highly affected during fertilizer crisis in paddy cultivation in all DS divisions. All the farmers in 5 DS divisions expressed some common drawbacks in the quality determining features of plant. Further the cost of production in paddy cultivation was increased more than 50% during fertilizer crisis than cost involved in Maha 2020/21 in all DS divisions. Furthermore, the results revealed that potential for organic manure production is very poor meanwhile majority of farmers are interested to adopt the sustainable farming system namely Integrated Plant Nutrient System by the judicious application of chemical and organic fertilizers received as subsidies according to present Government's fertilizer policy of 70% of inorganic fertilizers and 30% of organic manure application to improve sustainability in paddy cultivation.



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