7.1 INTRODUCTION

7.1.1 PROBLEMS OF SEED PRODUCTION AND MARKETING

This study on the marketing of agricultural seeds in Nagapattinam District has opened new vista and paved ways to find out new facts. The interview conducted with the farmers and traders of the study area made it possible to know the problems of seed marketing in the study area which are enumerated herein as under.

1. In the Nagapattinam District there has been acute shortage of water for irrigation. The farmers of the area were not able to undertake cultivation of paddy for two crops at least due to the shortfall of water. Frequently there has been failure of monsoon and at the same time there has been power shortage. Since the irrigation is largely depending upon pump sets the farmers of this area could not make use of the pump set irrigation. This is the foremost important problem of the farmers of the study area.

2. In the study area it was revealed that there has been inadequate availability of certified seeds quite often. With regard to the availability of paddy seed this is quite true. The variety of paddy seed required during a crop season may be available locally from the local farmers but the relevant variety of paddy seed has not been available with the government agencies at time of need.

3. There has been a problem of quantity of seeds also. There are different types farmers in the study area each type of farmer requires different quantity of paddy seeds but the required quantity may not be available with the government agencies and hence they have to rely on the private seed traders or their local seed cultivators.
4. Even though the certified seed are used by the farmers of the study area the seeds have not possessed a good germination quality. The uneducated and ignorant farmers were not able to identify ill-quality seeds.

5. The study area is lacking adequate testing facility to test the quality of seeds. The Nagapattinam District is happened to be the rice bowl of Tamilnadu. Till date there is no recognised testing laboratory to testing the quality of the seed. The seed cultivators of this area have to wait for a long period to test the seed produced in their land.

6. Only registered seed cultivators are permitted to produce the seeds, and seeds produced by the registered seed cultivators are procured by the Government departments for certification. Even if a farmer is producing quality seeds during a crop season and there is surplus of seed with the farmer he cannot sell the paddy seed to Government Agencies. If the paddy seed is qualitative it must be provided by the Governmental seed trading agencies after testing.

7. In the study area there is inadequate storage facility for preserving the agricultural seed. The farmers have to store the seed produced by them in the owns houses and the seeds are affected by rats, pests, etc.

8. The fluctuation in the prices of the agricultural seed is a huge problem both for the seed producers and seed users. The incentives provided by the Government have not been available to all the buyers. Hence a sizeable portion of the buyers are procuring the seeds from the private traders and local farmers.
7.1.2 The problem of the traders

The traders of the agricultural seeds have to encompass several problems as that of the problems faced by the seed producers such as storage problems fluctuation of price of the seeds etc. Apart from the problems the traders have to face the following specific problems.

1. The private seed traders could not adhere the regulations of the Government strictly. The impractical rules and regulation of the Government departments and Government orders necessitate them to adapt fraudulent means to service in the seed trading.

2. The supply of seeds either from the seed cultivators or from the National Seed Corporation has been inadequate several times that too it is true in the case of hybrid seeds.

3. The private seed traders have been facing financial problems. They have to procure the seed for cash but at the same time they have to sell them on credit. This type of trading system mostly in rural area is a main problem for the private seed traders.

4. With regard to the seeds of black gram and green gram there is adulteration prevailing in the seed market. The locally produced seeds are mixed up with certified seeds. As a result of which there has been loss of faith on the private seed traders from the farmers.

5. Agricultural yields are generally uncertain, as natural hazards such as the weather, pests and disease, and other production calamities have negative impact on the farm output. Even slight changes in weather conditions, less rain than usual can seriously affect the farm production. Pests and diseases may spread quickly, leading to a loss of part or all of crop production. Hence, most of the respondents opined that they were affected by bad weather condition. Due to that the crop was affected by pests and disease and also the loss of quality such as less weight, small size, bad color, etc.
6. The another severe problem is price and market risks which due to market fluctuation. It is particularly significant where market information is lacking or scanty, or where markets are imperfect.

7. Price fluctuations may be particularly severe in agricultural products market especially paddy and black and green grams. And also overproduction, however, may also considerably influence domestic market price. Hence, price uncertainty with liberalization of agricultural market and private buyers rarely fix a blanket- buying price prior to harvest, even though interlinked transactions for specific crops have become more common. These arrangements almost always involve the setting of a fixed price or a range of prices prior to planting.

8. Market risk also included the potential loses involved in marketing agricultural of agricultural produces.

9. Transportation is another major challenge in rural areas. Therefore the farmers forcibly sell their agricultural products to local buyers at lesser price than the market price and purchase agricultural input at higher rate.

10. The farmer should travel to sell their agricultural seed, even though it is considered as less important factor by the majority of the respondents. It is one of the factors that the producer farmer considers while deciding to whom to sell their seeds.

11. The transportation cost, it is considered as an important factor because many of the respondents responded that there was high cost of transportation for purchase of agricultural inputs such as seed, fertilizers and pesticides and sale of agricultural products.

12. Substantial lose may also occur due to a lack of appropriate storage facility. Lower quality of badly stored produce usually reduces prices.

13. For cost related issues regarding agricultural credit, a majority of the respondents raised issues related with cost of monitoring and follow up of agricultural credit.
14. The reliable buyer is one of the factors that the farmer considers while making the decision whether to sell their agricultural products. In the study area, the government seed purchasing agency were not buying agricultural seed from farmers. Therefore, most of the respondents take this factor as a very important one to be considered while making the decision for producing agricultural seeds.

15. Time of the payment for the agricultural product supplied by the farmer is another factor that the farmers consider while taking the ‘to whom to sell’ decision. This decision is actually emanated from the delay by the private agency in payment after buying the product from the farmers on credit basis, as reported by many of the respondents. Thus, majority of the farmers consider this factor as a very important factor.

16. In fact the ‘to whom to sell’ decision of the farmer is influenced by more than one factors. For instance, if the price offered for the farmer can cover transportation cost and other implicit costs like time and energy, the farmer can sell their agricultural product in a distant market that offers better price.
7.2 SUMMARY OF FINDINGS

India is primarily an agriculture based country and agricultural sector is dominant one. Indian economy largely depends upon agriculture and it plays an important role in progress of the country. The agricultural production is depending upon various factors like the fertility of the land, availability of water or the irrigation system, the technology adopted and the quality of the seed. Of these factors the seed quality alone is affecting the output by 15 to 20 percent. The Indian seed industry is occupied by both the government agencies and private seed traders. Therefore the study has under taken in the Nagapattinam district with the following major objectives i.e., the functioning of sample seed marketing firms in terms of quality management, assess the extent of the use of certified seeds and evaluate the impact of certified seeds used by farmers and quality management on the selected agricultural seeds in the production of different crops in the study area. Hence, based on the objectives of the study the performance of sample seed traders and sample farmers opinion towards quality of seed and seed marketing firms were analyzed. Based on the analyzed result the major findings of the study are presented as follows.

7.2.1 Profile of Study Area

1. The literacy level of the Nagapattinam district according to figures available for the year 1996 is 59.87% with male literacy level being more than the female literacy level. It is also observed that while the male literacy level has grown gradually from 62.70% in 1981 to 65.89% in 1996, there has been a steady increase of female literacy level from 37.92% in 1981 to 49.03% in 1996.

2. The total geographical area of the district was 3536.38 Sq.kms. Cropped area accounts for about 65.53% of the total area. Forest cover age is very minimum accounting for only about 1.31% of the land. The non-availability of cultivable land covering barren and uncultivable land and land put into nonagricultural uses, accounts for 22.83%. The other uncultivated lands including (a) permanent pastures and other gazing lands, (b) miscellaneous tree crops and groves not in the net area shown
and (c) cultivable waste land, covering 5.35%. However, figure of forest land seems to be at variance with the reported extent of forest area by the forest department.

3. Apart from paddy, Cereals, pulses and oil seeds are the three other important crops produced in the district. The production of cereals, pulses and oil seeds fluctuate during the past five years (1991-96). The areas under production for cereals, pulses and oil seeds, also fluctuate for the past five years. The reason for the fluctuation could be using rotation of crops seasonally, the productivity performance of the district in relation to Cereals, Pulses and Oil Seeds for the past 5 years.

7.2.2 Quality Management in Agricultural Seeds

1. The majority of the sample respondents were cultivating the other crops namely, Paddy, Sugarcane, Black gram, Green gram, Groundnut, Sesame, Sunflower, Cotton and Hybrid Cotton with the isolation distance of metres 3, 200, 10, 10, 3, 100, 400, 50 and 50 respectively.

2. The majority of the sample respondents were using certified seeds namely Paddy, Sugarcane, Black gram, Green gram, Groundnut, Sesame, Sunflower Cotton and Hybrid Cotton.

3. The number of days need to test the quality of seeds by quality management department was between 5 days to 14 days. Variety-wise shows that the Paddy, Cluster been, Tomato and Chilly were 14 days, followed by Cotton 12 days, Sunflower, Groundnut, Sorghum 10 days, Rahi, Green gram, Cowpea, Soya been 8 days, Maize, Cambu, Black gram 7 days, Red gram, Sesame 6 days and finally Horse gram 5 days.

4. The most of the sample farmers have purchased Gingili, Paddy and Groundnut which constitutes highest of 38.36 percent for Gingili, paddy 20.55 percent and Groundnut shows lowest percentage.

5. The seed production of sample areas were analyzed during the ten years period from 2004-05 to 2013-14. The seed production registered an increasing trend from 24634 hectares during 2006-07 to 55650 hectares during to 2013-14.
6. The data collected from the Nagapattinam district agricultural department found that the total number of the sample seed tested during 2004-05 to 2013-14 has been increasing except during the period of 2006-07 and 2007-08. And also it was found that the percentage of rejection of seed sample has not shown any significant variation. Only during the years 2011-12 and 2012-13 the percentage of rejection were 8.4 percent and 9.8 percent.

7.2.3 Seed Marketing of Sample Traders

7.2.3.1 General information of the Traders

1. The agricultural seed sold through the wholesale or retail system. The marketing firms consists of owned private shops or Government shops.

2. The majority of seed traders have sold both fertilizer and agricultural seeds (62.31 percentage) remaining 37.69 percentage of traders have sold only seed. All the 10 sample government seed traders have sold only seeds to the farmers. Out of 59 Private seed traders 43 (72.88 percent) traders have sold both seed and fertilizer and remaining 16 (27.12 percent) traders were sold seed only.

3. The majority of seed traders were running business in their own shop (60.87 percentage) remaining 39.13 percentage of traders were doing their business in the leased shop. All the 10 sample government seed traders were running business in government building. Out of 59 Private seed traders 32 (54.24 percent) traders were running business in their owned shop and remaining 27 (45.76 percent) traders were using leased shop.

4. The majority of the private traders were running their business between 7 to 9 years leasing which shows 48.15 percent and 29.63 percent of the private traders in 9 to 12 years of leasing. And only, 14.81 per cent of the respondents leased between 1 to 6 years and rest of them 7.41 percent of the traders leased for more than 12 years.
5. The majority (43.48 percent) of the seed traders have 10 years and above experience and 26.09 percentages of seed traders have 7 to 9 years experience and remaining 30.44 percentages of the seed traders have less than 6 years of experience. Out of 10 sample government seed traders most (70.00) of the traders have 10 years and above experience. And also, out of 59 private seed traders’ majority of the traders have more than 7 years experience.

6. The majority (62.32) of the seed traders employed less than 6 employees in their shop, 18.84 percent of the traders employed 7 to 9 employees and remaining 18.84 percent of the traders employed 10 and above employees in their shop. And also, out of 59 private trader’s majority (67.80 percent) of the traders were employed less than 6 employees in their shop, remaining 32.20 percent of the traders have only employed 7 and more than 7 employees in their shop. In government trading out of 10 traders each 30 percent (two traders) of the traders have employed 4 to 6 and 7 to 9 employees in their shop respectively and remaining 40 percent of the government traders employed 10 and above employees in their shop.

7. Out of the number of employees working in government and private shop, majority of 35.43 percentage of employees were working under the category of workers and 29.13 percentages of employees were working under the category of drivers. And only 15.53, 12.14 and 7.77 percentage of workers were working under the category of office assistance, filed officer and market development officers respectively. In government shops 33.33 percentages of employees under the category of office assistant, each 23.33 percentages of employees under the category of field officer and drivers respectively and the remaining 20 percentage of workers were working as market development officers. But in the private shops majority of the employees were working under the category of workers and drivers i.e., 41.48 and 30.11 percentages respectively. And only 12.50, 10.25 and 5.68 percentages of employees under the category of office assistant, field officer and market development officer respectively.
7.2.3.2 PROCUREMENT OF SEEDS

7.2.3.2.1 Paddy

1. The government seed trading shops have purchased paddy seed from government agricultural department only. But the majority (40.68 percent) of the private seed traders purchased paddy seed from Government and private seed companies, 35.60 percentages of private seed traders purchased from government agricultural department and local seed sellers and the remaining 23.72 percentage of private seed traders have purchased seed from private seed company and local seed sellers. Hence it was revealed that most (94.20 percentage) of the seed traders have purchased seed from government and private certified seeds. Only 4 (5.80 percentage) private seed traders have additionally purchased seed from local seed sellers.

2. All the private seed traders agreed themselves that they fix the price of paddy seed at the time of procurement and the fixation of price for the paddy seed under what basis can be categorized into three namely, Government price, market price and others. It was found that most (75.00 percentage) of the private seed traders agreed that they fix the price of paddy seed at the time of procurement and it was based on the market price and the remaining 25.00 percentage of private seed traders only fix their purchase price and it was based on government price.

3. The most of the sample seed traders (both government and private) have purchased certified seeds which constitute 94.20 percent and the remaining 5.80 percentage of private seed traders only purchased both certified and uncertified seeds. From this, it was found that the most of the sample seed traders mainly concentrated on the purchase of certified seeds.

4. During samba seasons the sample government seed traders have given first priority to purchase PBT seed (rank-1), followed by ADT-38, ASD-19, CR-1009, ADT-43, ADT-45, ADT-46 and White ponni. And the analysis of private traders also revealed that the quantity of PBT seed purchased occupied highest rank i.e. first. Followed by ADT -38 (rank-2), ASD-19 (rank-3), CR-1009 (rank-4), each rank-5 ADT-45, white
ponni and ADT-43 respectively and ADT-46 (rank-6) for private seed traders. It was found that both the private and government seed traders have given importance to purchase the seed variety of PBT. Also it was found that the paddy variety purchased was depending upon the geographically location of land and the types of soil.

5. During kuruvai crops the sample private and government seed traders have given first priority to purchase ADT-42 seed (rank-1), followed by ADT-36 (rank-2), each rank-3 for IR-50 and ADT-45, each rank-4 for ADT-43 and TKM-9 and MDU-5 (rank-6) for government traders, and ADT-36 (rank-2), ADT-45 (rank-3), IR-50 (rank-4), each rank-5 for ADT-43, MDU-5 and TKM-9 (rank-6) for private seed traders. The reason for the priority to purchase ADT-42, ADT-36 and IR-50 was that these three varieties have given large output and easy marketability.

6. During Navarai crop the sample private and government seed traders have given first priority to purchase ADT-36 seed (rank-1), followed by IR-50 (rank-2), ADT-42 (rank-3), TKM-9 (rank-4), ADT-45 (rank-5), each rank-6 for MDU-5 and ADT-43 for government traders, and ADT-42 (rank-2), IR-50 (rank-3), TKM-9 (rank-4), each rank-6 for MDU-5 and ADT-43 respectively for private seed traders. The selection of the variety of seed during Navarai was largely depending upon the type of the crops, hence ADT-36 and IR-50 and it was purchased largely in the area of the study area.

7.2.3.2.2 Cereals

1. It was found that both the government and private traders have purchased the seeds of black grams and Green grams from farmers and from the government traders.

2. All the sample seed traders have purchased only certified seeds from government and private seed companies. Hence it was found that the seed traders were selling only certified black gram and green gram seeds to farmers.
3. The sample private seed traders have purchased green gram and black gram seeds largely (76.27%) from the private seed companies whereas only 14 private seed traders (23.73%) have purchased the seed of black gram and green gram from the government agricultural department. The reason for this purchase of private seed traders from the private seed company was the government agricultural department are selling seeds to farmers only and also they are selling at subsidized price. Therefore the private seed traders are heavily depending on the private seed companies. Hence, it was found that there has been variation in the prices of the cereals seed sold by government agricultural department and the private seed traders.

4. The cereals seed sold by the sample government and private traders reveals that the quantity of green gram ranked first and black gram ranked second. The government agricultural seed traders have sold 22 quintals of black gram and 25 quintals green gram on an average during the period of study. The private seed traders have sold 15 quintals of green grams and 10 quintals of black grams on an average. Hence it was found that the government department and the government seed traders have occupied an important role in the sale of cereals seed in the study area.

7.2.3.4 Storage Facility

1. Most of the sample seed traders have the storage facility which constitutes 76.81 per cent and the remaining 23.19 percent of the sample seed traders were not having the storage facilities. But, all the government seed traders have the storage facilities. It was found that 16 of the private seed traders have no separate storage facilities and it was stated that this private seed traders have been in the practice of buying the seed variety only in limited quantity and make a purchase only when the stock of the shop becomes very low.
7.2.3.5 Selling Agricultural Seeds

1. The majority of (59.42 percent) the sample traders responded that they were not fixing the selling price of seed and the remaining 40.46 percent of the sample traders responded that they were fixing the selling price of the seed. All the government seed traders responded that they were not fixing the selling price. But the majority of private seed traders responded that they fix the selling price of seed which constitutes 52.54 and the remaining 47.46 percent that they were not fixing the selling price.

2. Out of the total 59 sample private seed traders 47.40 percent have been in the practice of fixing the selling price for the seed sold by them. It means that these traders have purchased the seed locally and sell them. It was also found that the price fixation of the seed traders have been depending upon the quantity of seeds and the prevailing demand for the seed.

3. During the samba season PBT paddy seed sales ranked first, ADT-38 ranked second and ASD-19 ranked third. The reason for the popularity of this variety was this variety yielded considerable output and at the same time the selling price of this variety was more than the other varieties.

4. During the kuruvai season TKM-9 variety was largely cultivated in the study area and therefore it was ranked first in the sales of paddy seed. And, the ADT-43 and IR-50 were also sold in considerable quantity. The reason for large number of farmers was using these three varieties was due to far easy marketability of output and high priority in the market.

5. The quantity of seeds sold by the of sample private and government seed traders in navarai season revealed that the government seed traders have sold highest quantities of ADT-36 and IR-50 seeds which constitute 38.92 mean value each and the private seed traders sold highest quantity of ADT-36, seed which constitute the mean value of 34.46. Followed by TKM-9 (mean value 28.34) second rank, ADT-42 (mean value 25.97) third rank, ADT-45 (mean value 13.34) fourth rank, ADT-43 (mean value 6.62) fifth rank, MDU-5 (mean value 5.41) sixth rank for
government traders, and ADT-42 (mean value 24.59) second rank, IR-50 (mean value 19.17) third rank, ADT-45 (mean value 11.61) fourth rank, TKM-9 (mean value 11.44) fifth rank, MDU-5 (mean value 4.99) sixth rank, and ADT-43 (mean value 4.92) seventh rank respectively for private seed traders.

6. In the study area the green gram sold by government department was 127 quintals which ranked first but the private seed traders have sold 578 quintals of green gram which ranked second. Contrary to this the government department sold 109 quintals of black gram which ranked second whereas the private seed traders have sold 638 quintals black gram which ranked first. It means that the sample farmers of the study area largely depend upon the government seed traders for green grams and private seed traders for black grams. It was due to the availability of branded green gram seed with the government department and also due to the similar quality of black gram sold by both the private and government seed traders.

7.2.3.6 Descriptive analysis of variety of seed sold between the traders

Samba

1. During the samba crop season, the sample government and private seed traders have sold different varieties of paddy seeds to farmers in the study area i.e., ADT-38, CR-1009, PBT, ASD-19, ADT-45, ADT-46, White ponni and ADT-43. The result of ANOVA revealed that there was significant variation between the seed traders as far as quantity of seed sold of the varieties of ADT-38, CR-1009, PBT, ADT-46 and ADT-43 concerned and within the traders itself there was significant variation. It was found that there is significant difference between the private and government seed traders in the sales of ADT-38, CR-1009, PBT, ADT-46 and ADT-43 paddy seed varieties. It was mainly due to the subsidy in the form of cash discount given by the government and also stability in the prices of these varieties and its quality whereas, the other varieties i.e., ASD-19, ADT-45 and White ponni have not shown significant variation between the seed traders as far as the quantity of seed sold
concerned and within the traders itself there was not significant variation. It was found that there is insignificant difference between the private and government seed traders in the sales of ASD-19, ADT-45 and White ponni varieties of paddy seeds.

Kuruvai
1. During the kuruvai crop season, the sample government and private seed traders have sold different varieties of paddy seeds to farmers in the study area i.e., ADT-36, IR-50, ADT-45, ADT-43, TKM-9 and MDU-5. The result of ANOVA revealed that there was significant variation between the seed traders as far as the quantity of seed sold of the varieties of ADT-43, TKM-9 and MDU-5 concerned and within the traders itself there was significant variation. It was found that there is significant difference between the private and government seed traders in the sales of ADT-43, TKM-9 and MDU-5 paddy seed varieties whereas, the other varieties i.e., ADT-36, IR-50 and ADT45 has not shown significant variation between the seed traders as far as the quantity of seed sold concerned and within the traders itself there was not significant variation. It was found that there is insignificant difference between the private and government seed traders in the sales of ADT-36, IR-50 and ADT45 varieties of paddy seeds.

Navarai
1. During the navarai crop season, the sample government and private seed traders have sold different varieties of paddy seeds to farmers in the study area i.e., ADT-36, ADT-42, ADT-45, MDU-5, ADT-43, IR-50 and TKM-9. The result of ANOVA revealed that there was significant variation between the seed traders as far as the quantity of seed sold of the varieties of ADT-43, IR-50 and TKM-9 concerned and within the traders itself there was significant variation. It was found that there is significant difference between the private and government seed traders in the sales of ADT-43, IR-50 and TKM-9 paddy seed varieties. Whereas, the other varieties i.e., ADT-36, ADT-42, ADT-45 and MDU-5
have not shown significant variation between the seed traders as far as the quantity of seed sold concerned and within the traders itself there was no significant variation. It was found that there is insignificant difference between the private and government seed traders in the sales of ADT-36, ADT-42, ADT-45 and MDU-5 varieties of paddy seeds.

7.2.3.7 Traders attitude towards seed marketing firms – A descriptive analysis

1. With regard the attitude of traders about seed marketing firms the ‘quality of seeds enrich more sales’ ranked first which constitutes highest mean value of 3.91, followed by ‘Storage facility is available’ with the mean value of 3.88, ‘Price of the seeds sold is very low’ is having the mean value of 3.81, ‘Ordinary seeds are also give more yield’ with the mean value of 3.75, ‘Variety of seeds are available’ has the mean value of 3.68, ‘Cost of seeds is high’ the mean value of 3.64, ‘Types of seeds’ (paddy, cereals, etc) has the mean value of 3.62, ‘Quantity of production’ has the mean value of 3.61, ‘Certified seeds give more profit’ has the mean value of 3.58, ‘Quantity of purchase’ has the mean value of 3.59, ‘Number of consumer’ has the mean value of 3.57, ‘Profit is very high’ has the mean value of 3.32 and ‘Quantity of sales is high’ has the mean value of 3.10 ranked last. Further analysis of the attitude of traders, it was found that the majority of the sample seed traders have given good opinion towards seed marketing firm based on Quality, storage facility and price of the seed.

7.2.3.8 Factor Analysis -(Traders Attitude towards Seed Marketing Firms)

1. Out of thirteen variables “Cost of seeds is high” has more communality value (0.828). The mean extracted factors are able to explain low variance in that variable which is more effective than other variables and “Quantity of purchase” variable has low communality value (0.402). It means that the extracted factors are not able to explain much variance in that variable. Hence it was found that this factor has no relevance for measuring the attitude of the traders.
7.2.3.9 Total paddy seed sold by sample seed traders

1. The paddy seed sold by the sample traders in the study area during the period of study 2014-2015 revealed that the government seed traders have sold high mean value for all season which constitutes 514.18 for samba, 491.22 for kuruvai and 157.52 for navarai season and the private seed traders have sold less than the government seed traders which constitutes the mean value of 380.88 for samba, 327.08 for kuruvai and 111.18 for navarai season.

7.2.4 Marketing of Agricultural Seeds in Nagapattinam District

7.2.4.1 Demographic information of the respondent

1. The majority (65.10 percentages) of the sample farmers were in the age group of 51 and above, 26.88 percentage of sample farmers were in the age group of 41-50 and the remaining 8.12 percentage of sample farmers were in between the age group of 20-40. Hence, in the study area the majority of the aged famers were involved in the agricultural activities. This indicates that the reluctance of the youngsters in the agricultural activities.

2. Out of 480 sample farmers, 421 (87.71 per cent) were male and 59 (12.29 per cent) were females. Agriculture as business or livelihood is carried on more by men rather women. Yet women were engaged as labourers for major agricultural activities like cropping, weeding, and harvesting.

3. The majority of the sample farmers 452 (94.17 per cent) were married and the remaining 28 (5.83 percent) were unmarried. The analysis revealed that most of the sample farmers were married. The reason was most of the sample famers were in the age group of above 30.

4. Almost similar proportion family members in all three groups such as 170 (35.42 per cent) sample farmers have 4-6 members, in their family161 (33.54 per cent) have above six members in their family and the remaining 149 (31.04 per cent) have 1-3 Members in their family.

5. Only 12 (2.50 per cent) respondents were illiterates and the remaining 97.50 percentage of respondents were having minimum of primary level
education. Out of 468 respondents 211 sample farmers (43.96 per cent) have completed Secondary level, 102 sample farmers (21.25 percent) have completed higher secondary level education, 65 sample farmers (13.54 per cent) have completed their UG level, 61 sample farmers (12.71 per cent) have completed at least primary level, 17 sample farmers (3.54 per cent) have completed their post graduation and remaining 12 sample farmers (2.50 per cent) have completed Diploma and others.

6. Out of 124 sample farmers, majority (45.97 percent) of the sample farmers were working under the category of private employees, followed by government employees 25.81 percent, semi-government employees 22.58 percent and remaining 5.64 percent of the sample farmers were working under the category of other employment such as, traders, daily wages etc.

7. Out of 480 sample farmers majority (44.17 percent) of the sample farmers have earned agricultural income of above Rs.75,000, followed by 31.04 percent of sample farmers have earned agriculture income between Rs.55,001 to 75,000, 17.71 percent of sample farmers have earned agriculture income between Rs.45001-50000 and the remaining 7.08 percent of respondents have earned below Rs. 45,000. Hence, the study revealed that the most of the sample farmers have earned more than Rs. 50000 per annum.

8. Out of 124 respondents, majority (55.64 percent) of the sample farmers have earned other income between Rs.10001 to 15000, followed by 31.45 percent of sample farmers have earned other income of above Rs.15000 and the remaining 12.91 percent of sample farmers have earned less than Rs.10000 per month. Hence, it was found that the most (87.09 percent) of the sample farmers have earned other income of more than Rs.10000 per month.
7.2.4.2 Land Details

1. Out of 480 sample farmers, majority of the sample farmers have own land which constitutes 94.38 per cent and remaining 5.63 percent of sample farmers were not having own land.

2. Most of the sample farmers have own land which constitutes 453 (94.38 per cent) out of 480. Consequently, table 5.10 shows that, out of 453 sample farmers most of 368 sample farmers owned land from inheritance and 85 farmers purchased land from the others. And the remaining 27 sample farmers were holding leased land.

3. Majority of the respondents engaged in agriculture activities for more than 30 years which shows 183 (38.13 per cent), followed by 32.08 percent of sample farmers involved for 21-30 years, 18.83 percent of sample farmers involved for 11-20 years and the remaining 10.83 percent of the sample farmers were having only less than 10 years of farming experience. Hence, it was found that most of the sample farmers have rich experience in the farming activities.

4. Majority of the sample farmers 138 (30.46 per cent) were holding arable land between 4-6 acres, followed by 109 (24.06 per cent) respondents were having between 7-10 acres, 108 (23.84 percent) respondents were between below 3 acres and the remaining 98 (21.63 percent) respondents were holding arable land of 10 acres and above.

5. Out of the 27 sample leased land holders, 11 (40.74 per cent) respondents were holding arable land between 4 to 6 acres, followed by 9 (33.33 per cent) respondents were holding between 7-10 acres, 5 (18.52 percent) respondents were holding upto 3 acres and the remaining 2 (7.41 per cent) respondents were holding arable land of above 10 acres.

6. Out of 27 leased land holding respondents, most of (87.50 percent) the respondents were holding below 6 acres and remaining 12.50 percent of respondents were only holding 7-10 acres of land.
7. Out of 480 respondents, most (86.25 percent) of the respondents were also cultivating paddy in kuruvai season, but the remaining 13.75 percent respondents expressed that they were not cultivating paddy in kuruvai season. Out of 480 respondents, only 27 (5.63 percent) respondents were cultivating paddy in the season of samba and navarai.

8. Out of 480 respondents most of 432 (90.00 percent) sample respondents were cultivating green grams and remaining 48 (10.00 percent) respondents were not cultivating the green gram. And also, out of 480 respondents most of 454 (94.58 percent) sample respondents were cultivating black Grams and remaining 26 (5.42 percent) respondents were not cultivating black gram. Hence, it was found that most of the respondents were cultivating cereals after harvesting paddy in the samba season.

9. It was found that Cereals cultivation has been depending upon the size of land holding and also the availability of water.

10. Most of the respondents states that they were cultivating other crops which constitute 76.25 percent and rest of the 23.75 percent famers were not cultivating other crops. The result indicates that most of the sample farmers were giving importance to cultivation of other crops such as Sugarcane, Cotton, Soya, Coconut, Tapioca, Gingili and etc.

7.2.4.3 Irrigation

1. The majority of (50.21 percent) sample farmers depend on river, pump set and canal irrigation and least percentage (10.21) of sample farmers depend on river and canal. The remaining 26.04 percent, 13.54 percent of the sample farmers depends on pump set and canal and river and pump set respectively. Hence it was found that most of the sample farmers in the study area mainly depend on pump set.
7.2.4.4 Agricultural Seed Details

Paddy

1. Most of the sample farmers were using their own paddy seed for the cultivation which constitutes 96.88 per cent and the remaining only 3.12 percent of sample farmers were not using their own seed for cultivation. Hence, it was found that most of the sample farmers were using their own seed for cultivation.

2. The majority of the sample farmers stored their own cultivated paddy seed in Gunny bags which constitute 53.33 percent followed by 32.90 percent of the sample farmers stored their seed in wooden box, 12.04 percent were stored their seed in sand pot and only 1.73 per cent of the sample farmers stored in kottai kattuthal. Hence it has know that majority of the sample farmers preferring gunny bags for storage of seed.

3. Most of the sample farmers were using pesticides for preservation of seed which shows 97.20 per cent and the remaining only 2.80 per cent of the sample farmers were not using pesticides for preservation of seed. Hence it indicates that most of the farmers were using pesticides for preserving their seed from damage.

4. Majority of the sample farmers used chemical type of pesticides for preserving their seed which constitutes 64.82 percent, and the remaining 35.18 percent of sample farmers were using herbal type of pesticides for preservation of their seed. Hence, it was leaved that the majority of the farmers depend on chemical type of pesticides for preserving the seed rather than herbal.

5. All the sample respondents have purchased only certified seeds. It clearly states that the sample farmers know about the benefit of certified seeds.

6. Out of 448 sample seed buyers’ majority of the sample seed buyers were purchasing certified seed from private agency which constitutes 56.92 percent and the remaining 43.08 percent were purchasing certified seed from government agricultural department. Hence it was found that majority of the sample seed buyers were mainly depending on private seed sellers.
7. Most of the sample farmers were purchasing seed in gunny bags which shows 91.96 percent and only 8.04 percent of the sample farmers were purchasing seed in paper bags. All the farmers have purchased certified seed in bag with seal. Hence, it was found that the government agricultural department and private seed industries were marketing their seed with seal only.

8. Most of the sample seed producing farmers were using separate land for producing seed which constitutes 92.19 percent and rest of 7.81 percent were not using the separate land. Therefore it may be concluded that most of the sample seed producing farmers were using separate agriculture land for cultivating paddy seed.

Cereals

1. Most of the sample farmers were using their own black grams and green gram seed for the cultivation which constitutes 92.70 percent and the remaining only 7.30 percent of sample farmers were not using their own seed for cultivation. Hence, it was found that most of the sample farmers were using their own black grams and green gram seed for their cultivation.

2. Most of the sample farmers have stored their cultivated own black grams and green gram seed in Gunny bags which constitute 93.93 percent and only 6.07 percent of the sample farmers were stored in wooden box. Hence it was found that most of the sample farmers preferring gunny bags for storage of black grams and green gram seed.

3. Most of the sample farmers were using pesticides for preservation of black gram and green gram seeds which show 92.58 percent and the remaining only 7.42 percent of the sample farmers were not using pesticides for preservation of black gram and green gram seed. It indicates that most of the sample farmers were using pesticides for preserving their black gram and green gram seeds from damage.

4. Most of the sample farmers were using chemical type of pesticides for preserving their black gram and green gram seeds which constitute 88.59 percent and the remaining 11.41 percent of sample farmers were using herbal type of pesticides for preservation of their seed. So it was
forward that the majority of the farmers depend on chemical type of pesticides for preserving the black gram and green gram seeds rather than herbal.

5. Out of 480 sample farmers only 35 sample farmers opined that they purchased black gram and green gram seed from others which constitutes 6.67 percent and the remaining 93.33 percent of the sample farmers were not purchased black gram and green grams seeds for their cultivation.

7.2.4.5 Purchase of Certified or Uncertified Seed

1. Majority of the sample farmers have purchased uncertified black gram and green gram seeds which constitutes 65.72 percent and the remaining 34.28 percent of the sample farmers have purchased certified seeds. It indicates that majority of the sample famers were mainly using their own seed and purchased uncertified black gram and green gram seeds for their cultivation.

2. Majority of the sample farmers were using black gram seed between 16-20 kg per acre which constitutes 46.25 percent followed by above 20 kg constitute 36.04 percent and the remaining 17.71 percent of the sample farmers were used upto 15 kg per acre. In green gram also majority of the sample farmers were used seed between 16.20 kg per acre followed by above 20 kg constitute 38.95 percent and the remaining 19.17 percent of the sample farmers were used upto 15 kg per acre. Therefore it was found that majority of the sample farmers were using 16-20 kg of black gram and green gram seeds per acre. The reason for different quantity of seed use for cultivation is mainly depends on the nature and type of the soil.
7.2.4.6 Sales of Paddy Seeds

1. Out of 448 sample farmers most of the sample farmers have sold their paddy seed which constitutes 97.32 percent and the remaining 2.68 percent of the sample farmers responded that they have not sold their paddy seed. Hence it was found that most of the sample farmers were selling their paddy seed to the seed buyers.

2. Most of the farmers were sold their paddy seed to private seed agency which constitutes 94.72 percent and remaining 3.28 percent of the sample farmers were sold their paddy seed to local farmers. And no sample farmers were selling their paddy seed to government agency. The reason for not selling paddy seed to government agency was the government agency purchase paddy seed from registered paddy seed producing farmers only and delay in payment, etc.

7.2.4.7 Other Crops of Cultivation

1. Most of the sample farmers were producing other crops also which constitutes 70 percent and the remaining 30 percent of the farmers were not produce any other crops.

2. The highest percentage of sample farmers were cultivating Tapioca crops in their dry lands which constitutes 29.23 percent followed by groundnut 24.86 percent, cereals other than black grams and green grams 20.77 percent, gingili 18.85 percent and 6.29 percent of the sample farmers were producing other types agricultural products such as corn, turmeric, gingili, etc.

7.2.4.8 Quantity of Paddy Seed Used

Samba

1. During the samba crop season, the farmers of the study area have used CR1009, ADT46, PBT, ASD19, White ponni and ADT45 varieties of paddy seed. A significant portion of the farmers have used more than 36 kilograms of paddy seed per acre in the study area.
Kuruvai

2. During the kuruvai crop season, the farmers of the study area have used IR50, ADT45, ADT43, ADT36, ADT37 and MDU5 varieties of paddy seed. A significant portion of the farmers have used more than 36 kilograms of paddy seed per acre in the study area.

Navarai

3. During the navarai crop season, the farmers of the study area have used TKM9, ADT45, ADT43, IR50, ADT36 and ASD19 varieties of paddy seed. Nearly two third of the sample farmers have used more than 36 kilograms of paddy seed per acre in the study area.

7.2.4.9 Variety wise quantity of Paddy produced per Acre

Samba

1. During the samba crop season, the farmers of the study area have used different varieties of certified paddy seeds. A significant number of farmers have produced more than 22.51 quintals per acre in the study area, which is comparatively higher quantity of output rather than ordinary seed used farmers in the study area.

Kuruvai

2. During the kuruvai crop season, 386 farmers have used different varieties of certified paddy seeds for their cultivation. A significant number of farmers have produced more than 27.01 quintals per acre in the study area, which is higher than the samba crop season output in the study area.

Navarai

3. During the navarai crop season, 24 farmers have used different varieties of certified paddy seeds for their cultivation. A significant number of farmers have produced more than 22.51 quintals per acre in the study area, which is similar quantity of output in samba crop season in the study area.
7.2.4.10 Problems Faced by the Farmers towards Agricultural Seed Cultivation

1. Most of the sample farmers have opined that malpractices in selling method were mainly affect their seed production which constitutes mean value of 4.00 and standard deviation value = 1.187 followed by Lack of sufficient soil testing facilities, Water scarcity, drought, Power problems, Scarcity of fertilizers and pesticides, Pest and diseases, High price of inputs (fertilizers and pesticides), Poor fertility of land, Crops were lost due to the heavy rainfall and floods, Delay in cash payment, Lack of local production and marketing policy, Lack of transportation and road infrastructure, Lack of awareness about market news and intelligence, Crop loss due to Livestock/Others, Improper market stabilization and Heat Wave and Cold Wave

7.2.4.11 Impact of using seed

1. **Impact on Quantity of Seed used** - There is significant difference between the quantity of seed used for production before and after using certified seed. Hence, it was found that there was a decrease in quantity of seed used after used certified seed.

2. **Cost of Seed used** - There is significant difference between the cost of seed used for production before and after using certified seed. Hence, it was found that there was a decrease in cost of certified seed spent.

3. **Seed Germination** - There is significant difference between the amount of seed germination before and after using certified seed. Hence, it was found that there was an increase in germination of certified seed.

4. **Fertilizer used** - It was also found that there is significant difference between the fertilizer used for production before and after using certified seed. The analysis of ‘t’ test that show there was a decrease in fertilizer used of certified seed.

5. **Production in Quantity** - The sample farmers have expressed, the quantity of production per acre was increased in certified seed when compared with uncertified seed. And also, the percentage of mean change of quantity of production was higher than the actual (138.63 percent. It implies that there is significant difference between the
quantity of production before and after using certified seed. Hence, the ‘t’ test shows that there was an increase in quantity of production of certified seed.

6. **Demand of Seed from Seed buyer** – There was a positive impact on demand of seed from seed buyers which means the local farmers were interested to buy paddy seed from certified seed traders for their seed requirement. And also, the percentage of mean change of demand of seed from seed buyer was higher than the actual (140.78 percent). Correlation was also significant at 5 percent level. It implies that there is significant difference between the demand of seed from seed buyers before and after using certified seed. Hence, the result shows that there was an increase in demand of seed from seed buyers from certified seed user in the study area.

7. **Quality of Production** – There was a positive impact on production in quality paddy after used certified seed which means the certified seed using produced quality output were compared with uncertified seed users. And also, the percentage of mean change of production of quality paddy was higher than the actual (156.94 percent). Correlation was not significant at 1 percent and 5 percent level. It implies that there is significant difference between the quality of production before and after using certified seed. Hence, the analysis shows that there was an increase in production in quality paddy from certified seed user in the study area.
CONCLUSION

The present study on the seed marketing and quality management of selected agricultural seeds i.e. paddy, green gram and black gram is the eye-opener in several aspects. The study was focused on procurement and sales of the selected agricultural seeds on the one side and the production and utilization of the selected seeds by farmers of the study area on the other. The collected data and the analysis revealed new facts on the chosen topic. The government seed selling traders have been procuring the seed varieties generally from the registered seed producers whereas, private traders have purchased the seeds mainly from the private seed companies and local seed sellers. The private seed sellers are procuring and selling both the certified and uncertified seeds. Also it is a fact that ADT-38 and PBT are the most popular varieties during the samba crop season. ADT-36 and ADT-42 are the most cultivated varieties during the kuruvai and navarai crop season. TKM-9 variety of seed is also widely used by the farmers of the study area. Accordingly the TKM-9, ADT-46, PBT, ADT-38 are the most popular varieties of paddy seed sold by the sample seed traders. Further in the case of the green gram the government seed traders are occupying the first rank and in the case of the black gram the private seed traders selling a major portion of the total sales. Most of the farmers of the region i.e., 93 percent are using their own cereals seeds it means that uncertified cereals seed have been largely used by the sample cultivators. From these observations and analysis, it can be conclude that the major percentage of farmers of the region were in the practice of using certified seeds of paddy varieties which is procured from the government seed agencies and at the same time a significant portion of the cultivators of the region were in the practice of using the cereals seeds produced by them which is uncertified on the belief that the cereals seeds of their own are having the similar quality of certified seeds. Hence the study ultimately concludes that there is a need for two pronged approach, that is the farmers have to be educated on the benefit of using certified seeds particularly the certified seeds of black gram and green gram and the government machineries in the agricultural department should be geared up to monitor and regulate the private seed traders from selling adulterated and modified seeds.
6.4 SUGGESTIONS

The present study was mainly focusing on the procedures involved in the certification of agricultural seeds and the functions of both seed traders and the seed producers in Nagapattinam district. For accomplishing the key objectives of the study necessary information were collected. The collected data were analyzed and findings were made and the findings have opened new vistas in the area of seed market and also the findings have lead to suggestions and the suggestions are enumerated herein as under.

1. There has been a problem in the seed production as well as in the sales of seeds. The seed producers have to register with the agricultural department for the quality of the seeds. The unregistered cultivators are not permitted to sell the agricultural seeds to the government agricultural seed agency. This type of problem may often lead to acceptance of ill quality and nonstandard seeds and also rejection of quality seeds. This procedure has to be dispensed with and hence it is suggested that the procurement center attached with testing laboratory has to be established in the every Taluk head quarters so as to produce the quality seed by the local farmers.

2. There is an apprehension on the part of the farmers about the quality of seeds which is purchased locally by the farmers and surplus seeds produced by the farmers and there has been doubt on the quality of the seeds available with the private seed traders. So there is need for the central seed marketing agency in every district for each important type of crops. Hence, it is suggested that the seed marketing has to be international. Further it is suggested that government may develop an export promotion council and it may be established for the export of surplus seeds. This measure will pave way for the increased production of quality seeds.

3. The farmers of the region are compelled to use of chemical pesticides for the preservation of agricultural seeds. So it is suggested that the farmer may be advised to use of natural pesticides, so as to avoid side effect of using chemical pesticides.
4. In the study area there is a shortage of storage facility especially for the major crop seeds even after the passage of more than six deadly during the post-independence era. There is no separate storage facility for the agricultural seeds in the study district. Even now the seeds are stored in gunny bags that too for a short period. There is no mechanism of facilitating for the preservation of the seed and storage of seed without the deterioration of quality for long period of time. Hence it is suggested that each types and variety of seeds has to be preserved without getting loss of its quality and the seed must be preserved like that of preservation of books in the libraries. i.e. index of varieties must be maintained.

5. At present there are regulations to the seed marketing. The Act contains provisions regarding to the production and marketing of quality seeds, but these provisions have not been meticulously compiled With so there is need for making propaganda about the provisions of the Act and necessary steps have to be taken for educating the farmers in this regard.

6. Generally the price of the major crops seed is based on the nature of administrative price for the fixation of the prices of baddy and cereals. There is separate agency for agriculture price commission (APC) but there is no separate agency for recommending the price of agriculture seeds at the national level. In tune with the prevailing demand and supplying the local traders of agricultural seeds of fixing the price of agricultural seeds. Quite often there is reduction of the prices of the cereals. Hence it is suggested that the Government of India have to take necessary steps for the formation of the separate pricing agency and this may be empowered to notify the price of important agricultural seeds.
7. There is no separate seeds laboratory in the study area. The study area considered as rice bowl of Tamil Nadu. In this area there are more than seventy thousands farmers and 3.5 lakhs agricultural laborers who are involving in the agricultural activities in more than 271000 hectares of land. Despite there is no laboratory for the testing of qualities of seed in the study area. Therefore, it is an urgent need to establish a seed quality testing laboratory in study area.

8. Even though the study area is agricultural oriented district there is no separate agricultural college. Therefore the government may institute separate agricultural college in the study area.

9. In the study area seeds were supplied additionally to the farmers. The farmers of this area are not showing any special interest for the production of paddy seeds. It is mainly because of the absence of competitive price while marketing their paddy seeds. Hence, it is suggested that the state Government may provide subsidy at least for the paddy seeds, black gram and green gram for motivating the farmers to produce seeds.

10. In the study area there is no adequate seed quality assurance infrastructure with respect to seed testing and to increase the crop productivity and provide enhanced food security. Therefore the government should concentrate in this area.

11. The evolution of seed quality determination has not reached an end point. Therefore the government should direct the agricultural seed quality department and agricultural field officer to conduct farmers meeting periodically and explain the seed quality management at regular intervals.

12. There is no transparency in the seed production among the farmers. Therefore the agricultural department may conduct periodical meeting in the farmers area and explain the method and new technology about seed production to farmers.
13. Production and marketing of certified seed of all agricultural crops is highly regulated at both the national and international level. A transparent and efficient regulatory system is crucial to ensure that farmers have access to high quality seed at a reasonable price.

14. Quality management systems have been successfully introduced and put into practice at the national level. An evaluation of the results of this (e.g. proficiency tests, performance of accredited laboratories compared to non-accredited laboratories) demonstrate that this has been success in optimizing the performance of laboratories and minimizing the risk of inaccurate testing.

15. The adoption of national certification standards has encouraged the growth in the seed trade by reducing technical barriers to trade, increasing transparency, lowering transaction costs and increasing access by farmers to high-quality seed.
6.5 SCOPE FOR FUTHER RESEARCH

1. This study was analyzing agricultural seed marketing and quality management. In this regard the researcher has analyzed paddy, green gram and black gram seeds only. Further, in the study area the farmers are producing other types of agricultural products such as sugarcane, groundnut, gingili, cotton, etc. A study can be made on the other agricultural seeds.

2. The sample size of the study is restricted to 69 seed traders and 480 sample seed farmers and the sample area is restricted to Nagapattinam district. Further extension of sample size and sample area can also be made to provide best results regarding the paddy seed production and marketing.

3. There is ample scope to pursue a comparative study on agricultural seed marketing and quality management in two districts or two states. Also, further study can be made on the problems and prospects of agricultural seed production and marketing in specific which will provide better results to seed producing farmers.

4. And also, the researchers may study about Implementation of Crop Insurance Schemes in seed production and marketing. Further, a study on the farmers Awareness and attitude towards seed marketing in Tamilnadu can provide information about seed production and marketing to the farmers.