CHAPTER-V
LAND SUITABILITY CLASSIFICATION FOR KORAIYAR WATERSHED

5.1 INTRODUCTION
The present chapter deals with Land Suitability Classification of the Koraiyar Watershed. In accordance with the various land suitability classes such as Highly Suitable, Moderately Suitable, Marginally Suitable, Currently Not Suitable and Permanently Not Suitable are made after having acquired good background knowledge on land evaluation techniques based on the FAO. For various crops like paddy, sorghum, maize, ragi, millets, black gram, horse gram, coconut, groundnut, sunflower, turmeric, sugarcane, chillies, banana, onion, tomato, mango and cotton. The third chapter provides an understanding of resources through land resource inventory studies related to physical, economic and social phenomena as they are the precursor to understand the status of the study area. The fourth chapter illustrates micro-watershed characteristics of Koraiyar watershed by having detailed analysis of terrain and its characteristics. It brings out the overall scenario of each micro watershed in respect of the land mapping units, landuse characteristics, morphological characteristics, groundwater, landuse/land cover changes over space and time. Based on the above and on the results of these analyses, each land unit of different land systems under various micro-watersheds has been assessed in this chapter to bring out the land suitability classes for eighteen crops, in this chapter.

5.2 LAND SUITABILITY
Land suitability is the fitness of a given type of land for a defined use. The land may be considered in its present condition or after improvements. The process of land suitability classification is the appraisal and grouping of specific areas of land in terms of their suitability for defined uses. If the land is not
suitable for any defined purpose, then the land is called as not suitable for the purpose.

This Suitability and Not Suitability are mentioned according to United States Department of Agriculture (USDA) by “S” and “N”. The “S” letter could be used to mention Suitability and the “N” letter used to mention for Not-suitability.

<table>
<thead>
<tr>
<th>Land Suitability Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Suitable</td>
</tr>
<tr>
<td>N</td>
<td>Not Suitable</td>
</tr>
</tbody>
</table>

5.3. LAND SUITABILITY CLASSES

Land suitability Classes reflect degrees of suitability. The classes are numbered consecutively, by Arabic numbers, in sequence of decreasing degrees of suitability within the Order. Within the Order Suitable the number of classes is not specified. There might, for example, be only two, S1 and S2. The number of classes recognized should be kept to the Minimum necessary to meet interpretative aims; five should probably be the most ever used. If three Classes are recognized within the Order Suitable, as it can often be recommended, the Following names and definitions may be appropriate in a qualitative classification:

**Class S1 Highly Suitable:** Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.

**Class S2 Moderately Suitable:** Land having limitations which are moderately severe for sustained application of a given use. The limitations will reduce productivity and increase required inputs to the extent that the overall advantage to be gained will be appreciably inferior to that expected on Class S1 land.
**Class S3 Marginally Suitable**: Land having limitations which in aggregate are severe for sustained application of a given use. It will reduce productivity or benefits, or increase required inputs, that this expenditure will only be marginally justified.

**Class N1 Currently Not Suitable**: Land having limitations which may be surmountable in time but which cannot be corrected with existing knowledge at currently acceptable cost; the limitations are so severe as to preclude successful sustained use of the land in the given manner.

**Class N2 Permanently Not Suitable**: Land having limitations which appear as severe as to preclude any possibilities of successful sustained use of the land in the given manner.

*Source: Food and Agricultural Organisation (FAO), 1976.*
The land suitability evaluation for the major crops found in the study area has been done not only to define the land fitness for specific land uses and cultivation, but also to estimate the possible increase of crops production after improving land by proper management.

The parameters considered for various crops are geomorphology, soil, slope, landuse, soil depth, texture, ESP, EC, pH and Rainfall. The parameter’s values are calculated to provide the different suitability classes for each crop in each Land Unit. Each crop classified into five categories like Highly suitable (S1), Moderately suitable (S2), Marginally Suitable (S3), Currently Not Suitable (N1) and Permanently Not Suitable (N2) (Table No 5.1 and Appendix 5.1).

**Table: 5.1  The Suitability of land for various crops are given as watershed in the following table.**

<table>
<thead>
<tr>
<th>Name of crop</th>
<th>Land suitability classes</th>
<th>Area in Ha &amp;%</th>
<th>Area of Occurrences</th>
<th>Constraints and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PADDY</strong></td>
<td><strong>S1</strong></td>
<td>14,240 Or 21.6</td>
<td>ZaminUthukuli, Santhegovundampalayam, Kulichettipalayam,Kondekavundampalayam, Avalappampatti, Chantharapuram, Periya Negamam, Sirukalandhail, Eripatti, Aupparpalayam, Nallampalli, Sinnanegamam, Kakkadavu, Vaguthampalayam, Devanampalayam and Kappalankarai.</td>
<td>The annual rainfall is above 1110 mm, &gt;75 cm of soil depth, Slope 0-1%. Surface texture of soil like sandy clay loam and clay loam soils and the pH value of 5.5 to 6.5. Geomorphology like buried pediplain and pediplian. Anamalai, Vellaur, Kottayam and Irugur soil series are supporting to this crop.</td>
</tr>
<tr>
<td><strong>S2</strong></td>
<td>20,119 Or 30.5</td>
<td>Kappalankarai, Sirukalandhail, Kollapatti, Unjavelampatti, Kodangipalayam, Neluthukuli and Valukkuparai.</td>
<td></td>
<td>suitable soil series under this class are the Dasaripatti, Ettinayakampatti, Salaiyur, Kallivalasu and Palathurai. like rainfall more than 900-1110 mm. Slope 1-3%, More than 10-20 cm of soil depth, pH value of 4.5 to 7.5.</td>
</tr>
<tr>
<td><strong>S3</strong></td>
<td>22,035 Or 33.4</td>
<td>Papampatti, Chettipalayam, Edayapalayam, Kallapalayam, Pottaiyandipurambu, Sokkanur, Part of Ramapatnam, Thampakovundampudur</td>
<td>Buried pediplain, the soil series like Palaviduthi, Annur and Varapatti are distributed, 25 to 50 cm of soil depth. 750 - 900 mm of rainfall. Slope 3-5%</td>
<td></td>
</tr>
<tr>
<td><strong>N1</strong></td>
<td>8,087 Or 12.2</td>
<td></td>
<td>The annual rainfall is &lt; 750 mm, Soil texture only for sandy, The pH various like &gt;8.5 and &lt; 4.5, Slope &gt;5%.</td>
<td></td>
</tr>
<tr>
<td><strong>N2</strong></td>
<td>1,519 Or 2.3</td>
<td></td>
<td>Rural and Urban settlement, Industrial site, Tank, Water bodies</td>
<td></td>
</tr>
<tr>
<td>Land Suitability Classification for Agricultural Development of Koraiyar Watershed</td>
<td>P. Masilamani (2016) 125</td>
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<tr>
<td><strong>SORGHAM</strong></td>
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<tr>
<td><strong>S1</strong></td>
<td>10,061 Or 15.3</td>
<td>Shinnanegamam, Solanur, Varathanur, Suleswarampatti, Servakarampalayam and Pottaiyandipurambu.</td>
<td>Rainfall 650 mm to 850 mm, more than 100 cm of soil depth, surface texture sandy clay loam to clay loam, with good aeration and well drainability, Annur, Irugur, Kallivalasu, Mettupalayam, Palaviduthi, Pichanur, Pilamedu, Salaiyur, Dasaripatti and Vellalur soils. pH value of 6.0 to 8.0, slope 2-3%. Length of growing period 120-150 days. Water logging in growing season 2-3 days.</td>
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<tr>
<td><strong>S2</strong></td>
<td>12,100 Or 18.3</td>
<td>Bogampatti, Andipalayam, Vaguthampalayam, Santhegovundampalayam, Arisipalayam and Otkakalmandapam.</td>
<td>The less rainfall of 550 - 650 mm, the soil depth 75 - 100 cm, surface texture of sandy clay, Varapatti and Kattampatti soil series. pH value of 8.1 to 8.5, slope 3-8%. Water logging in growing season 3-4 days.</td>
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</tr>
<tr>
<td><strong>S3</strong></td>
<td>30,350 Or 46.0</td>
<td>Chettipalayam, Malumachampatti, Myleripalayam, Arasampalayam, Vadakkipalayam and Ramapatnam</td>
<td>Rainfall 350 to 500 mm, very shallow depth of soil varies from 30 to 50cm, clay surface texture of soil of Attipalayam, Ettinayakampatti, Kottayam and Sengalam soil series and pH value of less than 5 to greater than 8.5, slope 8-15%. Water logging in growing season 4-5 days.</td>
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<tr>
<td><strong>N1</strong></td>
<td>11,970 Or 18.1</td>
<td>Vadachitur, Mettubavi, Malumachampatti, Servakarampalayam, Zamind Uthukali, Santhegovundampalayam, Kinathukadavu, Muthur, Kulichettipalayam, Kondekavundampalayam, Avalappampatti, Chantharapuram, Periya Negamam, Sirukalandhai, Erippatti, Aupparpalayam, Nallampalli, Sinnanegamam, Kakkadavu, Vaguthampalayam, Devanampalayam and Kappalankarai.</td>
<td>The annual rainfall is &lt; 450 mm, very poor drainage, Water logging in growing seasons &gt;5 days, Soil texture only for sandy, The pH various like &gt;9 and Slope &gt;15%.</td>
<td></td>
</tr>
<tr>
<td><strong>N2</strong></td>
<td>1,519 Or 2.3</td>
<td>Rural and Urban settlement, Industrial site, Tank, Water bodies.</td>
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<td></td>
</tr>
<tr>
<td><strong>MAIZE</strong></td>
<td></td>
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<tr>
<td><strong>S1</strong></td>
<td>16,631 Or 25.2</td>
<td>Vadachitur, Mettubavi, Malumachampatti, Servakarampalayam, Zamind Uthukali, Santhegovundampalayam, Kinathukadavu, Muthur, Kulichettipalayam, Kondekavundampalayam, Avalappampatti, Chantharapuram, Periya Negamam, Sirukalandhai, Erippatti, Aupparpalayam, Nallampalli, Sinnanegamam, Kakkadavu, Vaguthampalayam, Devanampalayam and Kappalankarai.</td>
<td>Temperature 21-32 °C, Rainfall 900 - 1000 mm, the length of growing period is more than 100 days, well drained soil drainage, soil depth is more than 75 cm, the pH value of 5.5 to 7.5. deep buried pediplain supporting by canal irrigation. sandy, Clay loam, and Sandy clay loam of Anamalai, Vellaur, Kottayam and Irugur soil series are supporting to S1. Slope &gt;3%.</td>
<td></td>
</tr>
<tr>
<td><strong>S2</strong></td>
<td>19,036 Or 28.9</td>
<td>Vadavalli, Vadakkipalayam, Andipalayam, Puliyampatti, Vaguthampalayam, Oikkilipalayam, Kabilipalayam, A.Nagar, Nallampalli and Santhegovundampalayam villages</td>
<td>Rainfall between 750 to 900 mm, gentle slope deep, and shallow buried pediments, soil texture like clay, sandy clay and sandy loam, good ground water potential but moderate and imperfect drainability affect the moisture availability and slight erosion. Soil depth ranges between 50 and 75cm, pH value of 5 to 9. Temperature 33-38 °C</td>
<td></td>
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<tr>
<td><strong>S3</strong></td>
<td>21,458 Or 32.5</td>
<td>Papampatti, Servakarampalayam, Edayapalayam, Kallapalayam, Pottaiyandipurambu, Kuthiraiyalampalayam, Valukkupparai, Thampakovundampudur and Vadapudur.</td>
<td>Owing to less rainfall 500-750, less soil depth between 25 and 50 cm, pH &lt; 5, slope 5-8%. Temperature 29-40 °C.</td>
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<tr>
<td><strong>N1</strong></td>
<td>7,356 Or 11.1</td>
<td>Vadavalli, Vadakkipalayam, Andipalayam, Puliyampatti, Vaguthampalayam, Oikkilipalayam, Kabilipalayam, A.Nagar, Nallampalli and Santhegovundampalayam villages</td>
<td>The annual rainfall is &lt; 500 mm, Very poor drainage, Soil texture only for sandy.</td>
<td></td>
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<tr>
<td><strong>N2</strong></td>
<td>1,519 Or 2.3</td>
<td>Rural and Urban settlement, Industrial site, Tank, Water bodies.</td>
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<td></td>
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</tbody>
</table>
| S1 | 5,990 Or 9.0 | Kakadavu, Vaguthampalayam, Mettubavi, Vadachitir, Suleswarampatti and R. Ponnapuram | The temperature ranges for their growth is 280 – 340°C, millets and ragi grow in loamy to clay soils. The soil depth should be above 75 cm. Well drained, aerated soils, pH may vary from 5.5-7.5. Slope must be flat to gentle. Rainfall 750-900 mm.

S2 | 9,488 Or 14.4 | Andipalayam, Puliyampatti, Vaguthampalayam, Santhegoundampalayam, Kallipatti, Avalappampatti, Pachapalayam, Panappatti, Malumachampatti and Potanyandipurambu | Rainfall between 600 to 750 mm, gentle slope deep and shallow buried pediments, soil texture of clay, sandy clay and sandy loam and moderate Soil depth of 51 – 75 cm, pH value of 4.5 to 8.5.

S3 | 30,463 Or 46.2 | Papampatti, Servakarampalayam, Edayalayam, Kallalayam, Pottaiyandipurambu, Sokkanur, Ramapatnam, Kuthiraiyalampalayam, Valukkaparai, Thampakovundampudur and Vadapudur. | The rainfall ranges from 600 to 750 mm, 25-50 cm of effective soil depth, The pH value of less than 4 to greater than 9.5, temperature 39-40°C, slope 5-10%, excessive drainage.

N1 | 18,540 Or 28.1 | Temperature >40 and below 20, rainfall <450 mm, length of growing period <60 days, soil depth <25 cm, slope >10%.

N2 | 1,519 Or 2.3 | Rural and Urban settlement, Industrial site, Tank, Water bodies.

| S1 | 13,267 Or 20.1 | Kondampatti, Pottayandipurambu, Avalappampatti, Kakadavu, Solanur, Mettubavi, Kallalayam and Suleswarampatti. | Rainfall 800 to 1000 mm, growing period above 100 days, the areas of shallow buried pediplain, moderately buried pediplain and soil depth above 100 cm, Pilaimedu, Somayyanur, Salaiyur, Pichanur, Palavidhuthi, Palathurai, Varapattai, Attipalayam, Ettinayakampatti, Kotaipal and Sengalam series, soil series comes under soil texture like clay, sandy clay and sandy loam. The pH value varies from 6 to 7.5.

S2 | 30,319 Or 45.9 | Vadavalli, Vadakkipalayam, Valukupparai, Andipalayam, Puliyampatti, Vaguthampalayam, Santhegoundampalayam, Valukkaparai, Edayalayam and Othakalmandapam | Rainfall between 600 to 800 mm, gentle slope deep and shallow buried pediments Pilaimedu, Somayyanur, Salaiyur, Pichanur, Palavidhuthi, Palathurai, Varapattai, Sengalam soil series, soil texture sustaining with good ground water potential.

S3 | 15,749 Or 23.9 | Papampatti, Servakarampalayam, Edayalayam, Kallalayam, Pottaiyandipurambu, Sokkanur, Kuthiraiyalampalayam, Valukkaparai, Thampakovundampudur and Vadapudur. | Rainfall varies from 400-600 mm, temperature varies from 15°C – 30°C other food crops are mostly practised here. Buried pediplain, shallow buried pediplain, the soil series like Attipalayam, Palathurai, Mettupalayam, Palaviduthi are distributed, 25 to 50 cm of effective soil depth. The pH value of less than 5.4 and more than 9.

N1 | 5,146 Or 7.8 | Temperature various <5°C and >30°C, Rainfall <400 Very poorly drained, pH >9, soil depth >25 cm.

N2 | 1519 Or 2.3 | Rural and Urban settlement, Industrial site, Tank, Water bodies.
<p>| COCONUT          | S1     | 24,239 Or 36.7 | Kondekavundampalayam, Avalappampatti, Chantharapuram, Periya Negamam, Sirukalandhai, Eripatti, Aupparpalayam, Nallampalli, Sinnanegamam, Kakkadavu, Vaguthampalayam, Devanampalayam and Kappalankarai | The annual perception of above 700 mm to above 900 mm, good soil drainage, dry season less than three months, more than 100 cm of soil depth, surface texture of soil like sandy clay loam and clay loam soils and the pH value of 5.1 to 6.5. pediplain land is under deep pediplian. Accordingly sandy, Clay loam, and Sandy clay loam of Anamalai, Vellaur and Kottayam soil series are supporting to this crop. |
| S2     | 26,210 Or 39.8 | Andipalayam, Puliyampatti, Vaguthampalayam, Santhegoundampalayam, Kallipatti, Avalappampatti, Pachalapalayam, Panappatti, Malumachampatti and Potayandipurambu | Rainfall more than 1000 mm is moderately suitable. Sandy clay soil is moderately suitable. The pH value of 7.5 to 8.5. |
| S3     | 12,312 Or 18.6 | Papampatti, Edayalapalayam, Kallapalayam, Pottaiyandipurambu, Sokkanur, Kkythiraiyalalapalayam, Valukkupurai, Thampakovundampudur and Vadamudur | Buried pediplain, the soil series like Palaviduthi, Annur and Varapatti soils have the depth of 50 to 75cm and pH value of less than 5 and &lt; 8.5. |
| N1     | 1,737 Or 2.6 | Rural and Urban settlement, Industrial site, Tank, Water bodies |
| N2     | 1,519 Or 2.3 | Rural and Urban settlement, Industrial site, Tank, Water bodies |
| GROUNDNUT | S1     | 22,322 Or 33.9 | Kattampatti, Chettikapalayam, Kondegoundampalayam, Unjavalampatti, Zamin Uthukuli, Serviakaranpalaiyam, Othakalmandapam and Myleripalayam | Rainfall 700 mm to 1000 mm, growing period of less than 120 days. More than 75cm of soil depth is shallow buried pediplain, a very gentle slope, sandy clay loam and clay loam soils of Pichanur, Pilamedu, Salaiyur, Annur, Irukur, Kaallivalasu, Mettupalauam, Palaviduthi, Dasarapatti and Vellalur soil series are supporting for groundnut cultivation. The pH value of 6.0 to 8.0 |
| S2     | 23,460 Or 35.5 | Chettikapalayam, Pachalapalayam, Othakalmandapam, Vadavalli, Panappatti, Vadagituru, Kondampatti, Arasampalayam, Ramapatnam, R.Ponnapuram, Achipatti, Serviakaranpalaiyam and Sulakkal | Rainfall more than 700mm, growing period of less than 120 days. More than 75cm of soil depth. Palathurai, Somaianur and Attipalayam soils with soil texture of sandy clay and clay loam and severe alkalinity, the pH 8.1 to 8.5. |
| S3     | 12,832 Or 19.4 | Mettupalam, Vadakkipalayam, Kulichettipalayam, Okkilipalayam, Kabilipalaiyam, Puliampatti, Kabilipalaiyam, Puliampatti, Periyanagamam, Chandrapuram, Kappalankari, Devanampalayam, Sirukkalanthai, Papampatti, Edayam Palayam, and Bogampatti | The rainfall 350 to 500 mm, growing period of less than 120 days. 25 to 50cm of soil depth, shallow buried pediments, surface texture of soil like clay, and the pH value of less than 5 to greater than 8.5 |
| N1     | 5,867 Or 8.9 | Temperature various like &lt; 20 and &gt; 40 ºc , Rainfall &gt; 350mm, poorly drained, soil depth &lt; 25 cm, slope &gt; 10% |
| N2     | 1,519 Or 2.3 | Rural and Urban settlement, Industrial site, Tank, Water bodies |</p>
<table>
<thead>
<tr>
<th>Region</th>
<th>Code</th>
<th>Area (ha)</th>
<th>Soil Series</th>
<th>Land Suitability Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SUNFLOWER</strong></td>
<td><strong>S1</strong></td>
<td>15,458 Or 23.4</td>
<td>Kondampatti, Mettubavi, Vadavalli, Sulakkal, Chettipalayam, Myeleripalayam, Arasampalayam, Vadakkipalayam and Poravipalayam</td>
<td>Rainfall 500 to 700 mm, growing period above 90 days, shallow buried pediplain, moderately buried pediplain. Soil depth is above 100 cm, Pilamedu, Somayyanur, Salaiyur, Pichanur, Palavidhuthi, Palathurai, Varapatti, Attipalayam, Ettinayakampatti, Kottayam and Sengalam series, soil series comes under soil texture like clay, sandy clay and sandy loam. The pH varies from 6.5 to greater than 8.</td>
</tr>
<tr>
<td></td>
<td><strong>S2</strong></td>
<td>24,407 Or 36.9</td>
<td>Andipalayam, Puliyampatti, Vaguthampalayam, Kallipatti, Avalappampatti, Pachapalayam, Panappatti, Arisipalayam and Othakalmandapam.</td>
<td>Rainfall between 500 mm to 600 mm, gentle slope deep and shallow buried pediments. Anamalai, Kanjampatti, Irurug, Palathurai, Dasaripatti and Anamalai soil series comes under soil texture like clay, sandy clay and sandy loam. There texture sustaining with good ground water potential. Soil depth ranges between 76 - 100 cm. The pH value of 5.5 to 8.5.</td>
</tr>
<tr>
<td></td>
<td><strong>S3</strong></td>
<td>16,914 Or 25.7</td>
<td>Papampatti, Servakarampalayam, Edayapalayam, Kallapalayam, Pottaiyandipurambu, Sokkanur, Kuthiraiyampalayam, Valukkupara, Thampakovundampudur and Vadapudur.</td>
<td>Less than 600 mm Buried pediplain, shallow buried pediplain, the soil series like Attipalayam, Palathurai, Muttupalayam, Palavidhuthi are distributed, 50 to 75 cm of effective soil depth. The pH value of less than 4.9 and greater than 9</td>
</tr>
<tr>
<td></td>
<td><strong>N1</strong></td>
<td>7702 Or 11.7</td>
<td>Rural and Urban settlement, Industrial site, Tank, Water bodies</td>
<td>Rainfall &lt; 400mm, &lt;16 and &gt;38°C temperature, length of growing period below 70 days, loamy sany and sany texture, pH &gt;9 and below 4.5, slope &gt;10%</td>
</tr>
<tr>
<td></td>
<td><strong>N2</strong></td>
<td>1519 Or 2.3</td>
<td>Rural and Urban settlement, Industrial site, Tank, Water bodies</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>TURMERIC</strong></td>
<td><strong>S1</strong></td>
<td>Kondekavundampalayam, Avalappampatti, Achipatti, Sokkanur, Devampadi valasu, Chantharapuram, Periya Negamam, Eripatti, Appurparalayam, Nallampalli, Sinnanegamam, Kakkadavu, Vaguthampalayam, Devanampalayam and Kappalankarai.</td>
<td>The annual perception of above 1500 mm, good soil drainage, more than 100 cm soil depth, and sandy clay loam and clay loam soils and pH value of 5.0 to 6.0.</td>
</tr>
<tr>
<td></td>
<td><strong>S2</strong></td>
<td>20,082 Or 30.4</td>
<td>Kondekavundampalayam, Avalappampatti, Achipatti, Sokkanur, Devampadi valasu, Chantharapuram, Periya Negamam, Eripatti, Appurparalayam, Nallampalli, Sinnanegamam, Kakkadavu, Vaguthampalayam, Devanampalayam and Kappalankarai.</td>
<td>soil series under this class are the Dasaripatti, Ettinayakampatti, Salaiyur, Kallivalasan and Palathurai. These soil series are good in all aspects. The soil depth is 50 - 75 cm. pH value of 7.1 to 7.5</td>
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<tr>
<td></td>
<td><strong>S3</strong></td>
<td>13,875 Or 21.1</td>
<td>Papampatti, Edayapalayam, Kallapalayam, Pottaiyandipurambu, Sokkanur, Kuthiraiyampalayam, Valukkupara, Thampakovundampudur and Vadapudur.</td>
<td>Less than 600 mm of rainfall, 25 to 50 cm of soil depth, the pH value of less than 5.5 to greater than 8.5 Buried pediplain, shallow buried pediplain, the soil series like Attipalayam, Muttupalayam, Palavidhuthi</td>
</tr>
<tr>
<td></td>
<td><strong>N1</strong></td>
<td>5,624 Or 8.5</td>
<td>Rural and Urban settlement, Industrial site, Tank, Water bodies</td>
<td>Rainfall &lt; 800mm, &lt;10 and &gt;40°C temperature, poorly drained, stony and heavy clay, loamy sany and sany texture, pH &gt;8.5 and below 4, slope &gt;15%</td>
</tr>
<tr>
<td></td>
<td><strong>N2</strong></td>
<td>1,519 Or 2.3</td>
<td>Rural and Urban settlement, Industrial site, Tank, Water bodies</td>
<td></td>
</tr>
<tr>
<td>Land Suitability Classification for Agricultural Development of Koraiyar Watershed - P. Masilamani (2016)</td>
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</tbody>
</table>

**SUGARCANE**

| S1 | 12,045 Or 18.3 | Bogampatti, Kattampatti, Devarayapuram, Kappalankarai, Thoppampatti, Sulakkal and Suleswarampatti | Clayey loam and sandy clay loam with moderately well-drained soils. In deep clayey loamy soil, irrigation interval is 2 to 3 weeks. The soils distributed over the shallow buried pediplain and buried pediplain, like Ettinayampatti, Annur, Attipalayam, and Irugur, have the dept exceeds with pH ranges of 6-8, slope <3%. |

| S2 | 11,767 Or 17.8 | Sirukalandhiai, Kappalankarai, Servakarampalayam, Andipalayam, Periyakalandhiai, Solanur, Kulikapalayam and Kurumbapalayam. | Pediment and buried pediment nature, good ground water potential, pH of the soil is 7.5 - 8.5, less depth (75-100cm) sand and clay texture, slope 3-5%.

| S3 | 22,413 Or 33.9 | Sirukandhai, Eripati, Makkinampatti, Achipatti, Ramapatnam and Mannur. | Moderately buried pediplain, pediplain, less soil depth 50 - 75 cm, the pH value of less than 5 to greater than 8.5, slope 5-8%.

**CHILLES**

| S1 | 16,576 Or 25.1 | Vadavalli, Kattampatti, Vadachitur, Vadakkipalayam, Mettupalayam, Mullupadi, Makkinampatti, Solanur, Varathanur, Kakadavu, Devanampalayam, Andipalayam, Puliyampatti, Vaguthampalayam, Oikkilipalayam, Kabilipalayam, A, Nagoor, Nallampalli and Santhegoundampalayam villages | Shallow buried pediments, pediplain, pediments, soil texture clayloam to clay soil texture comes under soil series like Anamalai, Irugur, Attipalayam, Dasaripatti, Ettinayakkampatti, Kottayam, pH level 6 to 7. The effective soil depth about 75cm, slope<3%.

| S2 | 23,950 Or 36.3 | Bogampatti, Kallapalayam, Malumachampatti and Servakarampalayam | Soil texture like clay, sandyclay and sandyloam, with good ground water potential. Soil depth ranges between 50 - 75cm. shallow buried pediments. The pH value of 7.1 to 8, slope 3-5%.

| S3 | 19,536 Or 29.6 | Papampatti, Devarayapuram, Sulakkal, Servakarampalayam, Edayapalayam, Kallapalayam, Pottayandipuram, Kuthiraiyalampalayam, Valukkuparai, Thampakovandumpudur and Vadapudur | Shallow buried pediplain soil depth which is less than 50 cm, less than rainfall ranges from 500-600mm. Slope 5-10%.

| N1 | 4,419 Or 6.7 | Vadavalli, Kattampatti, Vadachitur, Vadakkipalayam, Mettupalayam, Mullupadi, Makkinampatti, Solanur, Varathanur, Kakadavu, Devanampalayam, Andipalayam, Puliyampatti, Vaguthampalayam, Oikkilipalayam, Kabilipalayam, A, Nagoor, Nallampalli and Santhegoundampalayam villages | Temperature >38°c temperature, very poorly drained, pH >9 slope >15%. Soil depth below 25cm.

<p>| N2 | 1,519 Or 2.3 | Rural and Urban settlement, Industrial site, Tank, Water bodies | Rural and Urban settlement, Industrial site, Tank, Water bodies |</p>
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<tr>
<th></th>
<th>15,962</th>
<th>Or</th>
<th>24.2</th>
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<tbody>
<tr>
<td>S1</td>
<td>Vadachitur, Mettubavi, Zamin Uthukuli, Santhegovundampalayam, Kinathukadavu, Muthur, Kulichettpalayam, Kondekaundampalayam, Avalappampalli, Chantharapuram, Periya Negamam, Sirukandal, Eripatti, Apparangalal, Nallampalli, Sinnanegamam, Kakkadavu, Vaguthalampalayam, Devanampalayam and Kappalankarai</td>
<td>Precipitation of above 1110 mm, more than 125 cm of soil depth, sandy clay loam and clay loam soils texture and the pH value from 6.5 to 7, slope &gt;3%. Good irrigation, buried pediplain and pedieliam. sandy, clay loam, and sandy clay loam of Anamalai, Vellaur, Kottayam and Irugur soil series.</td>
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<td></td>
<td>21,432</td>
<td>Or</td>
<td>32.5</td>
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<tr>
<td>S2</td>
<td>Vadavalli, Sirukandal, Vadakkipalayam, Andipalayam, Puliyampatti, Vaguthalampalayam, Santhegovundampalayam, Arisipalayam and Othakalmandapam.</td>
<td>Rainfall between 900 to 1000 mm, gentle slope deep and shallow buried pediments, soil texture like clay, sandy clay and sandy loam. There texture sustaining with good ground water potential, The pH value of 5.5 to 8.5. Slope 3-5%.</td>
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<tr>
<td></td>
<td>22,313</td>
<td>Or</td>
<td>33.8</td>
</tr>
<tr>
<td>S3</td>
<td>Kinathukadavu, Ramapattanam, Thalakkarai, Bogampatti and Chettipalayam.</td>
<td>Rainfall of 700-900 mm, slope 5 to 15%, poorly drained, soil depth 50-75, temperature various 37-38°C.</td>
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<td></td>
<td>4,774</td>
<td>Or</td>
<td>7.2</td>
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<tr>
<td>N1</td>
<td>Vadavalli, Bogampatti, Arasampalayam, Kattampali, Chettikapalayam, Kondegounampalayam, Unjavalamptami, Zamin Uthukuli, Eripatti, Othakalmandapam.</td>
<td>Annual rainfall exceeds 750-1000 mm in the monsoon periods, it can be grown only as a summer crop. More than 15 cm of soil depth is highly suitable for Onion, shallow buried pediplain, very gentle slope</td>
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<td></td>
<td>68,00</td>
<td>Or</td>
<td>10.3</td>
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<tr>
<td>S1</td>
<td>Kappalankarai, Devanampalayam, Avalaoppampathi, Kondampatti Ramanapattanam, R. Ponnapuram, Achhipatti, Serwaikarampalaiyam, Sulakkal, and Arasampalayam.</td>
<td>Shallow buried pediplain left and right side and gentle slopeing areas, well irrigation, the physical constraint, like rainfall more than 500 mm, growing period of less than 120 days, more than 15 cm of soil depth.</td>
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<td></td>
<td>28,900</td>
<td>Or</td>
<td>43.7</td>
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<tr>
<td>S2</td>
<td>Mettupalayam, Vadakkipalayam, Kulichettpalayam, Okkiliapalayam, Kablipalaiyam, Arisipalayam, Papampatti, Edayar Palayam, and Bogampatti</td>
<td>Rainfall less than 500 mm, the soil depth of 10 cm, shallow buried pediments clay surface texture. pH less than 5 and greater than 8.5.</td>
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<tr>
<td></td>
<td>73,500</td>
<td>Or</td>
<td>11.1</td>
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<td>N1</td>
<td>Malumichampatti, Kallapalayam, Mettubavi, Kattampalli, Poravipalaiyam, Zamin Uthukuli, R. Ponnapuram and Myleripalayam</td>
<td>Temperature various like &gt;40°C, Rainfall &gt;350 mm, poorly drained, soil depth &lt;25 cm, slope &gt;10%.</td>
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<td></td>
<td>18,346</td>
<td>Or</td>
<td>27.8</td>
</tr>
<tr>
<td>S1</td>
<td>Papampatti, Edayar Palayam, Arasampalayam, Kondampatti, Vadasithur, Chettikapalayam, Sirukalanthei, Kappalankarai, Devanampalayam, Maniyalampalayam, Avalappampatti, Nagoor, Boligoundampalayam and Sulakkal.</td>
<td>Temperature requirement is 21-24°C, growing period of less than 150 days. Sengalal, Kottayam, Anamalai soils have sandy to heavy clays. The best soil for tomato is rich loam. pH should range from 5.5 to 7.0.</td>
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<td>28,642</td>
<td>Or</td>
<td>43.4</td>
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<tr>
<td>S2</td>
<td>annual rainfall is more than 750 mm in the eastern portion, growing period less than 100 days. pH 4</td>
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<tr>
<td><strong>COTTON</strong></td>
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<tr>
<td><strong>S1</strong></td>
<td>11,974</td>
<td>Vadavalli, Vadakkipalayam, Ramapatnam, Chandarapuram, Kallapalayam, Kakadavu, Devanampilayam, Andipalayam, Puliypatti, Vaguthampilayam, Oikkilipalayam, Kabilipalayam, A.Nagur, Nallampilai and Santhegoundampilayam</td>
<td>Shallow depth of 25 to 50 cm, Annur, Dasarapatti, Kottayam, Attipalayam and Ettinayakkampatti soils are having the soil textures of clay, shallow buried pediplain, the pH value of less than 5 and above 8.5</td>
</tr>
<tr>
<td><strong>S2</strong></td>
<td>20,109</td>
<td>Vadavalli, Vadakkipalayam, Andipalayam, Vaguthampilayam, Oikkilipalayam, kabilipalayam, A.Nagoor, Ramapatnam, Mannur, Muthur, Kinathukadavu, Sokkanur, Kuthiraiyalampilayam, Arasampilayam, Solavampilayam, Kothavadi, Valukkuparai, Thambakovundanpudur, and Kodangipalayam</td>
<td>Rainfall between 450 to 600 mm, gentle slope deep and shallow buried pediments, soil texture like clay, sandy clay and sandyloam. These texture sustaining with good ground water potential, Soil depth ranges from 60 – 100 cm. The pH value of 7.6 - 8.</td>
</tr>
<tr>
<td><strong>S3</strong></td>
<td>18,677</td>
<td>Papampatti, Servakarampalayam, Edayapalayam, Kallapalayam, Malumachampatti, Othakalmandapam and Chettipalayam</td>
<td>Rainfall is less than 700, shallow buried pediplain, the soil series like Attipalayam, Palathurai, Muttupalayam, Palaviduthi with, 30 to 60 cm of soil depth.</td>
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<tr>
<td><strong>MANGO</strong></td>
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<tr>
<td><strong>S1</strong></td>
<td>18,536</td>
<td>Kallipatti, Varathanur, Sirukalandhai, Nallampilai, Kattampatti, Devarayapuram, Kappalanarkai, Thoppampatti, Sulakbal and Suleswarampilai</td>
<td>Shallow depth, poor drainability, more alkaline and acidic, low CEC and poor groundwater potential, very less organic matter content and less rainfall of 700cm, pH&lt;4 and &gt;9.</td>
</tr>
<tr>
<td><strong>S2</strong></td>
<td>14,918</td>
<td>Vadavalli, Vadakkipalayam, Andipalayam, Puliypatti, Vaguthampilayam, Santhegoundampilayam, Arisipalayam and Othakalmandapam</td>
<td>Shallow depth, poor drainability, more alkaline and acidic, low CEC and poor groundwater potential, very less organic matter content and less rainfall of 700cm, pH&lt;4 and &gt;9.</td>
</tr>
<tr>
<td><strong>S3</strong></td>
<td>23,851</td>
<td>Kinathukadavu, Ramapatnam, Thalakkarai, Bogampatti and Chettipalayam.</td>
<td>Shallow depth, poor drainability, more alkaline and acidic, low CEC and poor groundwater potential, very less organic matter content and less rainfall of 700cm, pH&lt;4 and &gt;9.</td>
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<tr>
<td><strong>N1</strong></td>
<td>13,721</td>
<td>Vadavalli, Vadakkipalayam, Ramapatnam, Chandarapuram, Kallalapalayam, Kakadavu, Devanampilayam, Andipalayam, Puliypatti, Vaguthampilayam, Oikkilipalayam, Kabilipalayam, A.Nagur, Nallampilai and Santhegoundampilayam</td>
<td>Temperature various like 22 to &gt;36°C, Rainfall &lt;500mm, poorly drained, soil depth &lt;25cm, slope &gt;10%.</td>
</tr>
<tr>
<td><strong>N2</strong></td>
<td>1,519</td>
<td>Rural and Urban settlement, Industrial site, Tank, Water bodies.</td>
<td>Rural and Urban settlement, Industrial site, Tank, Water bodies.</td>
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<tr>
<td><strong>N1</strong></td>
<td>7,176</td>
<td>Vadavalli, Vadakkipalayam, Ramapatnam, Chandarapuram, Kallalapalayam, Kakadavu, Devanampilayam, Andipalayam, Puliypatti, Vaguthampilayam, Oikkilipalayam, Kabilipalayam, A.Nagur, Nallampilai and Santhegoundampilayam</td>
<td>Temperature various like 20 to 24°C, growing period, 120 days, very poor drainage, Rainfall &lt;500mm, soil depth &lt;75cm, slope &gt;10%.</td>
</tr>
<tr>
<td><strong>N2</strong></td>
<td>1,519</td>
<td>Rural and Urban settlement, Industrial site, Tank, Water bodies.</td>
<td>Rural and Urban settlement, Industrial site, Tank, Water bodies.</td>
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5.4 LAND SUITABILITY FOR PADDY

Paddy is the staple food for more than 60 per cent of the world's population. About 90 per cent of paddy grown in the world is produced and consumed in the Asia region. Paddy is the crop of tropical climate. However, it is grown successfully in humid regions of subtropics and temperate climate. It is grown in wide variety of climate-soil-hydrological regimes. High temperatures (35 – 40 °C) during the vegetative growth stage can result in reduced tillering. The average temperature required throughout the life period of the crop ranges from 21 to 35°C. The water requirement for land preparation ranges from 200 to 400 mm depending on the soils. It is grown in clay, clayloam and sandy clay soils and in very gentle slopes (0-1%) of pediplain areas with imperfect and poor drainability. Above 1000 mm of rainfall is well suited for paddy cultivation. Gravel surface should have < 3 cm and sub surface less than 15 cm with pH between 5.5 and CEC (Cation Exchange Capacity) should be > 20 are preferable for paddy cultivation. These physical conditions set the land under highly suitable class of S1, which can ensure for more yield. This kind of land is found especially in the command areas of the watershed.

**Highly Suitable Land for Paddy (S1)**: Optimum growth of Paddy can be achieved with physical conditions that are conductive. The annual perception of above 1110 mm, imperfectly drained, dry season less than three months, more than 75 cm of soil depth, surface texture of soil like sandy clay loam and clay loam soils and the pH value of 5.5 to 6.5. The area under this class is about 14,240 ha or 21.6 percent. This class is mainly found in the south eastern part of the study area due to canal irrigation, buried pediplain and pediplian. Accordingly sandy, clay loam, and sandy clay loam of Anamalai, Vellaur, Kottayam and Irugur soil series support this crop. The above said requirements are fulfilled in the villages of Zamin Uthukuli, Santhegovundampalayam, Kulichettipalayam, Kondekavundampalayam, Avalappampatti, Chantharapuram, Periya Negamam, Sirukalandhai, Eripatti, Aupparpalayam, Nallampalli,
Source: Compiled by Author

Legend
- S1 (Highly Suitable)
- S2 (Moderately Suitable)
- S3 (Marginally Suitable)
- N1 (Currently Not Suitable)
- N2 (Permanently Not Suitable)

Fig. 5.1
Sinnanegamam, Kakkadavu, Vaguthampalayam, Devanampalayam and Kappalankarai.

**Moderately Suitable Land for Paddy (S2):** The lands adjacent to the class S1 are moderately suitable for Paddy. Moderately Buried pediplain and shallow buried pediplain, where the soil series are changing. The suitable soil series under this class are the Dasaripatti, Ettinayakampatti, Salaiyur, Kallivalasu and Palathurai. These soil series are good in all aspects where the coarse texture and low fertility content reaches only moderately suitable. The land under this class covers 20,119 ha of area or 30.5% of total area of the watershed (Fig 5.1). This class is mainly found in the north east, south east and south western part of the study area. The physical constraint, like rainfall more than 900-1110 mm is moderately suitable. More than 10-20 cm of soil depth is moderately suitable for Paddy, pH value of 4.5 to 7.5 is the moderate suitable. The above said requirements are fulfilled in part of Kappalankarai, Sirukalandhai, Kollapatti, Unjavelampatti, Kodangipalayam, Neluthukuli and Valukkuparai.

**Marginally Suitable Land for Paddy (S3):** Marginally suitable land is mainly found in the north and north western, south western part of the Koraiyar watershed. It covers almost 22,035 ha or 33.4%. 750-900 mm of rainfall is marginally suitable for growing paddy. Other food crops are also mostly practiced here. Buried pediplain, the soil series like Palaviduthi, Annur and Varapatti are distributed about 25 to 50 cm of soil depth. The pH value of 7.6 to 8.5 is marginally suitable. Compared to S1, S2 marginally suitable is dominant in the study area. They are highly distributed in Papampatti, Chettipalayam, Edayapalayam, Kallapalayam, Pottaiyandipurambu, Sokkanur, Part of Ramapatnam, Thampakovundampudur.
5.5 LAND SUITABILITY FOR SORGHUM

Sorghum is called as camel among crops as it can withstand drought greatly. Millions of people in Africa and Asia depend on Sorghum as the staple food. It comes third in the major food grain crops of our country. It provides carbohydrates to 250 million people residing in the semi-arid zones of the peninsular and central India. It is preferred for its sumptuousness and nutrient value to the rural population in southern India. In addition, the fodder is fed to millions of animals, which provide milk and meat. It is also used as industrial raw material in U.S.A. and other developed countries. The area under its cultivation has hovered around 16 m ha. In fact, greater production efficiency per unit area has contributed to the increased sorghum harvest, from 5 M tones in 1970 to 8 MT in mid–nineties in the country.

Sorghum is grown in two main seasons, the rainy (Kharif) and post-rainy (Rabi). The kharif season begins with pre-monsoon rains that are initiated with the preliminary deep plugging or dishing. Kharif sorghum is shown during June or July and harvested by October. It is predominantly rain fed, with most rainy days occurring between July and September. Preferable to use drought tolerant genotypes, because rains are intermittent. A crop season receiving about 600 mm of rain or slightly more is ideal for the optimum crop performance. Over 90% of the Indian sorghum is grown between 12° to 26° N and 72° to 80° E comprising central and peninsular India. Temperature during the season fluctuates between 27° to 35° C. Early planting helps escape disease and pests. It permits the completion of growing period within rainy season. Light textured Alfii soil, needs higher rates of fertilizer and supplemental irrigation for a good crop stand. Variety soils with better caution exchange capacity, higher nutrient status and water retention support good crop.

High rainfall at heading stage reduces pollination, which results in poor yield. There are varieties and hybrids available to mitigate photo sensitiveness and drought (mid and terminal) and to fit into various cropping system. The
Koraiyar Watershed

SORGHUM

Legend

- **S1 (Highly Suitable)**
- **S2 (Moderately Suitable)**
- **S3 (Marginally Suitable)**
- **N1 (Currently Not Suitable)**
- **N2 (Permanently Not Suitable)**

Source: Compiled by Author

Fig. 5.2
optimum temperature range for growth is 25-30°C. The temperature less than 15°C affect adversely the crop growth. Humus-rich soils with clay to clay loam texture having pH 6-8.5 are best suited. Block cotton soils of central India are considered the best soils for sorghum.

**Highly suitable land for Sorghum (S1)**: Shallow moderate buried and deep buried pediment areas are highly suitable with the support irrigation. Optimum growth can be achieved with physical conditions that are conducive, the physical factors, like rainfall 650 mm to 850 mm, growing period of less than 120 days, more than 100 cm of soil depth are highly suitable for sorghum. Apart from the surface texture sandy clay loam to clay loam, with good aeration and well drainability. They found in Annur, Irugur, Kallivalasu, Mettupalayam, Palaviduthi, Pichanur, Pilamedu, Salaiyur, Dasaripatti and Vellalur soils. All these positive characters support Sorghum under S1 class. In the study area under the class of S1 accounts for 10,061 ha or 15.3 %. Further the pH value of 6.0 to 8.0 also supports for higher suitability. It’s found in the eastern part mainly covering the villages of southwest and south eastern part of the study area like Shinnanegamam, Solanur, Varathanur, Suleswarampatti, Servakarampalayam and Pottaiyandipurambu.

**Moderately suitable land for Sorghum (S2)**: The land under this class covers 12,100 ha or 18.3 % of the total study area. (Fig 5.2). The land under this class is seen adjacent to the S1 class, mainly in the south eastern part of the study with the villages like Bogampatti, Andipalayam, Vaguthampalayam, Santhegoundampalayam, Arisipalayam and Othakalmandapam. The less rainfall of 550 - 650mm, the soil depth 75- 100 cm are the major draw back that brought down the class from S1 to S2 though the areas have the positive factors like shallow buried pediplain, moderately buried pediplain, with surface texture of sandy clay, found in Varapatti and Kattampatti soil series. Further the higher pH value of 8.1 to 8.5 also decreases its conduciveness and hence these areas are found to be suitable for S2 class.
**Marginally Suitable land for Sorghum (S3):** Rainfall 350 to 500 mm, very shallow depth of soil varies from 30 to 50cm, clay surface texture of soil of Attipalayam, Ettinayakampatti, Kottayam and Sengalam soil series and pH value of less than 5 to greater than 8.5. S3 are the major physical constraints for S3 class here. It is mainly found in the centre and north eastern part of the koraiyar watershed like Chettipalayam, Malumachampatti, Myeleripalayam, Arasampalayam, Vadakkipalayam and Ramapatnam. It occupies an area of 30,350 ha or 46 percent of land is marginally suitable for Sorghum.

### 5.6 LAND SUITABILITY FOR MAIZE

Maize is one of the most important cereals of the world. Physiologically maize is one of the most efficient crop species domesticated by man with high yield potential. It is also called "queen of cereals". Maize is a warm weather plant. It grows well from sea level to 3000 m altitudes. Kharif is the main growing season in Northern India. In South, however, Maize may be sown at any time from April to October, as the climate is warm even in the winter. The most suitable temperature for germination is 21°C and for growth 32 °C. Maize is very sensitive to stagnant water, particularly during its early stages of growth. Maize is best adapted to well drain sandy loam to silt loam soils. Proper drainage is a must for the success of the crop especially during /charif season. Maize will not thrive on heavy clays, especially in low lands. It can be grown successfully in soils where pH ranges from 5.5 to 7.5. In general, the lands irrigated by wells are supporting to grow maize. Owing to more summer rainfall in this watershed, it is also cultivated as dry crop. Chemical fertilisers are highly utilised.

**Highly Suitable Land for Maize (S1):** The annual precipitation between 900 - 1000 mm, the length of growing period is more than 100 days, well drained soil drainage, the effective soil depth is more than 75 cm, the pH value of 5.5 to 7.5. The area under this class is about 16,631 ha or 25.2 percent. This class is mainly found in which is the deep buried pediplain supporting by canal irrigation. Accordingly sandy, Clay loam, and Sandy clay loam of Anamalai, Vellaur,
Fig. 5.3

Koraiyar Watershed

MAIZE

Legend
- Green: S1 (Highly Suitable)
- Light Green: S2 (Moderately Suitable)
- Yellow: S3 (Marginally Suitable)
- Orange: N1 (Currently Not Suitable)
- Red: N2 (Permanently Not Suitable)

Source: Compiled by Author
Kottayam and Irugur soil series are supporting to this crop. The above said requirements are fulfilled in Vadachitur, Mettubavi, Malumachampatti, Servakarampalayam, Zamin Uthukuli, Santhegovundampalayam, Kinathukadavu, Muthur, Kulichettipalayam, Kondekavundampalayam, Avalappampatti, Chantharapuram, Periya Negamam, Sirukalandhai, Eripatti, Aupparpalayam, Nallampalli, Sinnanegamam, Kakkadavu, Vaguthampalayam, Devanampalayam and Kappalankarai.

**Moderately Suitable Land for Maize (S2)**: The land under this class covers 19036 ha or 28.9% (Fig. 5.3). They exist adjacent to the S1 class, mainly occur in the south, south eastern and south western part of the study area covering Vadavalli, Vadakkipalayam, Andipalayam, Puliyampatti, Vaguthampalayam, Oikkilikapalayam, kabilipalayam, A.Nagur, Nallampalli and Santhegoundampalayam villages. The physical factors rainfall between 750 to 900 mm, gentle slope deep, and shallow buried pediments are constraints which brought it down from S1 class. Among 22 soil series, the soils suitable for S2 class are Pilamedu, Somayyanur, Salaiyur, Pichanur, Palavidhuthi, Palathurai, Varapatti and Sengalam series with the soil texture like clay, sandy clay and sandy loam. The texture sustaining with good ground water potential but moderate and imperfect drainability affect the moisture availability and slight erosion. Soil depth ranges between 50 and 75cm, pH value of 5 to 9, brought the area under moderately suitable for Maize. Failure of monsoon rains highly affect the production.

**Marginally Suitable Land for Maize (S3)**: About 32.5% or 21458 ha of land are marginally suitable for maize. Attipalayam, Palathurai, Mettupalayam, Palaviduthi are the soils of the area. It is mainly found in the north and north western part of the Koraiyar watershed, covering the villages like Papampatti, Servakarampalayam, Edayapalayam, Kallapalayam, Pottaiyandipurambu, Kuthiraiyalampalayam, Valukkuparai, Thampakovundampudur and Vadapudur. Owing to less rainfall soil limitations like less depth between 25 and 50 cm,
alkalic and alkaline nature reasons to bring this land and under S3 class for maize.

5.7 LAND SUITABILITY FOR RAGI/ MILLETS

This crop is cultivated up to an altitude of 2100 m. Crop is generally self-fertilized, photo insensitive and can be grown throughout the year. It is the main cereal crop for monsoon season in some hilly areas of Tamil Nadu state. It is grown both for grain and forage. In the northern hills of Tamil Nadu, grains are consumed mostly in the form of Chapaties and in South India grains are consumed in many preparations like cakes, puddings sweets etc. It is recommended diet for diabetic patients.

Ragi, Millets and Sorghum are poor peoples stable and hence marginal and small farmers grow them, invariably. They are often drought resistant, hardy and nutritious even more than paddy.

At present, Ragi price level increases compared to rice like 1 Kg rice is Rs 50, at the same time 1 Kg Ragi is Rs 85. Nobody is interested in cultivating ragi due to farmers interest in cultivating daily income oriented crops like tomato, chillies and banana. Ragi and millet can be grown throughout the year if temperature is > 15 °c. It is a heat loving plant. The minimum temperature for it germination, is 8-10°C. The minimum annual rainfall requirement for successful cultivation is 460 mm, but the crop can be grown in higher rainfall area also. The plant is adaptable from sea level to an altitude of 1000 M.

Highly Suitable Land for Ragi / Millets (S1) : The requirement for ragi and millets are medium rainfall of 750- 900 mm. The crop is however drought resistant. The temperature ranges for their growth is 28° – 34° c, millets and ragi grow in loamy to clay soils, lighter and heavier texture can be tolerated. The soil depth should be above 75cm. Well drained, aerated soils are most suitable. Water- logging is not tolerated and pH may vary from 5.5- 7.5. Slope must be flat to gentle. The geomorphology must be shallow buried pediplain, moderately
Koraiyar Watershed

Fig. 5.4

Legend
- S1 (Highly Suitable)
- S2 (Moderately Suitable)
- S3 (Marginally Suitable)
- N1 (Currently Not Suitable)
- N2 (Permanently Not Suitable)

Source: Compiled by Author
Legend
- S1 (Highly Suitable)
- S2 (Moderately Suitable)
- S3 (Marginally Suitable)
- N1 (Currently Not Suitable)
- N2 (Permanently Not Suitable)

Source: Compiled by Author

Fig. 5.5
buried pediplain. Pelamedu, Somayyanur, Salaiyur, Pichanur, Palavidhuthi, Palathurai, Varapatti, Attipalayam, Ettinayakampatti, Kottayam and Sengalam soil series come under soil texture like clay, sandyclay and sandyloam. It is mainly found in the north eastern and south eastern part of the koraiyar watershed like Kakadavu, Vaguthampalayam, Mettubavi, Vadachitur, Suleswarampatti and R. Ponnapuram. It occupies an area of 5990 ha or 9 percent of the area is highly suitable for ragi and millets.

**Moderately Suitable Land for Ragi / Millets (S2)**: The suitability of land under this class covers 9,488 ha or 14.4 % (Fig. 5.4 and 5.5). This class of land is bordering the S1 class, mainly occur in the north east, in the vicinity of Kothavadi river and few patches along the southern boundary covering the villages of Andipalayam, Puliyampatti, Vaguthampalayam, Santhegoundampalayam, Kallipatti, Avalappampatti, Pachapalayam, Panappatti, Malumachampatti and Potayandipurambu. The physical constraint, like rainfall between 600 to 750 mm, gentle slope deep and shallow buried pediments are the factors which brought it under moderately suitable. The soils suitable for S2 class lands are Anamalai, Kanjampatti, Mettupalayam, Irugur, Palathurai and Dasaripatti, with the soil texture of clay, sandyclay and sandyloam and moderate Soil depth of 51 - 75cm, pH value of 4.5 to 8.5.

**Marginally Suitable Land for Ragi / Millets (S3)**

Marginally suitable land is mainly found throughout the study area. It covers almost 30,463 ha which accounts for 46.2 %. The rainfall ranges from 600 to 750 mm for growing ragi and millets, other food crops are also mostly practiced here. The geomorphology of the study area is buried pediplain and shallow buried pediplain. The soil series like Attipalayam, Anamalai, Palathurai, Mettupalayam and Palaviduthi are distributed in the soil textures of sandy clay and clayloamy, 25- 50 cm of effective soil depth is marginally suitable, the pH value is less than 4 or greater than 9.5. They are mainly distributed in Papampatti, Servakarampalayam, Edayapalayam, Kallapalayam,
Pottaiyandipurambu, Sokkanur, Ramapatnam, Kuthiraiyalampalayam, Valukkuparai, Thampakovundampudur and Vadapudur.

5.8 LAND SUITABILITY FOR BLACK GRAM / HORSE GRAM

Gram requires cool climate for growth and high temperature for maturity. The optimum temperature ranges from 15 to 25 °C. Severe cold and frost are deleterious to growth. Frost at the time of flowering causes flower to drop. Low temperature at germination reduces percentage of germination. Heavy rains during germination and flowering, and hailstorms at and after flowering severely damage the crop. The plant requires cloud-free days for normal growth. It can be grown in areas receiving annual rainfall of 600-1000 mm. Waterlogging at any stage of growth may destroy the crop. It is a hardy crop and can be grown on a wide range of soils from medium to heavy black soils, mixed red and black soils or in alluvial soils. The well-drained and aerated soils produces good seedbed. The pH ranges between 5.5 and 8.6. The optimum pH is 5.7 to 7.2. The soil should be well drained within pH range of 6.0-8.0.

Highly Suitable Land for Black gram / Horse gram (S1) : The physical conditions favourable for this class are rainfall 800 to 1000 mm, growing period above 100 days, the areas of shallow buried pediplain, moderately buried pediplain and soil depth above 100 cm. Pilamedu, Somayyanur, Salaiyur, Pichanur, Palavidhuthi, Palathurai, Varapatti, Attipalayam, Ettinayakampatti, Kottayam and Sengalam series, soil series come under soil texture like clay, sandy clay and sandy loam. The pH varies from 6 to 7.5. Which is mainly found in the south eastern part of the Koraiyar watershed covering the villages like Kondampatti, Pottaiyandipurambu, Avalappampatti, Kakadavu, Solanur, Mettubavi, Kallalalayam and Suleswarampatti, it occupies an area of 13,267 ha or 20.1 percent. It is highly suitable for black gram and horse gram.
Fig. 5.6
**Moderately Suitable Land for Black gram / Horse gram (S2)**: The land under this class covers 30,319 ha or 45.9% (Fig. 5.6 and 5.7) of the total area under study. This class of land is adjacent to the S1 class, mainly occur in the south, south eastern and south western part of the study area covering villages of Vadavalli, Vadakkipalayam, Valukupparai, Andipalayam, Puliyampatti, Vaguthampalayam, Santhegoundampalayam, Arisipalayam and Othakalmandapam. The physical constraint, like rainfall between 600 to 800 mm, gentle slope deep and shallow buried pediments are moderately suitable lands. Among 22 soil series, the soils suitable for S2 class like Pilamedu, Somayyanur, Salaiyur, Pichanur, Palavidhuthi, Palathurai, Varapatti, Sengalam soil series comes under soil texture like clay, sandyclay and sandyloam. There the texture is sustained with good ground water potential but moderate and imperfect drainability affect the moisture availability in these areas that may lead to slight erosion. Soil depth ranges between 51- 75cm. The pH value of 5.5 to 8. So it is moderately suitable for gram like black gram and horse grams.

**Marginally Suitable Land for Black gram / Horse gram (S3)**: Marginally suitable land is mainly found in the north and north western part of the Koraiyar watershed. Its covers almost 15,749 ha or 23.9%. The rainfall varies from 400-600 mm, temperature varies from 15°C – 30°C, marginally suitable for growing black gram and horse gram, other food crops are also mostly practiced here. The geomorphology condition is buried pediplain, shallow buried pediplain. The soil series like Attipalayam, Palathurai, Mettupalayam, Palaviduthi are distributed. 25 to 50 cm of effective soil depth is marginally suitable, The pH value of less than 5.4 and more than 9, They are marginally distributed in Papampatti, Servakarampalayam, Edayapalayam, Kallapalayam, Pottaiyandipurambu, Sokkanur, Kuthiraiyalampalayam, Valukkuparai, Thampakovundampudur and Vadapudur.
HORSE GRAM

Legend

- **S1 (Highly Suitable)**
- **S2 (Moderately Suitable)**
- **S3 (Marginally Suitable)**
- **N1 (Currently Not Suitable)**
- **N2 (Permanently Not Suitable)**

Source: Compiled by Author

Fig. 5.7
5.9 LAND SUITABILITY FOR COCONUT

It is one of the richest sources of edible oil (67%) in the country and contributes to the extent of 7% to total edible oil production in India. Coconut not only supplies food, drink and shelter but also provides raw material for a number of industries. It is grown extensively in numerous islands and also in the humid coastal tracts of tropical countries.

Coconut can be successfully grown at an elevations of 500 - 1000 M above MSL in areas near the equator, with 27°C mean annual temperature and 1000-1500 mm average annual rainfall evenly distributed throughout the year. Temperature less than 21°C and extreme fluctuation harm vigorous growth. In addition, the coconut palm also requires plenty of sunlight and does not grow well under shade or in cloud weather. Coconut is growing under diverse soil condition ranging from coastal sandy soil to clayey soil, ill drained low lying area to well drained hill slopes, strongly acidic peaty soils to mildly alkaline calcareous soil. It comes up well on a wide range of soils including coastal sandy soil, lateritic soil, coastal deltaic and river alluvium, loams, medium black soil, reclaimed marshy soil and coral soil. Present of water table within 3m, good water-holding capacity, proper drainage and absence of rock or hard substratum within 1m of the surface are desirable.

Highly Suitable Land for Coconut (S1) : Optimum growth of coconut can be achieved with physical conditions that are conductive. The annual rainfall of above 900 mm, good soil drainage, dry season less than three months, more than 100 cm of soil depth, surface texture of soil like sandy clay loam and clay loam and the pH value of 5.1 to 6.5 are essential to make the land S1. The area under this class is about 24239 ha or 36.7 percent of the total area of the agricultural land (Fig 5.8). This class is mainly found in the south eastern part of the study area due to assumed water in canal. Further the pediplain land is under deep pediplian. Accordingly sandy, Clay loam, and Sandy clay loam of Anamalai, Vellaur and Kottayam soil series support this crop. The above said requirements
KOVAR CORONUT

Legend
- S1 (Highly Suitable)
- S2 (Moderately Suitable)
- S3 (Marginally Suitable)
- N1 (Currently Not Suitable)
- N2 (Permanently Not Suitable)

Source: Compiled by Author

Fig. 5.8
are fulfilled in Kondekavundampalayam, Avalappampatti, Chantharapuram, Periya Negamam, Sirukalandhai, Eripatti, Aupparpalayam, Nallampalli, Sinnanegamam, Kakkadavu, Vaguthampalayam, Devanampalayam and Kappalankarai.

**Moderately Suitable Land for Coconut (S2):** The lands adjacent to the class S1 are moderately suitable for coconut. The suitable soil series under this class are the Dasaripatti, Ettinayakampatti, Salaiyur, Kallivalasu and Palathurai. These soil series are good in all aspects where the coarse texture and slightly low fertility content reaches only moderately suitable. The land under this class covers 26210 ha or area or 39.8%. This class is mainly found in the north eastern and south western part of the study area. The physical constraint, like rainfall more than 1000 mm is moderately suitable. Sandy clay soil is moderately suitable. The pH value of 7.5 to 8.5 is slightly higher which brought under the moderately suitable class.

**Marginally Suitable land for Coconut (S3):** Marginally suitable land is mainly found in the north and north western part of the Koraiyar watershed. Its covers almost 12,312 ha or (18.6 %). Less than 600 mm of rainfall is slightly insufficient and hence this area is brought under marginally suitable. Other food crops are also mostly practiced here. Buried pediplain, the soil series like Palaviduthi, Annur and Varapatti soils have the depth of 50 to 75 cm and pH value of less than 5 and < 8.5 are the factors that brought the area under marginally suitable. They are prominent in Papampatti, Edayapalayam, Kallapalayam, Pottaiyandipurambu, Sokkanur, Kythiraiyalampalayam, Valukkuparai, Thampakovundampudur and Vadapudur.

5.10 **LAND SUITABILITY FOR GROUNDNUT**

Groundnut is an important source of oil and protein to a larger portion of the population in Asia, Africa and Americas. Groundnut is grown in all the tropical and subtropical countries of the world. It is predominantly a crop of
Legend

- S1 (Highly Suitable)
- S2 (Moderately Suitable)
- S3 ( Marginally Suitable)
- N1 (Currently Not Suitable)
- N2 (Permanently Not Suitable)

Source: Compiled by Author

Fig. 5.9
tropical and subtropical climates. It’s basically a day neutrals plant. It comes up well in tracts receiving 625-1250 mm of fairly well distributed rainfall. Heavy rains offer no advantage. The crop requires intermittent light showers for profuse flowering coupled with bright sunshine for further development of flower. The optimum reproductive growth is observed at the temperature between 24 °C and 27°. A temperature range of 25-30°appears to be optimum; flower production is adversely affected at the temperature above 35°. Loose / friable soils facilities good development.

Groundnut is an oilseed and a cash crop. It is a short terms, four month crop. Once it was a dry crop. Now it is grown as an irrigated crop and several hybrid varieties are in use. It is a crop which is grown in marginal and small holdings as well as medium and large holding, by poor and rich farmers alike. Groundnut is used for home consumption, for the oil extracted from the seeds is used as cooking medium. Traditionally, the Indian households have used groundnut oil for cooking food, although at present there are different oil, which are promoted for their low fat or cholesterol content.

Therefore, sandy and loamy soils with fairly rich in organic matter are extremely suitable. Groundnut is grown on many soil types such as black cotton soils and gravelly red soils. The water logging, alkalinity and soils poor in lime greatly affect the pod filling.

**Highly Suitable Land for Groundnut (S1) :** It accounts for 22,322 ha or 33.9 per cent (Fig 5.9) of the study area are highly suitable. The physical constraints are like rainfall 700 mm to 1000 mm, growing period of less than 120 days. More than 75cm of soil depth, shallow burried pediplain, a very gentle slope are highly suitable for groundnut. Accordingly sandy clay loam and clay loam soils of Pichanur, Pilamedu, Salaiyur, Annur, Irukur, Kaallivalasu, Mettupalauam, Palaviduthi, Dasarapatti and Vellalur soil series support groundnut cultivation. The pH value is 6.0 to 8.0. The extent of cultivation in
this class is mainly found in eastern part, southwestern and south eastern part of the study area. The above said requirements are seen in the well irrigated areas of Kattampatti, Chettikapalayam, Kondegoundampalayam, Unjavalampatti, Zamin Uthukuli, Servaikaranpalaiyam, Othakalmandapam and Myleripalayam. The above villages are highly suitable for groundnut cultivation.

**Moderately Suitable Land for Groundnut (S2) :** The land under this class covers 23,460 ha or 35.5 per cent of the total geographical area of the watershed. This class of S1 is found mainly in the upper part of the study area. The majority of the south western part of the study area shallow buried pediplain. The physical constraints are rainfall of more than 700mm, growing period of less than 120 days and more than 75cm of soil depth. These soils which are moderately suitable for groundnut are Palathurai, Somaiyanur and Attipalayam soils with soil texture of sandy clay and clay loam and severe alkalinity, the pH is 8.1 to 8.5. Chettikapalayam, Pachapalayam, Othakalmandapam, Vadavalli, Panapatti, Vadachitur, Kondampatti, Arasampalayam. Ramanpatnam, R.Ponnapuram, Achipatti, Servaikaranpalaiyam and Sulakkal in the south western part of the study area fall under S2 class for groundnut cultivation.

**Marginally Suitable Land for Groundnut (S3) :** S3 land is mainly found in the centre and north eastern part of the Koraiyar watershed. The area under marginally suitable for groundnut cultivation are Mettupalam, Vadakkipalayam, Kulichettipalayam, Okkilibalayam, Kabilipalaiyam, Puliampatti, Kabilipalaiyam, Puliampatti, Periyaganamam, Chandrapuram, Kappalankari, Devanampalayam, Sirukkalanthai in southern part and Papampatti, Edayam Palayam, and Bogampatti in the northwestern part occupy an area of 12832 ha or 19.4 per cent. The rainfall 350 to 500 mm, growing period of less than 120 days. 25 to 50cm of soil depth, shallow buried pediments, surface texture of soil like clay, and the pH value of less than 5 to greater than 8.5 are the major constraints which brought the area under S3 class for groundnut cultivation.
5.11 LAND SUITABILITY FOR SUNFLOWER

Sunflower is popularly known as Surajmukhi, it’s a commercial crop. It is an important recent addition to the list of edible oil seed crop in India. It is a short duration crop, annual, photo-insensitive crop with wide adaptability and drought tolerance. The crop generally requires 90-100 days to mature. There are some new varieties, which matures within 75 days. Its oil has an ideal combination of saturated and polyunsaturated fatty acids. The oil is rich in linoleic fatty acid (66.0%) and hence preferred for the reduction of high serum cholesterol level. The oil cake contains higher amount of protein (40- 44%) and balanced amino acids. Hence it is used as cattle and poultry feed. For optimal growth of sunflower, the suitability requirement is 500-700mm. The crop thrives well in a variety of soils. It performs well on neutral and well drained light soil as well as heavy soils. It performs better than groundnut in the heavy black cotton soils of Tamil Nadu. Sunflower grows well on neutral to moderately alkaline (pH 6.5-8.0) soils. The highly acid and saline soils are not suitable.

Highly Suitable Land for Sunflower (S1) : The physical factors are rainfall 500 to 700 mm, growing period above 90 days, shallow buried pediplain, moderately buried pediplain.The soil depth is above 100 cm, Pilamedu, Somayyanur, Salaiyur, Pichanur, Palavidhuthi, Palathurai, Varapatti, Attipalayam, Ettinayakampatti, Kottayam and Sengalam series, soil series comes under soil texture like clay, sandy clay and sandy loam. The pH varies from 6.5 to greater than 8. It is mainly found in the centre and north eastern part of the koraiyar watershed like Kondampatti, Mettubavi, Vadavalli, Sulakkal, Chettipalayam, Myeleripalayam, Arasampilayam, Vadakkipalayam and Poravipalayam. It occupies an area of 15.458 ha or 23.4 percent is highly suitable for Sunflower.

Moderately Suitable Land for Sunflower (S2) : The land under this class covers 24,407 ha or 36.9 % of the study area. (Fig. 5.10). This class of land is adjacent to the S1 class, mainly occur in the south, south eastern and south western part of the study area, like Andipalayam, Puliyampatti, Vaguthampalayam,
Fig. 5.10

Koraiyar Watershed

SUNFLOWER

Legend
- S1 (Highly Suitable)
- S2 (Moderately Suitable)
- S3 (Marginally Suitable)
- N1 (Currently Not Suitable)
- N2 (Permanently Not Suitable)

Source: Compiled by Author
Santhegoundampalayam, Kallipatti, Avalappampatti, Pachapalayam, Panappatti, Arisipalayam and Othakalmandapam. The physical constraints are rainfall between 500 mm to 600 mm, gentle slope deep and shallow buried pediments. Among 22 soil series, the soils suitable for S2 class like Kanjampatti, Irugur, Palathurai, Dasaripatti and Anamalai soil series come under soil texture like clay, sandyclay and sandyloam. There texture sustaining with good ground water potential but moderate and imperfect drainability affect the moisture availability in these areas that may lead to slight erosion. Soil depth ranges between 76 - 100cm. The pH value is of 5.5 to 8.5. So it’s moderately suitable for sunflower.

**Marginally Suitable Land for Sunflower (S3)**: Marginally suitable land is mainly found in the north and north western part of the Koraiyar watershed. Its covers almost 16,914 ha or 25.7 %. Less than 600 mm of rainfall is marginally suitable for growing Sunflower, other food crops are mostly practiced here. Buried pediplain, shallow buried pediplain, the soil series like Attipalayam, Palathurai, Mettupalayam, Palaviduthi are distributed, 50 to 75 cm of effective soil depth are marginally suitable for Sunflower, The pH value of less than 4.9 and greater than 9 is marginally suitability for sunflower. The area under marginally suitable for sunflower is distributed in Papampatti, Servakarampalayam, Edayapalayam, Kallapalayam, Pottaiyandipurambu, Sokkanur, Kuthiraiyalampalayam, Valukkuparai, Thampakovundampudur and Vadapudur.

**5.12 LAND SUITABILITY FOR TURMERIC**

Turmeric can be cultivated in most areas of the tropics and sub tropics provided that rainfall is adequate or facilities for irrigation are available. It requires a hot and moist climate. It is usually grown in regions with annual rainfall of 1000-2000 mm and in areas where rainfall is below 1000 mm. Cultivation has been extended in to wet areas with over 2000 mm of rain per annum. It can successfully be grown up to an altitude of 1220 M. Turmeric thrives well on loamy or alluvial, friable, fertile soils and cannot withstand water
logging. Gravelly, stony and heavy clayey soils are unsuitable for the development. Turmeric is not adversely affected by partial shade, and hence it is grown as mixed crop. The pH range between of 5.8 and 7.0 and temperature range between 12-30 °C are found suitable.

Moderately heavy clay loams are better suited than heavy and light soils. The optimum pH for better growth is between 6.0 and 8.0. More acidic or too saline soils do not support normal turmeric yield. The best rooting medium for turmeric should at least have more than 100 cm soil depth, stable, well-structured loam to clay loam soils. Inadequate aeration decreases the intake of water by turmeric through its effects on absorption and indirectly by reduced root growth which leads to reduce turmeric growth.

**Highly Suitable Land for Turmeric (S1) :** Optimum growth of turmeric can be achieved with physical conditions that are conducive. The annual perception of above 1500 mm, good soil drainage, more than 100 cm soil depth, and sandy clay loam and clay loam soils and pH value of 5.0 to 6.0 are highly suitable conditions. This class is mainly found in the eastern and southwest and south eastern part of the study area. The area under this class is about 20,082 ha or 30.4 percent of the study area, (Fig 5.11). This class is mainly found in the south eastern part of the study area due to assured canal water, through buried pediplain and pediplian. Accordingly loam to clay loam of Dasarapatti, Vellalur, Attipalayam, Ettinayakampatti, Kottayam and Sengalam soil series are supporting factors for the class. The above said requirements are fulfilled in Kondekavundampalayam, Avalappampatti, Achipatti, Sokkanur, Devampadi valasu, Chantharapuram, Periya Negamam, Eripatti, Upparpalayam, Nallampalli, Sinnanegamam, Kakkadavu, Vaguthampalayam, Devanampalayam and Kappalankarai.

**Moderately Suitable Land for Turmeric (S2) :** The lands adjacent to the class S1 are moderately suitable for turmeric. Geomorphologically the study area
comes under moderately buried pediplain and shallow buried pediplain. The suitable soil series under this class are the Dasaripatti, Ettinayakampatti, Salaiyur, Kallivalasu and Palathurai. These soil series are good in all aspects. The land under this class covers 24,900 ha of area or 37.7% of the area under this study. This class is mainly found in the north eastern and south western and northern part of the study area. The physical factors such as rainfall between 1000 mm and 1500 mm are moderately suitable. The growing period is more than 300 days. The soil depth is 50 - 75 cm. pH value of 7.1 to 7.5 are the factors which fix the suitability as S2 for turmeric cultivation. The villages Sirukalandhai, Kollapatti, Unjavelampatti, Mannur, Neluthukuli and Valukkuparai fall under S2 category.

**Marginally Suitable Land for Turmeric (S3)**: Marginally suitable land is mainly found in the north and north western part of the Koraiyar watershed. Its covers almost 13,875 ha or 21.1%. Less than 600 mm of rainfall is marginally suitable for growing Turmeric. Other food crops are also mostly practiced here. The geomorphic condition is buried pediplain and shallow buried pediplain. The soil series like Attipalayam, Mettupalayam, Palaviduthi are distributed. 25 to50cm of soil depth is marginally suitable for turmeric. The pH value of less than 5.5 to greater than 8.5 is marginally suitability for turmeric. They are marginally distributed in Papampatti, Edayapalayam, Kallapalayam, Pottaiyandipurambu, Sokkanur, Kuthiraiyalampalayam, Valukkuparai, Thampakovundampudur and Vadapudur.

### 5.13 LAND SUITABILITY FOR SUGARCANE

Sugarcane is an important commercial crop that farmers have taken to, quikely in the 1970s when modern inputs became available and there was an increase in the commercialisation of agriculture. The agricultural scenario changed with a number of agro- industries, most important sugar mills got estabilised in and around the study area. Udumalapeetai Amaravathi sugar mill and Coimbatore sugarcane research centure are located in the study area.
Sugarcane is basically a tropical plant thriving well in hot and sunny areas. The ideal climate for sugarcane is long warm summer with adequate rainfall, a fairly dry sunny and cool frost free ripening and harvesting season. It is an irrigated and an annual crop, requiring good water for almost three seasons in any agricultural year. When farmers found surface water scarce, but at the same time possibilities for using underground water looking bright both by the known underground water potential and technology for extracting the underground water (borewells and pumpsets), they quickly and increasingly took to the cultivation of sugarcane.

Moderately heavy loams are better suited than heavy and light soils. The optimum pH reported for good growth is between 6 to 8. Too acidic or too saline soils do not support normal sugarcane yield. The best rooting medium for sugarcane should at least have more than 100 cm soil depth, stable, well-structured loam to clay loam soils. Inadequate aeration decreases the intake of water and indirectly reduces root growth which leads to reduced sugarcane growth.

**Highly Suitable Land for Sugarcane (S1)**: The soil requirements for sugarcane cultivation are clayey loam and sandy clay loam with moderately well-drained soils. Irrigation must be provided once in every 10 or 12 days where the sandy loam soils occur and once in every 8 days for dry and porous areas. In deep clayey loamy soil, irrigation interval is 2 to 3 weeks. The soils distributed over the shallow buried pediplain and buried pediplain, like Ettinayampatti, Annur, Attipalayam, and Irukur, have the depth exceeds with pH ranges of 6-8 are the favourable determiners of S1 class in the study area. All these conditions are fulfilled in Bogampatti, Kattampatti, Devarayapuram, Kappalankarai, Thoppampatti, Sulakkal and Suleswarampatti. S1 class land under sugarcane is 12,045 ha or 18.3%.
Koraiyar Watershed

SUGARCANE

Legend

- S1 (Highly Suitable)
- S2 (Moderately Suitable)
- S3 (Marginally Suitable)
- N1 (Currently Not Suitable)
- N2 (Permanently Not Suitable)

Source: Compiled by Author

Fig. 5.12
**Moderately Suitable Land for Sugarcane (S2)**: A total of 11767 ha or 17.8\% (Fig 5.12), of land fall under moderately suitable. These are mainly found in south eastern part of the study area notably Sirukalandhai, Kappalankarai, Servakarampalayam, Andipalayam, Periyakalandhai, Solanur, Kullakapalayam and Kurumbapalayam. However though these areas have the positive factures like pediplain, pediment and buried pediment nature, good ground water potential, pH of the soil is 7.5-8.5, the area come down from S1 to S2 class due to soil limitation like less depth (75-100cm) sand and clay texture soils of Anamalai, Attipalayam, Ettinayakampatti, Kottayam and Sengalam.

**Marginally Suitable Land for Sugarcane (S3)**: These are spreading in several ecosystems like Moderately buried pediplain, pediplain and part of command area. However the less soil depth 50 - to 75 cm, the pH value of less than 5 to greater than 8.5 are setting the area under marginally suitable. It is mainly found in the centre and north eastern part of the koraiyar watershed which covers the villages Sirukandhai, Eripati, Makkinampatti, Achipatti, Ramapatnam and Mannur. Further soils like Kottayam, Mettupalayam and Ettinayakampatti soils are associated with river course and there by poor drainability which brought these areas under marginally suitable (S3) class for sugarcane cultivation. About 33.9 \% (22,413 ha) of land belongs to this category.

5.14 **LAND SUITABILITY FOR CHILLIES**

Chillies are an important commercial crop. It is rich in Vitamin A and C. Throughout the tropics, chillies are used as a major ingredient of curry powder in culinary preparations. This crop has a lot of demand and is an export crop as well. Local markets in and around the study area are big enough for the crop grown in the watershed. Just as coconut, chillies have good market, both domestic and international. It can be successfully grown upto 2000 M above MSL. The germination of Chilli crop is found satisfactory in soils with pH <7.6. Both highly acidic and alkaline soils are not suitable, black soils are suitable for growing rainfed crop. It is deduced that it is a crop grown everywhere in the
Fig. 5.13

Legend
- S1 (Highly Suitable)
- S2 (Moderately Suitable)
- S3 (Marginally Suitable)
- N1 (Currently Not Suitable)
- N2 (Permanently Not Suitable)

Source: Compiled by Author

Koraiyar Watershed
CHILLIES
watershed, mostly moderately suitable lands and to a very limited extent in land that are highly suitable and marginally suitable.

**Highly Suitable Land for Chillies (S1) :** Vadavalli, Kattampatti, Vadachitur, Vadakkipalayam, Mettupalayam, Mullupadi, Makkinampatti, Solanur, Varathanur, Kakadavu, Devanampalayam, Andipalayam, Puliyampatti, Vaguthampalayam, Oikkilipalayam, Kabilipalayam, A.Nagoor, Nallampalli and Santhegoundampalayam villages are highly suitable for chillies. Shallow buried pediments, pediplain, pediments are highly suitable with soil texture clayloam to clay soil texture comes under soil series like Anamalai, Irugur, Attipalayam, Dasaripatti, Ettinayakkampatti, Kottayam and are favourable for S1 class. Further Vellalur and Sengalam, with well and moderate drainability also support the cultivation of chillies. Apart from the pH level 6 to 7 and the effective soil depth of about 75cm are the supporting conditions for S1 class. This accounts for 16576 ha or 25.1%. The requirement for optimal growth of chillies is the annual rainfall 600-1500 mm.

**Moderately Suitable Land for Chillies (S2) :** The land under this class covers 23,950 ha or 36.3% (Fig. 5.13). This class of land lies adjacent to the S1 class, mainly occur in the south, south eastern and south western part of the study area, especially Bogampatti, Kallapalayam, Malumachampatti and Servakarampalayam. The physical constraint, like rainfall between 900 and 1200 mm, gentle slope deep and shallow buried pediments are the factors that fix the land under moderately suitable. Among 22 soil series, the soils suitable for S2 class are Annur, Annamalai, Pilamedu, Somayyanur, Salaiyur, Pichanur, Palavidhuthi, Palathurai, Varapatti and Sengalam with the soil texture like clay, sandy clay and sandy loam. Texture sustaining with good ground water potential but moderate and imperfect drainability affect the moisture availability in these areas that may lead to slight erosion. Soil depth ranges between 50 - 75cm. The pH value is of 7.1 to 8. So it is moderately suitable for chillies.
Marginally Suitable Land for Chillies (S3): The land under this covers almost 19536 ha or 29.6% of the total area. It is mainly found in the north and north western part of the Koraiyar watershed, like Papampatti, Devarayapuram, Sulakkal, Servakarampalayam, Edayapalayam, Kallapalayam, Pottaiyandipurambu, Kuthiraiyalampalayam, Valukkuparai, Thampakovundampudur and Vadapudur. Though the area is under moderate and shallow buried pediplain with suitable soils Attiplayam, Palathurai, Mettupalayam, Irugur, Palaviduthui are positive factors. The only major limitation is soil depth which is less than 50 cm. Further the rainfall distribution is also less than ranges from 500-600mm. Hence the area is put under marginaley suitable.

5.15 LAND SUITABILITY FOR BANANA

Banana is a commercial fruit crop of our nation. It is high in vitamins and minerals. It contains more than 20% sugars, which is a rich source of energy. Banana is moisture and heat loving plant and cannot tolerate frost or arid conditions. Banana is also intercrop with coconut plants. Many varieties of banana are available based on Indian climatic conditions. Banana is a predominantly a tropical crop. The optimum temperature for foliar growth is 26-28 °C and for fruit growth 29-30 °C. Banana can be cultivated from MSL upto 1500 meters. Under rainfed conditions it can be grown at an elevation of 500-1500 M. It can be grown on a wide range of soils having good internal adequate drainage fertility, and moisture sufficiency. Ideal soils described for banana cultivation are level 0-1 % slope, silty loam or fine sandy loam soils that have gravel content of 5 per cent or less, deep >120 cm depth, with angular blocky structure and pH 5.5 - 7.0. The clay content should be <40 per cent with water table deeper than 120 cm. Banana tolerates a pH range of 4.5-8.0, but excellent growth can be obtained in very slightly acid to mildly alkaline soils.

Highly Suitable Land for Banana (S1): Optimum growth of banana can be achieved with physical conditions that are conducive. The annual precipitation
Legend

- **S1** (Highly Suitable)
- **S2** (Moderately Suitable)
- **S3** (Marginally Suitable)
- **N1** (Currently Not Suitable)
- **N2** (Permanently Not Suitable)

Source: Compiled by Author

Fig. 5.14
of above 1110 mm, more than 125 cm of soil depth, sandy clay loam and clay loam soils texture and the pH value from 6.5 to 7. The area under this class is about 15,962 ha or 24.2 percent. This class is mainly found in the south eastern part of the study area due to irrigation, buried pediplain and pediplian. Accordingly sandy, clay loam, and sandy clay loam of Anamalai, Vellaur, Kottayam and Irugur soil series suppor this crop to bring under S1 class. Vadachitut, Mettubavi, Zamin Uthukuli, Santhegovundampilayam, Kinathukadavu, Muthur, Kulichettipalayam, Kondekvundampilayam, Avalappampatti, Chantharapuram, Periya Negamam, Sirukalandhai, Eripatti, Aupparpalayam, Nallampalli, Sinnanegamam, Kakkadavu, Vaguthampalayam, Devanampalayam and Kappalankarai villages have the above said characteristics and hence fall under S1 class.

**Moderately Suitable Land for Banana (S2)**: The land under this class covers 21,432 Sq.km or 32.5 % of the area under study (Fig. 5.14). This class of land is adjacent to the S1 class, mainly occur in the south eastern and south western part of the study area, like Vadavalli, Sirukalandhai, Vadakkipalayam, Andipalayam, Puliyampatti, Vaguthampalayam, Santhegovundampilayam, Arisipalayam and Othakalmandapam. The physical constraint, like rainfall between 900 to 1000 mm, gentle slope deep and shallow buried pediments are moderately suitable lands. Among 22 soil series, the soils suitable for S2 class like Pilamedu, Somayyanur, Salaiyur, Pichanur, Palavidhuthi, Palathurai, Varapatti, Sengalam soil series comes under soil texture like clay, sandy clay and sandy loam. There texture sustaining with good ground water potential but moderate and imperfect drainability affect the moisture availability in these areas that may lead to slight erosion. Soil depth ranges between 76-125. The pH value is of 5.5 to 8.5. So it’s moderately suitable for Banana.

**Marginally Suitable Land for Banana (S3)**: This class has moderate and strong slopes in shallow buried pediments. Annur, Mettupalayam, Kanjampatti, Kottayam and Attipalayam soils fall under this class. This soil series comes
under villages like Kinathukadavu, Ramapatnam, Thalakkarai, Bogampatti and Chettipalayam. Though loamysand is fit for banana cultivation, other soil characteristics such as surface coarse texture, shallow depth, poor drainability, more alkaline and acidic, low CEC and poor groundwater potential, very less organic matter content and the less rainfall of 700-900mm have kept the land under S3 class. It occupies an area of 22,313 ha or 33.8 % of total study area. The above requirements are marginally suitable for banana.

5.16 LAND SUITABILITY FOR ONION

Onion is a cool season crop, hardy to frost but less sensitive to heat. It is adapted to a temperature range from 13-24°C. For good vegetative growth 15-21°C temperature before bulbing and 20-25°C for bulb development are suitable. The optimum temperature for seedling growth is 20-25°C. Growth starts declining at temperatures higher than 27°C. The requirement of day length of different varieties may differ. Kharif onion varieties require day length of 10-11 hours, whereas Rabi varieties require relatively higher temperature and 12-13 hours day length. Long day varieties do not bulb under short day whereas short day varieties, if planted under long day, develop bulbs. Onion is shallow-rooted crop. Its root system is normally restricted to top 3 cm and roots penetrate seldom deeper to 15 cm. The water requirement of this crop at initial growth is less. It depends on crop growth, soil type and planting season.

Soil for onion should be deep friable and highly fertile. Onions can, however, be grown in all types of soils. The optimum pH range is between 5.8 and 6.5. Highly alkaline and saline soils are not suitable for onion cultivation. Salt concentration above 4 mmhos/cm² inhibits vegetative growth of most of its cultivars. Good drainage is essential. Waterlogging can result in failure of crop. Onion cultivation is a seasonal choice of occupation for farmers of south India as October to November provide favourable climate.
Koraiyar Watershed

Legend
- S1 (Highly Suitable)
- S2 (Moderately Suitable)
- S3 (Marginally Suitable)
- N1 (Currently Not Suitable)
- N2 (Permanently Not Suitable)

Source: Compiled by Author

Fig. 5.15
**Highly Suitable land for Onion (S1):** It accounts for 6,871 ha or 10.3 per cent (Fig 5.15) of the study area are highly suitable. The physical constraint, like rainfall areas where average annual rainfall exceeds 750-1000 cm in the monsoon periods, it can be grown only as a summer crop. More than 15 cm of soil depth is highly suitable for Onion, shallow buried pediplain, very gentle slope, Accordingly sandy loam and clay loam soils of Pichanur, Pilamedu, Salaiyur, Annur, Iruigur, Kaallivalasu, Mettupalauam, Palaviduthi, Dasarapatti and Vellalur soil series support onion cultivation. The pH value is 5.8 to 6.5. The extent of cultivation in this class is mainly found in north eastern and southwest part of the study area. The above said requirements are seen in the well irrigated areas of Vadavalli, Bogampatti, Arasampalayam, Kattampatti, Chettikapalayam, Kondegoundampalayam, Unjavalampatti, Zamin Uthukuli, Eripatti, Othakalmandapam, Myleripalayam and hence these villages are highly suitable for Onion cultivation.

**Moderately Suitable Land for Onion (S2):** The land under this class covers 28,900 ha or 43.7 per cent of the total geographical area of the watershed. This class of land is adjacent to the S1 class, mainly in the upper part and somewhat in south eastern part of the study area. Shallow buried pediplain left and right side and gentle slopeing areas, well irrigation, the physical constraint, like rainfall more than 500mm, growing period of less than 120 days, more than 15 cm of soil depth are favorable for this class. These soils are moderately suitable for Onion like Palathurai, Somaiyanur and Attipalayam with soil texture of soil like sandy clay and clay loam and severe alkalinity pH 5.5 to 6.5. Kappalankarai, Devanampalayam, Avalappampatti kondampatti, Arasampalayam. The above village are mainly occurring in the south eastern part and south west part Ramanpatnam, R.Ponnapuram, Achipatti, Servaikaranpalaiyam, Sulakkal are moderately suitable for groundnut cultivation.
**Marginally Suitable land for Onion (S3)**: S3 land is mainly found in the western half, north eastern and south eastern part of the watershed. Marginally suitable land for Onion cultivation area is seen in Mettupalam, Vadakkipalayam, Kulichettipalayam, Okkilipalayam, Kabilipalaiyam, and Arisipalayam situated southern part and Papampatti, Edayar Palayam, and Bogampatti in the northern part of the study area. It occupies an area of 21,450 Sq.km or 32.5 per cent. The physical constraint, like rainfall less than 500 mm, the soil depth of 10 cm, shallow buried pediments clay surface texture. pH less than 5 and greater than 8.5 are causes for pushing these areas under marginally suitable for Onion cultivation.

### 5.17 LAND SUITABILITY FOR TOMATO

Tomato is the most widely grown vegetable crop in India. It is grown throughout the country for fresh consumption as well as for processing purpose. One of the reasons for its increasing popularity is its amenability for various preparations like salad and pickles etc. Tomato is a good source of vitamin A,B and excellent source of ascorbic acid. It’s also called as “Poor man’s orange” due to its very high nutritive value.

Tomato is a warm season crop; the fruits ripen best for yield, color and quality during warm and sunny weather. Prolonged cold, cloudy weather or repeated low temperatures causes the stunted growth and impair the fruiting. During hot and drought condition and at very low temperature conditions tomato blossoms drop, pollen grain fail to germinate and results in puffy fruits as the dry winds aggravate the effect. The fruits exposed to direct sunlight may turn whitish yellow, the condition known as “Sun scald”, is common in summer season.

High rainfall and humid condition favors proliferation of foliar diseases. The crop can successfully be grown in areas where the annual rainfall is about 750mm and assured showers from July to October. Tomato can be grown on a
Koraiyar Watershed
TOMATO

Legend
- S1 (Highly Suitable)
- S2 (Moderately Suitable)
- S3 (Marginally Suitable)
- N1 (Currently Not Suitable)
- N2 (Permanently Not Suitable)

Source: Compiled by Author

Fig. 5.16
wide range of soils from sand to heavy clays. The best soil for tomato is rich loam, with a little sand in the upper layer and good clay in the sub soil. The soil should be well drained and the pH should range from 5.5 to 7.0.

**Highly Suitable Land for Tomato (S1):** The crop can successfully grown in areas where the annual rainfall is about 750mm and assured showers from July to October. The optimum temperature requirement is 21-24°C. The mean temperatures below 16°C and above 27°C and growing period of less than 150 days are not desirable. Sengalam, Kottayam, Anamalai soils have sandy to heavy clays. The best soil for tomato is rich loam, with a little sand in the upper layer and good clay in the sub soil. All kinds of buried pediplains are highly suitable. The soil should be well drained and the pH should range from 5.5 to 7.0. These characters are found in 18,346 ha or 27.8 per cent of the area hence highly suitable. The highly suitable land found in the northern part and south western part of the koraiyar watershed, covering Malumichampatti, Kallapalayam, Mettubavi, Kattampatti, Poravipalaiyam, Zamin Uthukuli, R.Ponnapuram and Myleripalayam villages.

**Moderately Suitable Land for Tomato (S2):** The area under this class is seen all over the study area and it is distributed for 28,642 ha or 43.4 percent of the area covering the villages of Papampatti, Edayapalayam, Arasampalayam, Kondampatti, Vadasithur, Chettikapalayam, Sirukalanthai, Kappalankari, Devanampilayam, Maniyalampalayam, Avalappampatti, Nagoor, Boligoundampilayam and Sulakkal.

Based on the suitability analysis for tomato cultivation is concerned the entire watershed is could be divided into two halves if a line is drawn connecting central northern boundary to mid centre of the southern boundary. The entire western portion either suitable for S2 class or S3 apart from many pockets fall under currently not suitable or permanently not suitable. In contrast, the entire eastern position is either suitable for S1 or S2 class. These differences are set by
the rainfall and soil, though the mean annual rainfall is more than 750mm in the eastern portion.

**Marginally Suitable Land for Tomato (S3)**: The villages Vadakkipalayam, Achipatti, Zamin Uthukuli, Mettupalayam, Kulichettipalayam, Kallipatti, Kakadavu, Bogampatti are the villages marginally suitable for Tomato cultivation. S3 land is mainly found in the mid western part of the Koraiyar watershed. The land under marginally suitable for tomato occupies an area of 13,822 ha or 20.9 per cent. The physical constraint, like rainfall less than 700 mm. Shallow depth of 25 to 50 cm of soil are the major causes for marginally suitable for tomato. Annur, Dasarapatti, Kottayam, Attipalayam and Ettinayakampatti soils have the soil textures of clay, shallow buried pediplain, the pH value of less than 5 to greater than 8.5 fix the area under marginally suitable for tomato cultivation (Fig 5.16).

5.18 LAND SUITABILITY FOR COTTON

Cotton is one of the most important commercial fibre crops. It plays dominant role in national and international market. Besides fibre, cotton is also valued for its oil and cotton seed cake. The cropping season varies from region to region. Cotton is a sensitive for climatic conditions that need temperature of 29°C to 34°C and the mean minimum temperature range from 20 to 24°C. The deep, friable, well-drained soils with good organic matter content are ideal. Under rainfed conditions, good yield is obtained from deep, fine textured soils having good structure. As the absence of modern mechanisms in our country, all the workers are done by hands. Hence, plenty of cheap workers are required for sowing, weeding, fertilising, pest control and ripening. At present cotton growers opt by alternative crops pulses, sorghum, maize and vegetables.

**Highly Suitable Land for Cotton (S1)**: Vadavalli, Vadakkipalayam, Ramapatnam, Chandarapuram, Kallapalayam, Kakadavu, Devanampalayam, Andipalayam, Puliyampatti, Vaguthampalayam, Oikkilipalayam, Kabilipalayam,
COTTON

Legend

- S1 (Highly Suitable)
- S2 (Moderately Suitable)
- S3 (Marginally Suitable)
- N1 (Currently Not Suitable)
- N2 (Permanently Not Suitable)

Source: Compiled by Author

Fig. 5.17
A. Nagur, Nallampalli and Santhegoundampalayam villages have highly suitable land for cotton. All categories of buried pediments, soil texture like clay loam to clay soil texture come under soil series like Attipalayam, Dasaripatti, Ettinayakkampatti, Kottayam, Vellalur and Sengalam. Well and moderate drainability, pH level 6.5 - 7.5, the effective soil depth of 100-150 cm, rainfall 800-1000 mm are the supporting factors for cotton cultivation. It covers about 11,974 ha or 18.1%.

**Moderately Suitable Land for Cotton (S2):** The land under this class covers 20,109 ha or 30.4% (Fig. 5.17). This class of land is adjacent to the S1 class. It is in the south, south eastern and south western part of the study area, covering Vadavalli, Vadakkipalayam, Andipalayam, Vaguthampalayam, Oikkilipalayam, kabiliyalayam, A.Nagoor, Ramapatnam, Mannur, Muthur, Kinathukadavu, Sokkanur, Kuthiraivalampalayam, Arasampalayam, Solavampalayam, Kothavadi, Valukkuparai, Thambakovundanpudur and Kodangipalayam. The physical constraint, like rainfall between 450 to 600 mm, gentle slope deep and shallow buried pediments led the area to come under moderately suitable. Among 22 soil series, the soils suitable for S2 class like Pilamedu, Somayyanur, Salaiyur, Pichanur, Palavidhuthi, Palathurai, Varapatti, Sengalam soil series come under soil texture like clay, sandyclay and sandyloam. These textures sustained with good ground water potential but moderate and imperfect drainability affect the moisture availability that may lead to slight erosion. Soil depth ranges from 60 – 100 cm. The pH value is of 7.6 - 8. So it’s moderately suitable for cotton.

**Marginally Suitable land for Cotton (S3):** Marginally suitable land is mainly found in the north and north western part of the Koraiyar watershed. It covers almost 18,677 ha or 28.2% of the study area. Rainfall is less than 700 mm and this insufficiency makes the area brought the area under, marginally suitable for cotton. Further, shallow buried pediplain, the soil series like Attipalayam, Palathurai, Mettupalayam, Palaviduthi with, 30 to 60 cm of soil depth are the
factors that led the area to be brought under S3 class. They are seen in Papampatti, Servakarampalayam, Edayapalayam, Kallapalayam, Malumachampatti, Othakalmandapam and Chettipalayam.

5.19 LAND SUITABILITY FOR MANGO

Mango, the king of fruits, is grown in India for over 450 years. It is a medium to large evergreen tree with an open or dense canopy with long taproot and dense fibrous root system. The fruits are delicious and rich in vitamins A and C. The fruits can be used in preparation of processed products. The fresh fruits and also the processed product are being exported. Mango occupies nearly half of the total area under fruit crops in the country.

In olden days, a few trees were grown in the backyards of the house and large land holders grew them here and there. Nowadays it is cultivated as a common crop due to their commercial value. Farmers fetch good yield and income because urban centres have high demand for fruits.

Growth of mango tree is secured within the optimal temperature between 22\(^{0}\)c to 28\(^{0}\)c. High temperature and low humidity and high winds adversely distress the trees, while young plants are sensible to frost. They can grow on different types of soils. Cold temperature limits mango production. Young plants do not withstand frost. The most suitable pH ranges between 5 to 7.0 but it can be grown commercially upto pH 8.5. The tree is sensitive to saline conditions and in severe cases the growth is very poor.

**Highly Suitable Land for Mango (S1)**: The soil requirements for mango cultivation are clayey loam, sandy clay, silt and loamy with well-drained soils. The soil series like Ettinayampatti, Annur, Attipalayam, and Irugur support mango cultivation. The land high suitable for mango cultivation is distributed for 18,536 ha or 28.1% of the total area (Fig 5.18). High rainfall >1000 mm, the pH value of 5.5 to 7.5. Very gentle slopes, erosion free, soil depth more than 100cm are favourable condition in these areas. The class S1 are seen in the south
Fig. 5.18

Legend

- **S1** (Highly Suitable)
- **S2** (Moderately Suitable)
- **S3** (Marginally Suitable)
- **N1** (Currently Not Suitable)
- **N2** (Permanently Not Suitable)

Source: Compiled by Author
eastern and western part of the Koraiyar watershed covering villages Kallipatti, Varathanur, Sirukalandhai, Nallampalli, Kattampatti, Devarayapuram, Kappalankarai, Thoppampatti, Sulakkal and Suleswarampatti. In general the area between upper reaches of Kothavadi river in the north east to south and Manga Pallam river in the south east.

**Moderately Suitable Land for Mango (S2)**: The land under this class covers 14,918 ha or 22.6%. This class of land is adjacent to the S1 class, mainly occurring in the south, south eastern and south western part of the study area, covering the villages Vadavalli, Vadakkipalayam, Andipalayam, Puliyampatti, Vaguthampalayam, Santhegoundampalayam, Arisipalayam and Othakalmandapam. Where ever the shallow pediment is large, the less than 700mm rainfall is a major draw back. Further among 22 soil series, the soils suitable for S2 class are Pilamedu, Somayyanur, Salaiyur, Pichanur, Palavidhuthi, Palathurai, Varapatti and Sengalam soils which have the soil texture of clay, sandyclay and sandyloam. These texture sustaining good ground water potential but moderate and imperfect drainability affect the moisture availability in these areas that may lead to slight erosion. Though the area has good soil depth, the pH value of 5 to 8.5 and low rainfall set the area under moderately suitability. A Rainfed area also suitable for this crop as the tree is tolerable for dry condition. Failure of monsoon rains highly affect the production.

**Marginally Suitable Land for Mango (S3)**: The area under this class has moderate and strong slopes in shallow buried pediments. Annur, Mettupalayam, Kanjampatti, Kottayam and Attipalayam soil series has high alkalinity (pH >9). This soil series are seen in villages like Kinathukadavu, Ramapatnam, Thalakkarai, Bogampatti and Chettipalayam. Though loamysand is fit for mango cultivation, the soil characteristics such as surface coarse texture, shallow depth, poor drainability, more alkaline and acidic, low CEC and poor groundwater potential, very less organic matter content and less rainfall of 700cm have kept
Agricultural Land Suitability

Koraiyar Watershed

Legend
- **S1** (Highly Suitable)
- **S2** (Moderately Suitable)
- **S3** (Marginally Suitable)
- **N1** (Currently Not Suitable)
- **N2** (Permanently Not Suitable)

Source: Compiled by Author

Fig. 5.19
the land under S3 class. About 23,851 ha or 36.1% of total study area fall under this class. Further it is noted that the area on either side of drainages/river are not suitable for S1 class as the area is prone for slight erosion and relatively hard terrain and hence it is under marginally suitable of S3. Dry pockets of the watershed are occupying more areas of S3 class.

5.20 LAND SUITABILITY FOR AGRICULTURAL PURPOSES

From foregoing analysis, interpretation and degree of suitability for 18 crops the land potential is understood. By compilation and superposition by overlaying the layers of 18 crops the overall suitability for agricultural purpose are drawn. From the figure 5.20 one could easily have the perception over the agriculture of the study area. By and large the land under highly suitable is almost free from limitations and will not abstract in cultivating any kind of crops. About 44.3% of area (29257 ha) occupying good quality for cultivation is also as much as highly suitable. However, in this case the limiting factor which limited the production could be within tolerable limits. Therefore highly suitable and moderately suitable, altogether holds 34866.2 (ha), 52.8% of study area. However it should be noted that this figure is greater while compared not suitable and permomtly not suitable. Hence it could be concluded that the Koraiyar watershed is agriculturally developed.

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