FINANCIAL ANALYSIS OF CITRUS FARMING ON SORJAN SYSTEM AT TIDAL SWAMPLAND

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Abstract. Tidal swampland has a high potential for rice-base agricultural production. Its utilization, however, faces several technical and socio-economic constraints. Farmer usually uses sorjan system to develop citrus cultivation at tidal swampland area. This paper reported feasibility study of sorjan system for rice+citrus+vegetables pattern. The research was conducted at Karang Buah village, Belawang Sub-District, Barito Kuala Regency, in June 2012. The amount of sample was determined by purposive method. The result showed that sorjan system with rice+citrus+vegetables pattern at Karang Buah Village was suitable to be developed. Interest rates of 12, 15, and 18% per annum resulted in B/C value > 1, positive Net Present and Internal Rate of Return values were greater than interest rate. The main problems of sorjan system in this area were capital and diseases.

Keywords: Farming, citrus, tidal swampland

INTRODUCTION

Tidal swampland area in Indonesia is 20.1 million ha. It is estimated that 9.5 million ha area is potential for agriculture where approximately 4.1 million ha has been reclaimed (Nugroho et al. 1992). In South Kalimantan, tidal swampland reaches 190,206 ha, including 155,513 ha that has been planted (Agricultural Department, South Kalimantan Province, 2009).
The agricultural development on tidal swampland is faced with land bio-physical constraints so its management should be done carefully and holistically with appropriate and correct implementation of technology. The success keys in the utilization of tidal swampland for agriculture depend on land and soil management. The research result of SWAMP II Project in 1993 showed that the system can be done with land forming sorjan system gradually in acid sulphate or shallow peat on overflow type B and C.

Benefits of sorjan system according to Anwarhan (1986) are among others (1) crop diversification, (2) no soil acidification, (3) reduction of drought risk, (4) toxicity reduction due to inundation, (5) minimizing failure risk, (6) more equitable widely used labor distribution, and (7) the increase of farmers' income. Despite the benefits of the sorjan system has been well known by farmers, development of the system in tidal land is still slow due to capital constraint to make the sorjan.

Citrus is a plant that has long been cultivated by local farmers in the tidal swampland area since 1930s and is a prime commodity of South Kalimantan. Therefore, since 2004 the Government of Barito Kuala District had programmed the development of citrus until 2009, and targeted to reach 5,000 ha of citrus. Siam Banjar citrus was cultivated on raised bed system while rice was planted on sunken bed. The average rice production in the South Kalimantan is 3.5 tons/ha and production of citrus is 111.4 kg/tree (BPS Tk I, 2010). The increase in production of rice and citrus can be done through the proper cultivation technology.

Siam Banjar Citrus in terms of fruit flesh flavor and aroma is quite sweet which produced at several plantation locations and citrus peel contained black spots that need to be repaired. Similarly, the size of the harvested fruit should be uniform in accordance with the needs of consumers. The research results by Supriyanto et al. (2006) showed that consumers of Siam Banjar citrus fruit favored D class which contains 14 pieces/kg and tastes sweeter than A and B classes. The edible part of the fruit is more and the number of seeds tends to slightly less. But the citrus sold outside Kalimantan was generally A and B classes.

Development of citrus requires costly investment as citrus is long-term plant. According to Johnson (1970), each investment is expected to (a) rapidly generate profits, (b) profusely endeavored profitability, and (c) the risk of marketing the product must be as little as possible. This long-term investment will produce a little cash at the beginning of the implementation, so it is necessary to make cost and benefit calculation in order to know the feasibility of investment. According to Soekartawi et al. (1984) in conducting an assessment of the economic development program activities, it is necessary to know whether the investment plan is financially feasible.

This paper presents information on the financial feasibility of citrus farming on sorjan systems in tidal swampland and problems in citrus farming development.
RESEARCH METHOD

Research was conducted with survey method in 2012. Location was purposively determined based on production center at Karang Buah Village, Belawang Sub-district, Barito Kuala District, as type B tidal swampland area. Samples of farmers were purposively set as many as 40 households. Data were collected through interviewing farmers using questionnaire that had been prepared. Data collection included planting area, land forming, rice farming, citrus and vegetables and citrus farming problems.

Financial feasibility analysis is used to calculate the investment feasibility of sorjan farming systems using three performance indicators (Rianto 1984; Kadariah et al. 1976). The feasibility model was mathematically formulated as follows:

1. Net Present Value (NPV)

\[
NPV = \sum_{t=1}^{n} \frac{B_t - C_t}{(1+i)^t}
\]

2. Internal Rate of Return (IRR)

\[
IRR = i^* + \left( \frac{NPV'}{NPV' - NPV''} \right) \left( i'' - i^* \right)
\]

3. Benefit Cost Ratio (B/C)

\[
B/C = \frac{\sum_{t=1}^{n} B_t}{\sum_{t=1}^{n} (1+i)^t}
\]

\[
= \frac{\sum_{t=1}^{n} C_t}{\sum_{t=1}^{n} (1+i)^t}
\]

Where:

- \(NPV'\) = First Net Present Value
- \(NPV''\) = Second Net Present Value
- \(IRR\) = Internal Rate of Return
- \(B/C\) ratio = Ratio of benefits to costs
- \(B_t\) = Benefit on t-year
- \(C_t\) = Cost on t-year
- \(t\) = Year
- \(i^*\) = First bank interest
- \(i''\) = Second bank interest

Criteria for decision-making if the system sorjan is feasible: (1) \(NPV > 0\); (2) \(IRR > \) discount level, and (3) Gross \(B/C\) ratio > 1.
RESULTS AND DISCUSSION

Characteristic of Farmers

The ability of farmers to participate in the application of technology related to their characteristics such as age, level of education, experience, while resource mastery including land ownership and availability of labor (Table 1). The results showed that the average age of farmers was 49 years old, and it was categorized as productive age since productive age ranges from 15 to 55 years.

Formal and non-formal educations are means to improve knowledge and skills. The low level of education of farmers is very influential on the absorption of innovation in agriculture, which is recommended by the field agricultural extension or delivered by other mass media. According to Raymon as quoted by Depari and Mac Addrew (1988) that there are different tendencies in a person receiving the information and how he searches for information. The determining factor is education. Individual response speed affects perception of innovation. Older farmers with relatively low education showed a slower response to the new innovations (Abunawan et al. 1988). Average education level of farmers was 8.18 years. The level of education was dominated by elementary school to junior high school graduates, which means that farmers have a good enough education to accept the introduction of technology.

The experience of farmers in farming the tidal swampland area was 18.43 years and it can be said quite long. The farming experience of farmers in tidal swampland ranged from 16 to 23 years, and it was an asset for farming because of the conditions of tidal swampland were different from the region of origin (transmigrant). The experiences of farmers are very significant in determining the success of farming. According to Azahri (1988) the longer the experience in farming will cause the easier to understand innovation and the higher participation in agricultural development program.

The average of farmers labor availability per household was 515.12 man days/year. When compared with the available land area of 2.49 ha, the family labor supply is insufficient. Therefore, farmers need the availability of sufficient agricultural machinery to cover the labor shortage.
Table 1. Characteristics of farmers at Karang Buah Village, Belawang Sub-district
Barito Kuala District, 2012

<table>
<thead>
<tr>
<th>Resource of Farmers</th>
<th>Average</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age (year)</td>
<td>49</td>
<td>29 – 70</td>
</tr>
<tr>
<td>2. Formal education (year)</td>
<td>8.18</td>
<td>6 – 8</td>
</tr>
<tr>
<td>3. Farming experiences (year)</td>
<td>18.43</td>
<td>16 – 23</td>
</tr>
<tr>
<td>4. Occupation (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Main</td>
<td>100.00</td>
<td></td>
</tr>
<tr>
<td>-Side</td>
<td>50.00</td>
<td></td>
</tr>
<tr>
<td>5. The number of family members per head of</td>
<td>3.45</td>
<td>2 – 5</td>
</tr>
<tr>
<td>family (people)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Availability of labor (man days/household/year)</td>
<td>515.12</td>
<td>357.5 – 942.5</td>
</tr>
<tr>
<td>7. Area of land ownership (ha).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yard</td>
<td>0.35</td>
<td>0.25 – 1.60</td>
</tr>
<tr>
<td>Field area</td>
<td>2.14</td>
<td>1.25 – 7.62</td>
</tr>
</tbody>
</table>

**Farming System**

Karang Buah Village is one of villages, which is located at Belawang Sub-district, Barito Kuala District. Before becoming a village, this area was part of the transmigration settlement unit (UPT)-Tarantang. The settlement was occupied in 1983 with 106 heads of household that came from East Java. Every family acquired 2.25 ha of land that consisted of 0.25 ha yard, 1.0 ha first field area, and 1.0 ha second field area to be used as farmland to support life.

In the beginning, rice farming developed by farmers in the village was done in their yards and first field area to apply the cropping pattern once a year using a rice variety adaptive to acid sulphate field and longevity, i.e. local rice with productivity level of 2.0 to 3.5 ton ha⁻¹.

In 1984/1985 through project of SWAMP-II and APBN, Indonesian Swampland Agriculture Research Institute (ISARI) directly involved in the farmer development. ISARI introduced some technologies of tidal swampland management such as raised bed (sorjan) system, water management system with one-way flow and dam overflow systems, nutrient management, land preparation, and utilization of tolerant varieties. The sorjan area was planted with citrus, coconut, and other seasonal plants so that it looked like diversification of agricultural commodities. These efforts were quite successful in increasing land productivity and farmers’ income and welfare, as seen today at the site. To support the achievement of agricultural diversification in tidal wetlands, landscaping sorjan system is very necessary. In its development, in the venture field I and II in the UPT area, Tarantang now has been developing landscaping’s sorjan system and planting with variety of Siam Banjar citrus with variety of ages.
Rice Cultivation Technology

The developed planting pattern was twice rice planting - a year, either high yielding variety–high yielding variety or high yielding variety-local rice variety. The difference of cultivation technology between high yielding variety and local rice variety is only on its seedbed. The high yielding-rice variety planting is only through one-time wet seedbed; while local rice variety is planted on dry seedbed (called: teradak and ampak). High yielding-rice varieties planted by farmers are Ciherang, Margasari, and Inpara, and local rice varieties are Siam Unus, Siam Ganal, Siam Kuning, etc. For making rice seedbed, soil is plowed. The size of beds is 10 cm height, 110 cm width and length as needed. Land is left in wet and loose conditions till dried. Then the rice seed, which had been soaked for one night, were uniformly broadcasted and fertilized with dosages of 6 kg Urea and 6 kg NPK per 400 m². Seedlings were transplanted after 21 days old.

Land preparation was conducted by spraying the land with herbicide or by slashing. For some farmers, the land preparation was conducted using rotary tractor (called glebek). High yielding rice variety seedlings are planted on 21 days old and local variety seedlings on 60 days in field that ready to be planted. Planting space on high yielding rice is 20 cm X 20 cm or 25 cm X 25 cm, whereas for local rice variety is 25 cm X 30 cm. Transplanting is conducted on 1-2 weeks after planting.

The first fertilizer application on high yielding rice variety was on planting day and the second one was at 15 - 30 DAP (Days After Planting), whereas fertilizer for local rice variety was given once depending on rice plant condition. The types of fertilizer used by farmers were Urea, SP-36, and Ponska with various dosages. Slashing was conducted manually by hands or using short machete, once or twice per crop season, but some farmers conducted slashing with herbicide. The major pests attacking rice plants were rats, birds, and rice bugs. Farmers used rodenticide and insecticide in accordance with attacks level magnitude.

Harvest was conducted by using sickle and shedding or thresher. After shedding, the rice was dried. Cleaning was conducted by using “Gumbaan”.

Citrus Cultivation Technology

Citrus farming characteristics in Karang Buah Village, Belawang Sub-district Barito Kuala District are presented in Table 2.
Table 2. Citrus farming characteristics at Karang Buah village, Belawang Sub district, Barito Kuala District, 2012

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Average</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Planting area (ha)</td>
<td>1.46</td>
<td>0.75 – 3.5</td>
</tr>
<tr>
<td>2.</td>
<td>Sunken bed : raised bed</td>
<td>65 : 35</td>
<td>80–20</td>
</tr>
<tr>
<td>3.</td>
<td>Seed type of citrus</td>
<td>Grafting</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Plant spacing (m)</td>
<td>5</td>
<td>4 – 6</td>
</tr>
<tr>
<td>5.</td>
<td>Population (tree)</td>
<td>267</td>
<td>96 – 650</td>
</tr>
<tr>
<td>6.</td>
<td>Production (kg/tree)</td>
<td>37</td>
<td>20 – 70</td>
</tr>
</tbody>
</table>

Table 2 shows that the average area of land planted with citrus area were 1.46 ha with 267 or 183 trees/ha. However, there were only 170 productive trees/ha, and the occupational area was 65%: 35%, meaning 0.65 ha sunken bed (local rice) and 0.35 ha raised bed (citrus). The research results (Antarlina et al. 2005) in some tidal swamplands showed that the ratio of sunken beds and raised bed as in Simpang Arja Village was 60%: 40% with 0.31 ha of raised bed (113 trees), Sungai Kambat Village was 59%: 41% with 0.42 ha of raised bed (195 trees), Gudang Hirang Village was 55%: 45% with 0.25 ha of raised bed (133 trees), and Sungai Tandipah Village was 55%: 45% with 0.27 ha of raised bed (156 trees). Variations in plant ages on the research area of Sungai Tandipah, Sungai Kambat, and Gudang Hirang villages were due to rejuvenation.

Citrus plant spacing and seed variety in Karang Buah Village were more uniform compared to other sites since there was an expansion program from related institutions.

Plant cultivation on sorjan system was as follows: citrus on raised bed and rice on sunken bed. The development of sorjan system took long time, especially for farmers who did not have capital. Usually farmers make gradual raised bed and then from the first to the fifth year, farmers gradually construct raised beds into raised bed. The production process begins with the preparation of land with 5 m spacing between plants and digging citrus planting hole one month before planted. The whole size used by farmers varies, depending on soil type and soil layers beneath. Topsoil mixed with manure, then inserted into the holes, and left for a week, and then newly seeds were planted by digging back to a size slightly larger than the media polybag. Form of seed planted is grafting (Table 2).

Maintenance activities range from gradual raised bed widening, *peliburan* (maintenance of sorjan system conducted by farmer every year by spreading rice straw on raised bed and then covered with muddy soils taken from rice field or sunken bed), weeding, fertilizing, constructing supporting poles, fruit thinning and pest eradication. Widening gradual raised bed is conducted every year since the tree is two-year-old. Fertilization is applied after citrus crops harvest. Farmers generally provide manure, lime, urea, and Ponska with varying doses. The dose of fertilizer increases with increasing age of the plant. Fertilizer is applied in 1-2 times per year by putting it surrounding the plant. Similarly, weeding is done 1-2 times per year depending on the thickness of the weeds. The weeding is commonly used by using herbicides.
Organic fertilizers are needed to increase the humus content of the soil becomes moist around the roots. For farmers who have the capital, fertilization in plants is conducted before fruiting twice a year which is applied at the beginning and the end of the rainy season. Whereas on the plants that had been bear fruit, fertilizing is conducted three times a year. Citrus blossoming is conducted every year by spreading rice straw on raised bed and then covered with muddy soils derived from rice field (sunken bed) on the side raised bed. The first fertilization is applied before flowers appear, the second one during fruit ripening and the third one after the harvest.

Pests and diseases that attack citrus are generally wet Diplodia and dry Diplodia, these diseases could cause plant death.

Fruit thinning have been only conducted by some farmers because the income from thinning the Siam Banjar citrus was almost the same without thinning. Thinning activity on citrus tree with plenty fruit as 60% while maintaining Siam Banjar citrus with slightly fruit maintained at 33%. Citrus harvesting is 6 - 8 months after its flower bloom. The way of harvesting citrus by cutting the fruit stalk with prune shears approximately 1-2 cm from its fruit. Gathering time is conducted after the sun has shone around 9 am till afternoon.

Siam citrus is grouped based on the standard as follow:
Class A : citrus with diameter of 7.6 cm, approximately 6 fruits/kg
Class B : diameter 6.7 cm, approximately 8 fruits/kg
Class C : diameter 5.9 cm, approximately 10 fruits/kg
Class D : diameter 5.7 cm, approximately 12-14 fruits/kg

The Cost of Making Sorjan

According to Leknas concept (1977) in Günawan et al. (1979), that someone is considered working full time based on the following criterias: (a) adult male age > 15 years = 35 hours/week and (b) young male < 15 years and female > 15 years = 20 hours/week. Based on that concept, then farmer labor which available at Karang Buah Village Belawang Sub-district was about 515.125 man-days per household/year or around 357.5 – 942.5 man days/household/year

The labors number, which is required for constructing sorjan, is different on tidal field type A and C, this is very depending on the width and height of rice bed of sorjan. Constructing 1 ha of sorjan system at Karang Buah Village on overflow of type B field with sorjan area of 0.35 ha requires160.7 man days. Farmers generally work with hired labor as much as 75% or equivalent to 120.5 man-days. When compared with available labor, the family labor is still available. However, farmers use family labor for other productive activities such as cultivate the sawit-dupa cropping pattern (rice-rice) in the business land I, yards and so on.
Likewise, the cost of constructing sorjan is greatly affected by the type of land. The cost of making raised bed and gradual raised bed in the Karang Buah Village on type B tidal swampland is IDR 9,600,000/ha (0.35 ha) with a width of 2 meters sorjan size by 8 pieces along the field size of 120 m. These costs consist of wage of sorjan making IDR 5000/m² and gradual raised bed making IDR 15,000/unit. If farmers plant citrus only on gradual raised bed for 200 pieces, then it requires cost as much as IDR 3,000,000. Farmers usually make sorjan gradually and within 3 years it has become sorjan with width of 4 m.

**Analysis of Rice + Citrus + Vegetable Farming**

Farmers was originally encouraged to plant citrus on the second field with rice + orange pattern, while the first field cultivated with rice - rice. Area of citrus is averagely 1.46 ha/household with a population of 267 trees, which has been harvested 83%. This cost benefits analyses use an area of 1 hectare consisting of 0.65 ha sunken bed (paddy field) and 0.35 ha raised bed (sorjan) with a citrus population of 183 trees/ha.

To obtain the result of cost-benefit analysis, the production, revenues, expenses and income of the farming system sorjan are assessed beforehand (Table 3). The production is the result of human effort to produce output using the existing input. Input includes means of production such as seeds, fertilizers, pesticides and fixed costs such as equipment depreciation, property tax and religion tax or zakat of rice yield.

Rice production ranged 2-3 ton ha⁻¹, this yield was still high because citrus plants were still young or <5 years old. At the age of 8 years old of citrus plants, local rice yield was 2.7 ton ha⁻¹. Vegetable was planted by farmers on sorjan between citrus plants of 1-3 years of age because after 3 years old the citrus plant has started to grow high. Planted vegetables were, among others eggplant, chili pepper, beans, tomatoes, etc., but it cultivated on a small scale.

Citrus production was calculated from plant age 4-8 years old. At 4 years old, the average citrus production was 1500 kg ha⁻¹ (183 trees), and at 8 years old was 9000 kg ha⁻¹. According to the results of research on tidal land showed that the highest citrus production was at the age of 10 years old, namely 14.25 ton ha⁻¹, and at 15 years old the citrus production was assumed stable, then at 16 years old the citrus production begin to decrease. Average citrus production at the age of 25 years old as many as 170 fruits/tree equivalent to 24.2 kg/tree and fruit size is smaller than citrus production from younger tree (Rina et al., 2006).

The analysis of citrus plant in the Karang Buah Village was only at the age of 8 years old. Production rate depends on plant age, population density, maintenance and the state of the water system.

Revenue per hectare in year the t<sup>th</sup> (R<sub>t</sub>) was calculated from the production per hectare in year t multiplied by the unit price of the product. The selling price of rice, vegetables and citrus are determined based on farmer’s price on selling time. The average rice price was IDR 4,500,-/kg GKG (unhusky rice), the highest one was IDR 5,500,-/kg GKG and the lowest one was IDR 4,000, -/kg GKG. While the average citrus price was
IDR 4,000,-/kg, the highest one was IDR 4,500,-/kg and the lowest one was IDR 3,000,-/kg. The highest revenue of rice + orange + vegetable obtained at the age of 8 years old was IDR 38,273,400,- and this value will grow higher in accordance with citrus age up to 15 years old.

The production cost is the sum of input materials costs, labor costs, depreciation costs, land tax and religion tax of paddy (zakat). In this study, because the planting pattern which conducted by farmers was rice + citrus + vegetables, then the investment cost was only the cost of making sorjan and rice farming (zero citrus plant age). In the calculations of fixed costs (such as depreciation of equipment and taxes) and variable costs (such as the cost of fertilizer and labors) is expense cost. The results of financial analysis per hectare of the rice + citrus + vegetables pattern are presented in Table 3.

Table 3. B/C, NPV and IRR at interest rate (Df) of 12%, 15%, and 18% on financial analysis of 1 hectare rice + vegetables + citrus fruit pattern at Karang village, Belawang Sub district, Barito Kuala District, 2012

<table>
<thead>
<tr>
<th>Investment criteria</th>
<th>Benefit Cost Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Df 12%</td>
</tr>
<tr>
<td>Citrus price at IDR 4000/kg</td>
<td></td>
</tr>
<tr>
<td>B/C</td>
<td>1.25</td>
</tr>
<tr>
<td>NPV (IDR million)</td>
<td>19.587</td>
</tr>
<tr>
<td>IRR(%)</td>
<td>37.10</td>
</tr>
<tr>
<td>Citrus price at IDR 3600/kg</td>
<td></td>
</tr>
<tr>
<td>B/C</td>
<td>1.19</td>
</tr>
<tr>
<td>NPV (IDR million)</td>
<td>14.963</td>
</tr>
<tr>
<td>IRR(%)</td>
<td>34.82</td>
</tr>
<tr>
<td>Citrus price at IDR 4500/kg</td>
<td></td>
</tr>
<tr>
<td>B/C</td>
<td>1.32</td>
</tr>
<tr>
<td>NPV (IDR million)</td>
<td>25.367</td>
</tr>
<tr>
<td>IRR(%)</td>
<td>39.10</td>
</tr>
</tbody>
</table>

Cost benefit analysis carried out in Karang Buah Village with used average price of citrus IDR 4,000/kg and rice IDR 4,500/kg GKG. Obtained IRR value was greater than the interest rates used in this calculation, namely 12%, 15%, and 18% (Table 3). From the analysis using prices prevailing at the farmers’ level values obtained greater IRR was on the interest rate of 12% (37.10%) and 18% (36.07%). In these circumstances the investment of constructing sorjan on planting pattern of rice + siam citrus + vegetables in Karang Buah Village was declared feasible because the value of B/C> 1, positive NPV and IRR > interest rate.

Even, if the price used was 10% lower than the current price of rice (IDR 4,500/kg GKG) and citrus (IDR 3,600/kg), it obtained B/C> 1, positive NPV and IRR > the interest rate. From this circumstance rice + citrus + vegetables farming was financially worth effort.
Citrus farming problems

Based on interview with farmers, it showed that 40% of farmers stated that Diplodia disease was a major problem, and 30% of farmers stated that capital was a major problem. Citrus marketing, according to farmers was easy because there are buyers from East Java who buy the oranges directly to farmers.

CONCLUSION

1. The average age of farmers was 49 years old, the farming experience was 18.43 year, and landownership was 2.44 ha.

2. Farming system developed on yard field had been managed with paddy and citrus. Wet rice field was planted with rice+citrus+vegetables, rice+citrus, and rice–rice patterns.

3. Citrus had been planted with sorjan system. Guludan (raised bed)was planted with citrus and vegetable meanwhile wet rice field (sunken bed) was planted with rice.

4. The cost of manufacturing sorjan with the dimension of 4 m wide and 120 m long for 8 sorjans was Rp. 19,200,000.00 (0.38 ha).

5. Sorjan system with rice+citrus+vegetables pattern was financially feasible due to the interest rates of 12, 15, and 18%. For the analysis of 1 ha, it was obtained a B/C ratio > 1, the positive net present and the Internal rate of Return were greater than the interest rate.

6. The main problems in citrus farming faced by farmers were disease and capital.

SUGGESTION

The cultivation of citrus on tidal swampland requires substantial capital therefore it is suggested to government to provide a part or all of financial for making sorjan system.

REFERENCE


