Title of EVOKATION

Secure Livelihood by Small Orchard in Rural India—by Pradip Dey

Summary of EVOKATION

This Evokation consists of a fruit based multitier model, focusing on livelihood generation for disadvantaged and underserved populations primarily consisting of located in tribal communities. It will help break the vicious cycle of poverty and migration due to subsistence agriculture with rice monocropping and poor yield (popularly called one ton agriculture). Successful implementation of the EVOKATION will generate livelihood in the village itself round the year and hence migration will be stopped. Participating farmers will learn specific skills and establish holistic and sustainable solutions to prioritized challenges for different landscape.

* Country of implementation: Jharkhand, India.
* Area of action: Can be upscaled to anywhere in the world with minor modification.

Place of work

Rajaulatu and Sonahatu villages, Jharkhand state, India.

Background of EVOKATION area

Rajaulatu and Sonahatu villages are primarily inhabited by tribal (indigenous people) in Ranchi district of Jharkhand State. The area is endowed with a climatic condition that is conducive for successful cultivation of a diversity of horticultural crops. The wide product base, high volume of round the year production, strategic geographical location, high domestic demand, abundant sunlight and easy availability of labor at comparatively low cost make it an attractive place for investments in horticulture. The horticultural produce from the state especially fruits and vegetable have clinched a niche in the neighboring states for their quality and time of availability. The state produces about 3.39 million metric tonnes of different vegetables per annum with a surplus of more than 1 million metric tonnes. However, the present area under horticultural crops is little over 0.1 million hectare which constitute only 4.5% of total upland and medium land. The area under floriculture is meager. There lies immense scope for increase in production of different horticultural crops through area expansion and improving productivity.

Natural resources of EVOKATION area

The soil of Jharkhand state is spread in 7971655 ha geographical area and the area suitable for agriculture is 2852162 ha, gross cropped area is 2419213 ha, area under upland is 1339203 ha and under lowland is 1065944 ha. The major constraint is more that about 90% area suitable for agriculture is rainfed (2287459 ha). The state is occupied by Alfisols and dominant soils occurring on different landforms in each geological formation are (1) Archean Granite and Gneiss (Deoghar, Dumka, Giridih, Hazaribagh, Ranchi, Lohardaga and Gumla districts), (2) Dharwar landscape (Giridih, Gumla, Singhbhum and Palamu districts) and Gondwana landscapes (Dhanbad and parts of Hazaribagh and Palamu districts). These landscapes are having hilly terrains, undulating plains, plateau and valleys (Sarkar (2002). Hill terrains are under forest cover and not used for agricultural activities due to slopes, shallow rooting depth, soil erosion and low to medium available water capacity.
The other three landscapes are used for agricultural activities. The soils under undulating plains, plateau and valley are shallow (25-50 cm), deep (100-150 cm) and very deep (>150 cm), well to moderate to poorly drained, slightly acidic in nature, low organic matter and low to medium to high available water holding capacity. Majority of soils are having sloppy and undulating topography, stoniness, poor water holding capacity, drought prone, moderately eroded and soils in some part of state is poorly drained. Majority of plateau soils are grown with paddy, maize, minor millets, pulses and oilseed (niger crop) in block rotation and only paddy cultivation in terraced/valley lands.

In broad sense, soils of Jharkhand state have been classified into two broad groups as per revenue class, namely, Tanr mitti (Upland soils) and Don mitti (Lowland soils). The Tanr mitti is further divided into Tanr I (Bariland), Tanr II (Typical upland) and Tanr III (Gravel, stony, morram land). The Don mitti is divided into Don I (Garha), Don II (Tarkha) and Don III (Chatar) as per hydrology. The description of these revenue class land is given below.

**Land classification by revenue class, local class and by hydrology in Jharkhand state.**

<table>
<thead>
<tr>
<th>Revenue class (Group)</th>
<th>Sub-group</th>
<th>Local name</th>
<th>Category by Hydrology</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanr land</td>
<td>Tanr III</td>
<td>Tanr</td>
<td>Upland</td>
<td>Sloppy and gravelly lands, shallow in depth, low water holding capacity and with poor soil fertility. The lands are generally on the upper most topo-sequence on the landscape. Gentle sloppy to sloppy land, adjacent to the village with good soil depth, coarse texture, poor in organic matter, low water holding capacity, erosion prone and acidic in nature.</td>
</tr>
<tr>
<td></td>
<td>Tanr II</td>
<td>Tanr/Gora land</td>
<td>Upland</td>
<td>Land immediately adjacent to the homestead, used for vegetable, maize and rice seedling growing.</td>
</tr>
<tr>
<td></td>
<td>Tanr I</td>
<td>Bari land</td>
<td>Upland (Kitchen Garden land)</td>
<td>Transitional land between tanr and don categories moving from shallow to deep soils, greater bund heights, flat surface, higher water holding capacity. Suitable for short duration crops. Almost same physiographic position as the Tanr I. These are the best lands for rice cultivation and for follow up crops. This land rarely faces drought. Major rice production in Jharkhand comes from these lands.</td>
</tr>
<tr>
<td>Don land</td>
<td>Don III</td>
<td>Chater/Chaura/ Badi (3 number)</td>
<td>Drought prone shallow lowland</td>
<td>Lowlands with water accumulation up to 40-50 cm. Lowest in topo-sequence and suitable for long duration rice crop.</td>
</tr>
<tr>
<td></td>
<td>Don II</td>
<td>Tarkha (2 number)</td>
<td>Favorable shallow lowland</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Don I</td>
<td>Garha/ Ghoghra (1 number)</td>
<td>Favorable lowland to medium deep</td>
<td></td>
</tr>
</tbody>
</table>
**Special features:** Soils of state are sloppy and undulating, deep (100-150 cm), well drained, acidic, fine texture and medium available water capacity in upper terraces and terraced bunded fields, very deep (>150 cm), drained to poorly drained, neutral to slightly acidic, fine loamy texture and medium to high water holding capacity in lower terraces.

**Constraints:** Drought in upland and drought and water logging in lowland, poor soil fertility are major constraints. The undulating topography causes soil erosions and surface run off of water.

**Opportunities:** These lands are used by farming communities for growing paddy, minor millets, maize and pulses. Crop diversification has started in some parts with vegetable crops, specially rainy season tomato. Introduction of horticulture crops, fruit trees and tuber crops are best option in uplands and rice-wheat, rice-mustard, rice-summer vegetables are best option in lowland if water devices are developed in lowest part of topo-sequence.

**Water Resources**

The major source of water in Jharkhand is precipitation during monsoon months. Average rainfall of state is 1300 mm (based on 50 years average) in 90 rainy days in a year. Major amount of rainfall (80%) occurs from June to September in 60 rainy days. Pre-monsoon rainfall accounts 7.3% in March-April, 3.8% in January-February and post monsoon rainfall accounts 6.7% in October-December months. The 10 year mean rainfall of 22 districts (given below) showed that there is plenty rain water is available in the state.

**District wise mean rainfall (10 years mean) in Jharkhand**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Districts</th>
<th>Rainfall (mm)</th>
<th>S.No.</th>
<th>Districts</th>
<th>Rainfall (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bokaro</td>
<td>1145.3</td>
<td>12</td>
<td>Jamtara</td>
<td>1328.8</td>
</tr>
<tr>
<td>2</td>
<td>Chatra</td>
<td>1078.7</td>
<td>13</td>
<td>Kodarma</td>
<td>1125.1</td>
</tr>
<tr>
<td>3</td>
<td>Deoghar</td>
<td>1420.7</td>
<td>14</td>
<td>Latehar</td>
<td>1329.9</td>
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<tr>
<td>4</td>
<td>Dhanbad1</td>
<td>223.5</td>
<td>15</td>
<td>Lohardaga</td>
<td>1137.4</td>
</tr>
<tr>
<td>5</td>
<td>Dumka</td>
<td>1358.5</td>
<td>16</td>
<td>Palamu</td>
<td>1257.1</td>
</tr>
<tr>
<td>6</td>
<td>East Singhbhum</td>
<td>1321.6</td>
<td>17</td>
<td>Pakur</td>
<td>1730.1</td>
</tr>
<tr>
<td>7</td>
<td>Garhwa</td>
<td>1237.4</td>
<td>18</td>
<td>Ranchi</td>
<td>1388.6</td>
</tr>
<tr>
<td>8</td>
<td>Giridih</td>
<td>1095.3</td>
<td>19</td>
<td>Sahebganj</td>
<td>1371.4</td>
</tr>
<tr>
<td>9</td>
<td>Godda</td>
<td>1100.2</td>
<td>20</td>
<td>Saraikela</td>
<td>1276.9</td>
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<tr>
<td>10</td>
<td>Gumla</td>
<td>1521.5</td>
<td>21</td>
<td>Simdega</td>
<td>1381.8</td>
</tr>
<tr>
<td>11</td>
<td>Hazaribagh</td>
<td>1138.2</td>
<td>22</td>
<td>West Singhbhum</td>
<td>1253.4</td>
</tr>
</tbody>
</table>

The rainwater either accumulates in ponds, reservoirs, check dams, paddy fields or out flow through the rivers (Swarmrekhs, Damodar, Sunkh, South Koel, North Koel, Ganga, Mayurakshi, Barakar and Konar) in sea. The river systems are spread in 1800 km length. The state is having number of reservoirs for electricity generation and irrigation purposes and total area of reservoirs is 108,001 ha. Under development program, number of check dams (20,000 ha) and ponds (29,000 ha) are constructed. Inspite of so much rain water and water resources, only about 10% area is under irrigation.
**Constraints:** The major constraints of non-availability of irrigation water is run off loss of rain water due to sloppy and undulating terrain, poor quality of water and soil conservation methods, low soil depth with poor water holding capacity and solid rocks below soil surface which check the infiltration of rain water.

**Opportunities:** Plenty rainfall, creeks in most of the villages, perennial small shallow rivers, ponds, low land paddy fields are available in the state. Making small check dams in depressed area, concrete structure across the creeks, ponds along the creeks and open wells of 20” diameter can expand irrigated area many fold in the state.

**Farming system in Jharkhand**

In farming system, three components are household, cropping system and livestock system. These components are interdependent and they function by helping and complimenting each other. Cropping system involves low cash and low risk while livestock system involves more amounts of cash with high risk because for purchasing a pair of draft power needs more money and their death causes a huge loss to the farm families.

The more than 80% farmers are small, marginal and medium categories. Most of families are rearing two kinds of animals namely draft power animal and income generating animal. Due to fragmented landholdings and non-mechanization mostly bullocks and he buffaloes are used as draft power. Marginal and small farm families are having sharing arrangement. They usually keep one bullock and share with their neighbor. In addition to draft animal, the farmers are also rearing goats, chickens, ducks, pigeon and pigs for cash and home consumption. The major farming systems are animals+ cereal crops+ vegetables, animals+ cereal crops+ vegetables+ fisheries, animals+ cereal crops+ vegetables+ pigeon, animals+ cereal crops+ vegetables+ chicks, animals+ cereal crops+ vegetables+ ducks. Animals includes cow, buffalo, bullocks, pigs, goats and birds include chicks, pigeon, ducks. The vegetables and birds are main source of income in the farming systems. The majority of tribal families are having jackfruit in their orchards in Santhal Pargana Division of Jharkhand. Big farmers are having mango and guava orchards which is very remunerative.

**Problem identification**

From my own experience during my over eight years of stay in Jharkhand, I have seen the following vicious cycle which is the root of problem identification and my resolve to do something with this problem in the first opportunity:

Most of the fields are monocropped usually with upland rice with very poor productivity (less than one ton) and we call it 1t agriculture (one tone agriculture). This has created vicious cycle of selling a portion of rice and keeping another portion for household consumption. The money earned from the sale of portion is used for purchase of goat, chicken etc. After few months when the saved household portion of rice gets exhausted, the goat and hen/cock are sold to meet household consumption. When those also get exhausted then they migrated to nearby town for working as labourer.
Strategy

EVOKATION will be done initially in a pilot scale in Rajaulatu and Sonahatu village of Jharkhand state, India in one acre each with following objectives:

**Short term objective:**

To improve livelihood security and check migration from village through round the year income generation from small orchard model.

**Long term objective:**

To provide a development model for Eastern Indian Plateau with the scope for up-scaling throughout the developing world.

The proposed model

Rice monocropping besides yielding very less (less than 1 ton), also build-up pest and diseases because of producing same crop year after year. The proposed model will also provide consistent income especially from vegetable activity. Another important part is crop insurance; the proposed model with multi-crops provides safe guard to counter aberrations of environment and incidence of pest and diseases in virulent form. I envisage small orchard with 1acre area which will help in generating round the year engagement for farmers, thereby checks migration besides generating income round the year. The outer boundary of the orchard will be live fenced by Jatropha followed by inner row with Sarifa+Agave. After live fence, one row of *Moringa (Sahajan)* at 2.5 x 2.5 m spacing will be planted. This will be followed by mixed plantation of Papaya at 2.5 x 2.5m and lemon at 5 x 5 m. Interspaces to be used by *arhar* (Pigeon pea)/*kulthi* (Horse gram)/Vegetables (Cowpea/French bean/dhania Tomato/Chili)

Inputs required

**Planting material and availability:**

- **Jatropha**-cutting/sapling (from NOVOBOARD/Forest Department).
- **Sharifa**- Sapling/seedling (Forest Department/HARP)
- **Agave**- Rhizome (to be searched from Jhumri Tilaiya area where it is available in plenty from farmers field)
- **Moringa**-Planting of stump, 1m length and 10 cm diameter/seed collected from TNAU, Coimbatore.
- **Papaya**: Plant to be prepared by seed/seedling (seeds/seedling may be procured from HARP/RAU).
- **Lemon**: To be procured from Bihar.
**Time of pit preparation:**

Ideally pits are to be opened in the end of April /first week of May and should be left opened for about a month. This will ensure killing of many soil borne pathogen and pest due to high temperature of summer month.

**Pit filling:**

- **Jatropha**: 10g Dursban (Chlorpyrifos) 10G + Excavated soil
- **Sharifa**: 5 kg FYM+10g Dursban (Chlorpyrifos) 10G + Excavated soil
- **Agave**: Excavated soil
- **Moringa**: 10 kg FYM+10g Dursban (Chlorpyrifos) 10G + Excavated soil
- **Papaya**: 10 kg FYM+10g Dursban (Chlorpyrifos) 10G + Excavated soil

**Details of each crop**

**Pit filling:**

- **Jatropha**
  - Pit: 0.45x0.45 cm
  - Pit filling: 10g Dursban (Chlorpyrifos) 10G + 2 kg FYM + Excavated soil

- **Agave**
  - Pit: 0.45x0.45 cm
  - Pit filling: 10g Dursban (Chlorpyrifos) 10G + Excavated soil

- **Papaya**
  - Loamy soil with well drained land is very suitable for papaya cultivation and it can be grown in different parts of Jharkhand.
  - Seed is sown in April and plant will be ready within 1.5 to 2.0 months after sowing in tube filled with planting mixture.
  - Variety: Pusa Dwarf, Pusa Nanha and Ranchi Selection can be selected.
  - Seed rate: About 250 g per acre.
  - Transplanting: Mid June to end of July.
  - Spacing: 2.5x2.5 m
Manures and fertilizer: 20 to 25 kg well rotten FYM, 1.5 kg *karanj/neem* cake, 100 g urea, 150 g SSP, and 50 g MoP during planting and each year up to 3 years. After three years, the FYM should be increased to 30-40 kg and rest of the nutrient inputs should be applied doubled the amount stated above. For controlling termite problem, in areas with termite infestation 15 g Chlorpyriphos (Dursban) 10G should be applied. In acid soils, 500 g lime may be added with pit soil during filled.

Irrigation: As per need during summer. Usually in summer months flood irrigation at 7 days interval or drip at alternate days and in winter months 15 days interval or drip at five days. Mulching with weeds taken out during intercultural operation in the month of October after cessation of rain helps in moisture conservation and is highly recommended. However, one should be cautious for termite infestation in the mulched basins.

Intercultural operations: Basin should be made weed free as far as practicable.

Fruits are damaged by birds and proper care should be taken to save fruits from birds.

Yield: 30 to 50 kg per plant.

**Lemon**

Gravel mixed loamy soil with well drained land is very suitable for lemon cultivation and it can be grown successfully in different parts of Jharkhand.

Variety: Kagji, Benarasi can be selected.

Spacing: 5mx5m

Planting: Mid June to end of July.

Manures and fertilizer: 10 to 15 kg well rotten FYM, 1 kg *karanj/neem* cake, 100 g urea, 150 g SSP, and 50 g MoP during pit filling and each year up to 3 years. After three years and up to 7 years, the FYM should be increased to 30-40 kg and rest of the nutrient inputs should be applied doubled the amount stated above. After 7 years, the FYM should be increased to 60 kg and rest of the nutrient inputs should be applied doubled the amount recommended for 3-7 years period. For controlling termite problem, in areas with termite infestation 15 g Chlorpyriphos (Dursban) 10G should be applied. In acid soils, 500 g lime may be added with pit soil during filled.

Irrigation: As per need during summer. Usually in summer months flood irrigation at 10 days interval or drip at three days interval and in winter months 20 days interval or drip at seven days.. Mulching with weeds taken out during interculture operation in the month of October after cessation of rain helps in moisture conservation and is highly recommended. However, one should be cautious for termite infestation in the mulched basins.

Intercultural operations: Basin should be made weed free as far as practicable.

Pruning: Pruning of dead and diseased branches should be done in the month of January-February before new flash emerges. Bourdo mixture should be applied in cut portion soon after pruning operation.
In case of heavy fruit drop, spraying of 100 ppm (100 mg/litre water) NAA and 0.5 % zinc sulphate should be done during May and September.

Yield: 20 to 60 kg per plant.

**Sharifa**

It can be grown in all types of soils found in Jharkhand.

Variety: Besides Balanagar, Arka Sahan, local varieties can be selected. Seedling raised plants can be grown successfully and starts giving fruits after 2-3 years of planting.

Spacing: 5x5 m

Planting: Mid June to end of July.

Manures and fertilizer: 10 to 15 kg well rotten FYM, 1 kg *karanj/neem* cake, 100 g urea, 150 g SSP, and 50 g MoP during pit filling and each year up to 3 years. After three years and up to 7 years, the FYM should be increased to 30-40 kg and rest of the nutrient inputs should be applied doubled the amount stated above. After 7 years, the FYM should be increased to 60 kg and rest of the nutrient inputs should be applied doubled the amount recommended for 3-7 years period. For controlling termite problem, in areas with termite infestation 15 g Chlorpyriphos (Dursban) 10G should be applied. In acid soils, 500 g lime may be added with pit soil during filled.

Irrigation: As per need during summer. Since fruits develop in monsoon months, it requires little irrigation. Mulching with weeds taken out during intercultural operation in the month of October after cessation of rain helps in moisture conservation and is highly recommended. However, one should be cautious for termite infestation in the mulched basins.

Intercultural operations: Basin should be made weed free as far as practicable.

Pruning: Pruning of dead and diseased branches should be done in the month of January-February before new flash emerges. Bourdo mixture should be applied in cut portion soon after pruning operation.

In case of heavy fruit drop, spraying of 100 ppm (100 mg/litre water) NAA and 0.5 % zinc sulphate should be done during May and September.

September-October.

If leaves (cut leaves are observed in the plants) are damaged by pests, Monocrotophos @1ml/litre of water should be sprayed.

Yield: 20 to 30 kg per plant. Starts flowering in July-August and fruits mature in
Drum Stick (Sahijon)

It can be grown successfully in different parts of Jharkhand.

**Variety:** PKM-1 developed by TNAU, Coimbatore. Starts flowering after 90-100 days. Planting of stump (1m length and 10 cm diameter) from local cariety may also be planted.

**Spacing:** 2.5x2.5 m

**Seed rate:** 200 g per acre.

**Pit:** 45x45 cm

**Planting:** 2 seeds per pit at 2-3 cm from the surface.

Manures and fertilizer: 10 to 15 kg well rotten FYM, 0.5 kg karanj/neem cake during pit filling. 100 g urea, 100 g SSP and 50 g MoP should be applied 3 months after planting. A second dose of 100 g urea should be applied after 6 months of planting. For controlling termite problem, in areas with termite infestation 15 g Chlorpyriphos (Dursban) 10G should be applied. In acid soils, 500 g lime may be added with pit soil during filled.

**Pinching:** When plant attends height of 75 cm, the top is pinched to encourage more branches.

**Irrigation:** Usually at 3 days interval depending on the moisture status of the soil. Mulching with weeds taken out during intercultural operation in the month of October after cessation of rain helps in moisture conservation and is highly recommended. However, one should be cautious for termite infestation in the mulched basins.

**Intercultural operations:** Basin should be made weed free as far as practicable.

**Pest:** Fruit Fly- When the sticks (fruits) are three weeks old, neem based pesticide are sprayed to control fruit fly. If the problem persists, Dichlorvos (1 ml/litre) or Fenthian (1.5 ml/litre) should be sprayed.

**Ratoon crop:** After harvesting of fruits, plants are cut at 10 cm height. Fruiting starts after 5 months. Ratooning can be practiced for 3-4 years. Fym @ 25 kg per plant should be applied one week after ratooning. 100 g urea, 100 g SSP and 50 g MoP should be applied each year in ratoon crop.

**Yield:** 20 to 30 kg per plant.

Coriander (Dhania):

**Variety:** Pant Haritma and CS-4 (Sadhana). Can be sown any time except hot summer.

**Spacing:** 20x5 cm

**Seed rate:** 6 kg per acre. Seeds should be treated with thirum (2 g/kg seed).

Seeds should be soaked for 12 hours in water before sowing. It should be divided into two parts by rubbing in hands.
Manures and fertilizer: 4 tons per acre well rotten FYM should be applied at the time of final cultivation. 100 kg urea, 125 kg SSP and 30 kg MoP should be applied in one acre (100 decimal) land.

Irrigation: After three days of sowing followed by at 10 days interval.

Intercultural operations: Field should be made weed free as far as practicable.

Pest: Powdery bmildew- Spray Kerathane (0.15%) or sulphur (0.25%)

Aphid and leaf eating catterpiller- Monocrotophos (2 ml/litre) or neem based formulations should be sprayed.

Red mite-Kelthane (3 ml/litre)

Yield: 2 to 5 tons per acre.

Vegetable activity

A total of about 10 decimal area will be reserved for vegetable activity, out of which 8 decimal for growing of cowpea/French bean/chili/Tomato. About 2 decimal area will be reserved for growing leafy vegetable preferably dhania.

Investment/costing

We assume a plot size of 4000 sq.m (100 m* 40 m).

**No. of Jatropha: 190**

Cost of Plant: Rs. 3.00 per plant*190=Rs. 570.00

Cost of Pit: Rs. 3.00 per pit*190=Rs. 570.00

**No. of Sarifa: 100**

Cost of Plant: Rs. 3.00 per plant*100=Rs. 300.00

Cost of Pit: Rs. 5.00 per pit*100=Rs. 500.00

**No. of Moringa (Sahajan): 112**

Cost of Plant: Rs. 15.00 per plant*112=Rs. 1680.00

Cost of Pit: Rs. 5.00 per pit*112=Rs. 560.00

**No. of Papaya: 108**

Cost of Plant: Rs. 5.00 per plant*108=Rs. 540.00
Cost of Pit: Rs. 5.00 per pit*108=Rs. 540.00

No. of Lemon: 108
Cost of Plant: Rs. 20.00 per plant*108=Rs. 2160.00
Cost of Pit: Rs. 5.00 per pit*108=Rs. 540.00

Irrigation including drip lines for fruit plants and sprinklers for interspaced vegetables for each unit of one acre is Rs. 9,000.00

Manures and fertilizer Rs. 2500.00

Intercultural operation: Labour @Rs. 70.00 per day for 50 days in a year is Rs. 3500.00

Pesticide: Rs. 500

Vegetable activity (seeds/seedlings/rhizomes etc. and other extra cost like fertilizers and manures, pesticide etc.): Rs. 4000.00

Vermicomposting unit: Rs. 3000.00

Misc. cost: Rs. 750.00

A total of about Rs. 26,000 will be spent for one acre.

### TIME SCHEDULE FOR SMALL ORCHARD DEVELOPMENT

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>Particulars</th>
<th>Period</th>
<th>Approx time taken (days)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Meeting with beneficiary</td>
<td>Jan - Feb</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Selection of beneficiary</td>
<td>Feb - March</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Selection of land/plot of beneficiary</td>
<td>March - April</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Identification and finalization of reputed nursery and seed dealers</td>
<td>April - May</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Collection of planting materials (Seeds)</td>
<td>March - April</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Nursery rising</td>
<td>April - May</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Pit digging for orchard plantation</td>
<td>April</td>
<td>30</td>
<td></td>
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<tr>
<td>8</td>
<td>Orientation of project personals on small orchard</td>
<td>April - May</td>
<td>4</td>
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<tr>
<td>9</td>
<td>Training of beneficiary on small orchard</td>
<td>April - May</td>
<td>4</td>
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<tr>
<td></td>
<td>Activity Description</td>
<td>Time Frame</td>
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<tr>
<td>10</td>
<td>Arrangement of fertilizers and manures for orchard plantation</td>
<td>April - June</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Preparation for fencing of orchard plot (trench/live/dead local fence)</td>
<td>June - July</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Collection/purchase of quality planting materials</td>
<td>June - July</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Plantation</td>
<td>June - July</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Plantation of root crops (Yam, Turmeric, Zinger etc.)</td>
<td>April - May</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Interculture</td>
<td>Sept - Oct</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Cultivation of inter crops season wise</td>
<td>Season wise</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Arrangement of irrigation water</td>
<td>Nov - Dec</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Day to day monitoring</td>
<td>Every day</td>
<td>Daily</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Replacement of dead plant</td>
<td>Oct - Nov</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Data collection and documentation</td>
<td>Every month</td>
<td>Monthly</td>
<td></td>
</tr>
</tbody>
</table>

**Social impact of EVOKATION**

Successful implementation of the EVOKATION will generate livelihood in the village itself round the year and hence migration will be stopped.

**Steps to make the EVOKATION a success**

The EVOKATION will be run through development of farmers self help groups in a participatory mode with maintenance and supervision by local farmers entirely, with support from Online Universal (an NGO founded by my wife and has agreed to take up the project). I along with team members of Online Universal will focus on coordination and capacity-building. Proper representation of women in the project will be ensured through Online Universal.

**Factors that may prevent the success of EVOKATION and ways to counter the same**

Cattle grazing just after rice is harvested (villagers leave their cattle for open grazing) is a menace to have year round cultivation. Social fencing is the best fencing and we will enter in public commitment for this. Natural disaster, political instability or inter-village rivalry could prevent the successful expansion of this EVOKATION. We will go for crop insurance to counter these.
Impact and expected results of these actions over the next three years

**Impact (short term)**

- Food security achieved.
- Income generation improved.
- Poverty alleviation achieved.
- Sustainable development achieved.
- Gender issues addressed and women involved in economic activity and decision making.

**Impact (Long term)**

The long-term goal of the EVOKATION is to provide a development model for Eastern Indian Plateau. Additionally, the model can be up-scaled for use throughout the developing world.

**Income (for three years only shown)**

<table>
<thead>
<tr>
<th>Head</th>
<th>Year-I</th>
<th>Year-II</th>
<th>Year-III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good management</td>
<td>Average management</td>
<td>Good management</td>
</tr>
<tr>
<td>Papaya</td>
<td>9000.00</td>
<td>4500.00</td>
<td>9000.00</td>
</tr>
<tr>
<td>Lemon@Rs. 20/kg</td>
<td>-</td>
<td>-</td>
<td>500</td>
</tr>
<tr>
<td>Moringa</td>
<td>3000.00</td>
<td>2000.00</td>
<td>3000.00</td>
</tr>
<tr>
<td>Sarifa</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vegetable</td>
<td>10000.00</td>
<td>8000.00</td>
<td>11000.00</td>
</tr>
</tbody>
</table>

Income from *Jatropha* will come after three years.

*After successful pilot scale EVOKATION, some of the farmers may opt for guava as an alternative to lemon; costing will be same; return will be from 2nd year.

**Partnership**

EVOKATION will have non-monetary partnerships with Online Universal. Water crisis in the summer months will be tackled through participatory irrigation management will also be promoted through benefit sharing mode.
The $1000 expenditure model

During the pilot phase of EVOKATION, the $1000 that will be received will be used for funding some portion for model development and the other portion, especially labour component will be sourced from NAREGA (Govt. of India scheme for National Rural Employment Guarantee Act). Another portion of EVOKATION fund will be used to purchase a laptop and for travel. The overall financial obligation of this EVOKATION is that the system pays for itself over time and that it will be self-sustaining. I expect that up-scaling will ultimately occur by diffusion of the technology and financing through NAREGA.

Involvement of women

The EVOKATION was conceived for engaging women in monetary activity and hence, I believe it will help in women empowerment with time. Many phase of the model will be implemented, operated and maintained by women. Provision will be made for engagement of women in decision making and monitoring and evaluation of EVOKATION.
Layout of orchard:
M is *Moringa* (2.5x2.5 m); J is *Jatropha* (1.5x1.5 m); S is Sharifa (5x5 m); A is Agave (3x3 m); L is Lemon (5x5 m). P is Papaya (in between lemon). The interspace is used by *Arhar/Kulthi/Root crops/vegetables* (*cowpea, French bean, dhania, Chilli, Tomato etc.*)