

Project proposal

1. Project Information

1.1 Project Title:-Ultra High Density 36 Method Home Garden

1.2 Objective:-

- 1.2.1 Minimize monetary investment for purchase of key inputs like seeds, fertilizers and plant protection chemicals from the market
- 1.2.2 Maximum use the useless agriculture land to the cultivation
- 1.2.3 Get multi nutrients for a family
- 1.2.4 Make Recourse recycling and cost reduction in farming
- 1.2.5 Efficient use of irrigation water

2. Project Rationale

2.1 Introduction to the Project:

In Sri Lanka, home gardens (HGs) have been identified as an integral part of the landscape and culture for centuries and remain today one of the major and oldest forms of land use in the country. Although the term Ultra high density 36 method home garden (UHD 36 HG), as a subset of HGs in Sri Lanka and it is a unique method of farming which requires absolutely no monetary investment for purchase of key inputs like seeds, fertilizers and plant protection chemicals from the market. The farmer can grow hardy local varieties of crops without application of fertilizers and pesticides. Since it is a zero budget farming no institutional credit would be required and dependence on hired labour is also reduced to bare minimum. All that the system requires is native breed of cattle which is any case forms an integral part of farming families in rural areas. It is claimed that one cow is sufficient to take up this method of farming on thirty acres of land.

UHD 36 HGs are considered a result of farmers' conception, investments and long term planning. UHD 36 HG in Sri Lanka will be evolved to satisfy households' food and other needs while countering the resource constrains resulting from population pressure and shortage of arable lands and capital.

UHD 36 HG represent of perennial mixed cropping comprising a variety of tree crops with multiple uses and to a lesser extent livestock. This traditional ,complex and risk averse multi story production system comprising several perennial food crops, vegetables, fruits, roots, tubers, medicinal plants, sugar crops, spice crops and timber crops has continuously provided high levels of nutritional and diet diversity to households while medicinal species and tree species provide substantial additional income. While similar to other home garden systems in other parts of the world, UHD 36 HGs are unique in high levels of functional plant diversity they contain. The farmers and households with UHD 36 HG have also tended to have a better livelihood from a broader range of market and subsistence products compared to those with other home garden systems. UHD 36 HG provide connectivity and linkages to other agricultural and natural land spaces, and this in itself is important for biodiversity conservation and adaptation, will become more important under a changing climate, particularly as the risk of population fragmentation and the need for gene flow and species dispersal and migration increase. UHD 36 HG may well provide the quality matrix through which such linkage and connectivity may occur. For these

reasons, past present and future, this important for the contribution it makes to sustainable diets and livelihoods as well as enhanced conservation of globally important biodiversity.

2.2 Salient Features of Ultra high density 36 method Natural Farming

1) Leaser monetary investment farming

In this system of farming no monetary investment on the part of farmer is required for purchase of seeds, fertilizers and plant protection chemicals from the market. The farmer can produce his own seed or he may use seeds that are available with other farmers. More importantly, there is absolutely no place for fertilizers and plant protection chemicals in this scheme of farming. Dependence on hired labor is also reduced to the bare minimum as the system discourages intercultural operations. The whole philosophy behind this system is to make the farmer self-reliant so that he is freed from the clutches of money lenders and market dispensed high cost inputs.

2) Seed Treatment with “Amirtham”

Composition:

a)	Water	20 litres
b)	cow dung	5 kg
c)	cow urine	5 Litres
d)	One handful of soil from the surface of field	
e)	Lime	50 grams

The above mixture termed as ‘Amirtham’ can be used to treat seeds, seedlings or any planting material. The planting material has to be simply dipped in ‘Amirtham’ taken out and planted. Amirtham protects the crop from harmful soil borne and seed borne pathogens during the initial stages of germination and establishment.

3) Treatment with Jeevamrutham

Composition:

1)	Water	200 litres
2)	cow dung	10 kg
3)	cow urine	5 to 10 litres
4)	Jaggery	2 kg
5)	Flour of any pulse	2 kg
6	Handful of soil from farm or forest	-

The above mixture will suffice for one time application on one acre crop. ‘Jeevamrutham’ is to be provided once in a fortnight or at least once in a month. It promotes immense biological activity in the soil and makes the nutrients available to the crop.

Jeevamrutham is not to be considered as nutrient for the crop but only a catalytic agent to promote biological activity in the soil.

4) Mulching

Mulching with organic residues or live mulching reduces tillage and consequently labour requirements, suppresses weeds, promotes humus formation and enhances the water holding capacity of the soil. Mulching enhances the biological activity and replenishes the nutrient base of the soil. Adequate mulching keeps the top and sub soil moist and enhances the water holding capacity of the soil and also reduces water loss due to evaporation so that the crop will be better equipped to tide over drought conditions.

5) Plant Protection

In the event of outbreak of insects and diseases the farmer can himself prepare homemade pesticides and use it on the crops.

Fungicide-I

a) Butter milk fermented for five days	5 litres
b) Water	50 litres

Fungicide –II

a) cow milk	5 litres
b) Black Pepper Powder	200 grams
c) Water	200 litres

Insecticide- I

a) Powder of neem seed or Neem leaves	20 kg
b) Water	200 litres

Insecticide- II

a) Cow dung	5 kg
b) Cow urine	10 litres
c) Neem leaves	10 kg
d) Water	200 litres

This mixture is particularly effective against aphids, jassids, mealy bugs and white flies.

The above ingredients should be soaked in cow urine for ten days. About 3 litres of this mixture can be mixed with 100 litres of water and sprayed on crops.

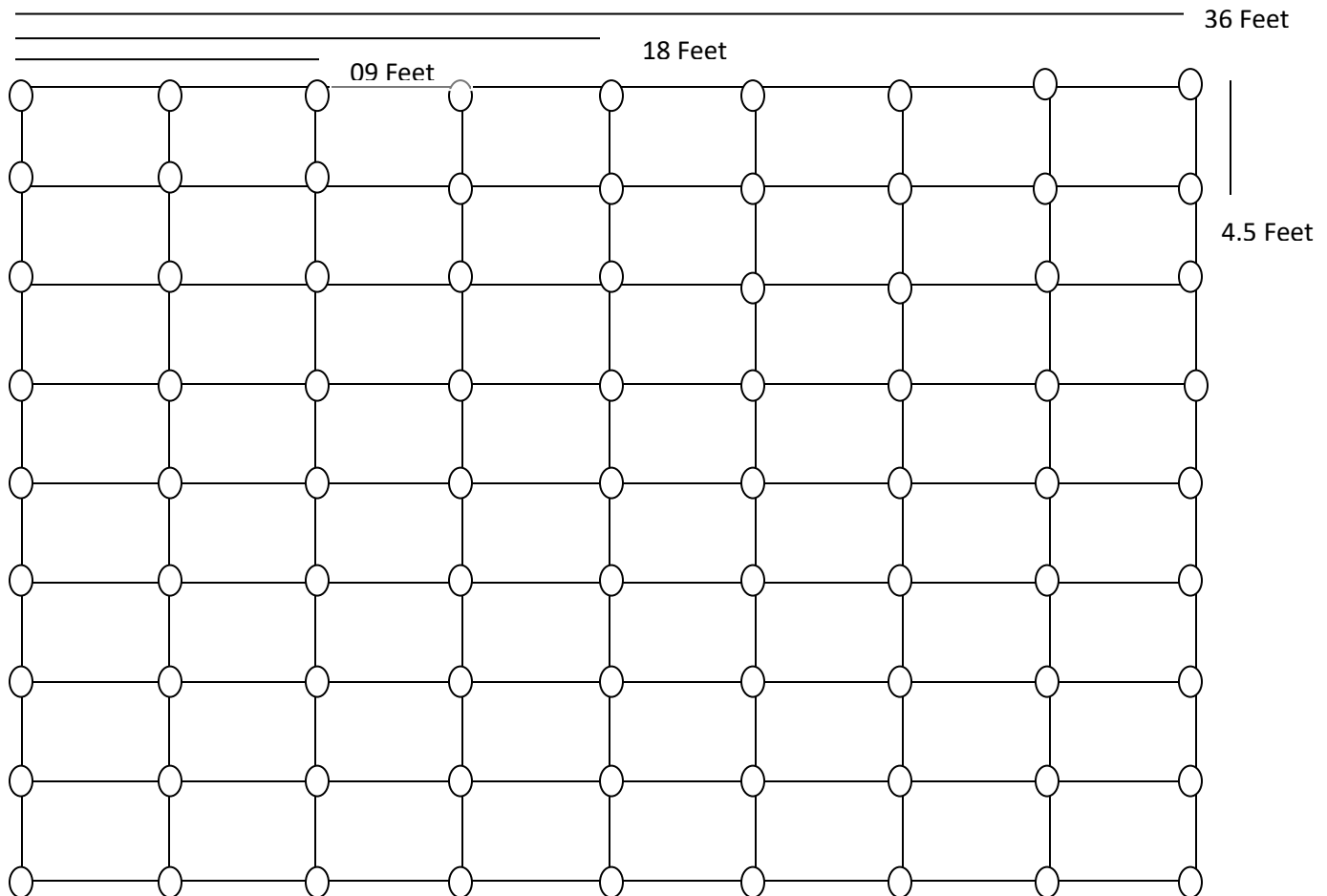
The above mentioned fungicides and insecticides can be prepared by the farmer himself and used either as prophylactic or as curative measure for control of crop pests. If the economic injury to crops due to pests is less than five percent, it should be deemed to be 'return to nature' and no plant protection measures should be taken.

6. Mixed Cropping and Crop Rotation

UHD 36 HGS advocates cultivation of diverse species of crops depending on site specific agro climatic conditions. Mixed cropping provides buffer against total failure of single crop and also widens the income source of farmers. There is stress on inclusion of leguminous crops to ensure replenishment of soil fertility. Crop rotation is also emphasized to discourage build up of endemic pests. In the scheme of mixed cropping, cereals, millets, leguminous crops, horticulture crops particularly vegetables and even medicinal plants can be included to make farming more lucrative. The system also advocates wider spacing of crops to facilitate inter cropping.

2.3. Methodology

These diagrams will show the Ultra high density 36 method home garden.



This model can be developed in 36ft X 36ft (which is further divided into four 9ft X 9ft sub-blocks) and can be grown around 170 trees.

This chart will show the trees grown in UHD 36 HGs and their purpose and nutritional values

Purpose of grown	Examples
Staple and other food items	Breadfruit, cassava, coconut, jackfruit, maize
Fruits	Avocado (Bud), banana, cashew, citrus, custard apple, guava, jackfruit, mango, orange, passion fruit, papaya, pineapple, pomegranate.
Ornamentals	Anthurium, cacti, crotons, begonias, orchids, palms, roses, ferns
Timber trees	<i>Alastonia</i> , <i>Alibizia</i> , <i>Berrya</i> , Coconut, <i>Gmelina</i> , jackfruit, mahogany, <i>Melia</i> , <i>Michelia</i> , <i>Pterocarpus</i> , teak
Medicinal plants	Most herbs and trees in homegardens are medicinally used
Vegetables	<i>Amaranthus</i> , brinjal, cabbage, leafy vegetables, okra, pumpkin, <i>Sesbania</i> , wing bean, Tomato, Capsicum
Spices	chillies, curry leaf, ginger, lemon grass, pepper, rampe, turmeric
Cash crops	Anthurium, Avocado, coconut, mahogany, teak.
Animal products	Local breeds of chicken, eggs, goat and cow milk.

Nutrient	Examples
Energy	Avocado, banana, breadfruit, cashew nut, cassava, coconut, groundnut, jackfruit, maize, sugar cane, sweet potato, yam
Protein	Cashew nut, cowpea, eggs, ground nut, beans, <i>sesbania grandifolia</i> , wing bean
Fat	Avocado, cashew nut, coconut, ground nut, milk and milk products
Vitamin A	Amaranth, banana, bitter gourd, cassava and drumstick, mango, papaya, sweet potato, water spinach
Vitamin C	Anona, banana, cashew nut, citrus (many kind), custard apple, guava, mango, nelli, orange, passion fruit, papaya, pineapple, pomegranate.
Minerals	Most green vegetables and fruits
Fibre	Most green vegetables and fruits

UHD 36 HGs is farmer friendly, eco friendly and above all extremely cost effective. These reasons are cogent enough for them to give this method a fair trial and hence will switch over to this new method.

The system of UHD 36 HGs is eminently suited to the farmer's particularly small and marginal farmers because of its simplicity, adoptability and drastic cut in cost of cultivation of crops. The appeal to the farming community lies in the fact that maintaining optimum levels of production and keeping the cost of cultivation to the bare minimum will substantially enlarge the profit margin. All the sample farmers acknowledged it as farmer friendly and financially viable. However during the initial period of transition to new system, the results will not be encouraging because of the lingering effects of chemical farming. The results will become evident only after adequate mulching and restoration of biological activity in the soil. Hence, patience and perseverance are required on the part of farmers.

Treatment with Amirtham and Jeevamrutham gives extremely encouraging results for successful cultivation of crops. Amirtham does provide adequate protection to crops from insects and

diseases during the initial stages of germination and establishment. Mortality in case of treated crop is reported to be almost negligible.

Treatment with Jeevamrutham promotes rapid and enormous biological activity in the soil. However, it should be coupled with adequate mulching so that the soil is transformed into humans rich reservoir of nutrients. It is also observed that providing Jeevamrutham once in a fortnight is better than providing it once in a month.

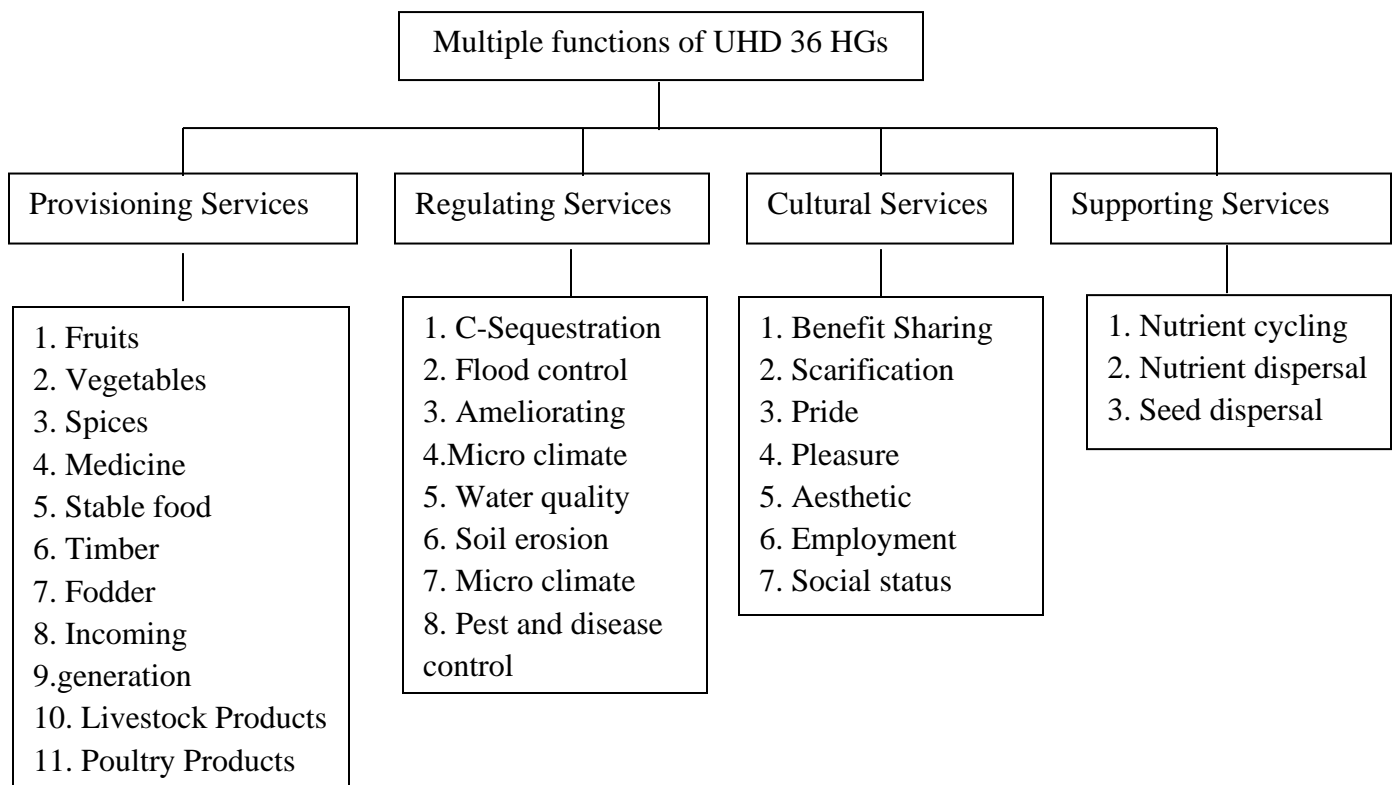
Experience with this method of farming corroborates the fact that adequate mulching promotes humus formation, suppresses weeds and greatly reduces the water requirement of the crops. Live mulching particularly with leguminous crops has been found to be not only a subsidiary source of income but also a safeguard against depletion of nutrients by crops.

Mixed cropping particularly with short duration legumes, vegetables and even medicinal plants are certainly expanded the income source of farmers. Vegetables rich in vitamins and minerals are generally marketed after adequately providing for home consumption and this certainly augurs well for overcoming malnutrition which is widespread in rural areas.

The methodology will provide for conclusions regarding feasibility of the method at present and final conclusions regarding sustainability can be drawn only after constant monitoring for a period of two to three years.

2.4. Benefits

Benefits obtained from UHD 36 HGs



Ultra High Density 36 Method Home Gardens are Good nutritional gardens. Thus, helping food and nutritional security