INNOVATIVE PLAN ON AGRICULTURAL PRODUCTION WITH WATER SUSTAINABILITY FOR FUTURE WORLD

Full Paper

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IT IS NOT MEATH, NOT HYPOTHETICAL IDEA, NOR WRITER HAS ANY MAGIC ROD AND ALL FOLLOWING STATEMENTS ARE REAL & ACHIEVABLE, NOT IMAGINARILY CONCLUDED.

1. SAVING OF WATER ABOUT 350 Cub. Km. i.e. about 350,000,000000000 ltrs of WATER.

2. SAVING OF ENERGY ABOUT 2276004 Gwh.

3. Production of grain increase by 3.35 times with multi tier production pattern.

4. Contribution from renewable energy resources (Solar Panel) is 104878 WATT/hour in peak time. Utilising land area = 1.5988 acres.

5. GDP of the country will minimise with sustainable development in country's economy.

6. Provision of honey production earn extra.

7. Rain Water Harvesting ensure as an additional resources of water.

Innovative infrastructure development take place when mankind on 'Struggle for existence's' to remove the problem with viable solution. My Model/Project emphasis a step is forwarding for Global as well as National Development.

Previously our ancestors had live in with the plot of land. Day by day with the increase of population and rapid urbanisation force us to share that land with others as enter in flat culture that concept confirm the living of many families with land utilisation is minimum. In the other hand we ensure to get & enjoy the facilities at the minimum possible money investment. Due to rapid urbanisation the rural agricultural land become scarce and effect to food grain production. This concept day by day force us to purchase the food in higher price depending on the simple demand & availability context; result direct effect on countries economy. The inflation rate & GDP use to increase day by day. In this acute situation, any Government become puzzled to coup up with the situation and need the change in policy. If require, any innovative ideas are gladly acceptable with the merit.

My esteemed project & model can solve the problem as faced by our nation as well as World. My inspiration is the first welcome address of our beloved President of India on 25th July, 2012 by honourable Sri. PRANAB MUKHERGEE as mentioned below.

In India as well as world suffers many types of atmospheric environmental hazard, restrict the planned development, casualty of human and animal, directly affect the financial stability of the country. With the technological advancement and innovation slowly but firmly, human win the obstacles. It is a small contribution from me to overcome the unforeseen fact facing due to vagaries of environment. Somehow human's unreliable act cause of the same. **Our President of India Sri Pranab Mukherjee** reiterates and quote in his welcome address as President of India on 25th July, 2012 that **'There is no humiliation more abusive than hunger. Trickle-down theories do not address the legitimate aspirations of the poor. We must lift those at the bottom so that poverty is erased from the dictionary of modern India.'**

My innovative project symbolises to become self-reliance in Agriculture sector to overcome poverty, with multi utilisation of single land ignoring drought and classification of land (**which is suitable for agricultural production or not**). Even the quarrel/land dispute with land owner (farmer & other) and corporate giant, bureaucrats for the process of urbanisation, industrialisation process resolved with the implementation of my innovative model/project.

PRINCIPLE AND STRUCTURAL NEED

As per the enclosed drawing /picture/animation, the constructional & structural phenomena are well understood by the audience/technologist/scientist and reiterates in your mind, is it the invention? But its principle is to utilise the land in multiple way to multiply the production. For agriculture there are minimum seven things are required; land,

agricultural soil, seeds, fertiliser (optional), water, air & sun ray. In my enclosed structure all the amenities as mentioned are available, but all are may use as portable in application.

1. The Figure 1 to 9 ensures various visual confirmation of my concept which is described in stage by stage as followed. My model/project confirms the optimum utilisation of Land, Water, and Energy. The ROI (Return on investment) is immeasurable when we consider the saving in terms of money as mentioned in first page with seven points. My structured mode can be dismantled or alter as per the need and can be installed at other places also.

   This model/project is introducing the tier farming. I consider four tiers firming are viable and appropriate but any change can be accepted for betterment of Nation & World. In figure.1 the solar panel act as renewable energy resources and its act through utilisation the same in irrigation & plant machinery with simultaneous crop production and the unused water can be reserved at plastic moulded container (Fig. 6) will keep at underground or in the reservoir (Fig. 5) construct between the 1st tier & ground.

   The rain water harvesting is introduced in the model (Fig. 6) by placing the solar panel as show in figure. Actually in rainy season the back side of the panel create slop and collect the rain water. From Fig. 4 & 9 shows the placing of reflector stand and six numbers of units each has length 400' ft. and width 40'ft respectively. In Fig. 9 the upper smallest unit indicated by arrow represent unit as mentioned in the Figure. The Bee Basket are introduced for honey production for optimum utilisation of land result increase in return on Investment.

2. **Selection of Land/Place: -** The total land area in the world has been estimated at about 148.5 million Sq. km on which Asia cover about 44.6 million Sq. km the highest in the world (30%). Africa, North America, South America, Antarctica and Europe occupy about 20%, 16.3%, 8.9%, 8.9% and 6.7% land areas respectively of the world.The land utilisation depends on the needs of inhabitant.

   In the developed & under developed countries, pressure of land has led the inhabitants to seek the other occupation like mining, commerce, industries, agriculture & shelter. In nut shell land can be classified as Agriculture & Non Agriculture. Due to over exploitation the productive lands for sustainable agriculture, deteriorate day by day.

   As per the Human Development report about two and half billion hectare of productive land have been degraded. It is an interesting part that the loss of good cultivated lands belongs to developing & under developing country; most of them belong to Asia and Africa, where acute food shortage and famines are recurrent. Surprisingly about world's two third of the poorest people lived in that region.

With the minute concern as mentioned above, my project (portable Agriculture production unit) can be sustained in the following areas

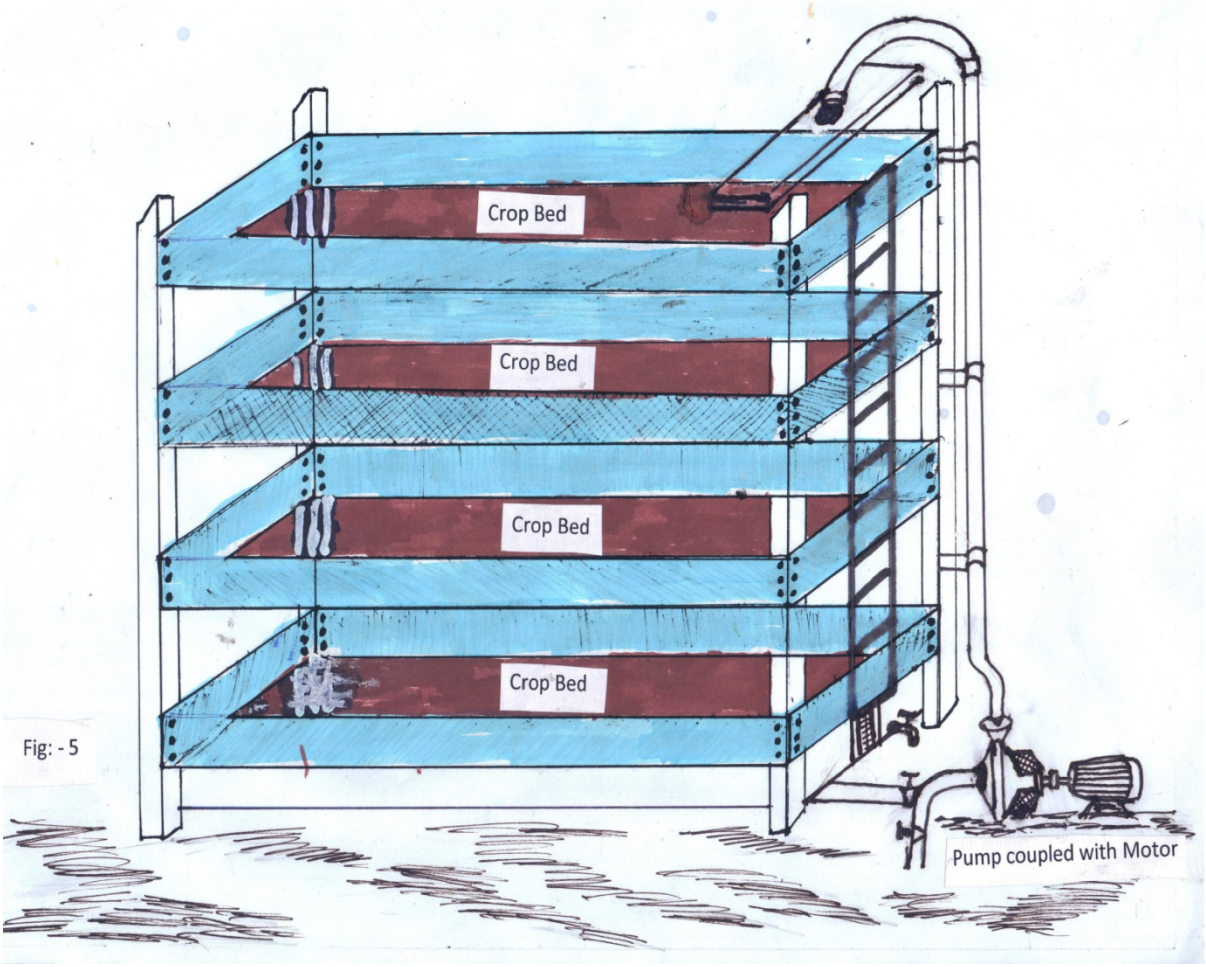

Fig: - 5

3. **Selection of Seed:-**Selection of seed depends on the place where this project is come on effect. It is somehow depends on the soil available or proposed agricultural need as a whole. Atmosphere and climate play the major role for selecting the same which is directly commensurate with the selection place. **Selection of soil: -** Soil selection depends on the crops to be cultivated. Choice lies with owner as the same are use in portable in nature. The soil will keep in the floor of each shelf and according to the required atmospheric temperature and environment which suits the crops for healthy development.

4. **Selection of Fertiliser:-**As far as possible, the attempt should be made to use manure as agriculture recourses for recycling the waste of animal. It is very convenient to utilise various types of biodegradable waste as a fertiliser. Due to portable handling of soil it is easier to mixing the fertiliser with the soil. Above all after cutting the crop, it is easier to test the soil and detect the discrepancy for reuse or having the opportunity to get the require quality as per the crops to be cultivated with necessary addition & alteration of the constituent need for next crop. It is a great advantage to use the quality soil as per the crops using the predetermined selected fertiliser.

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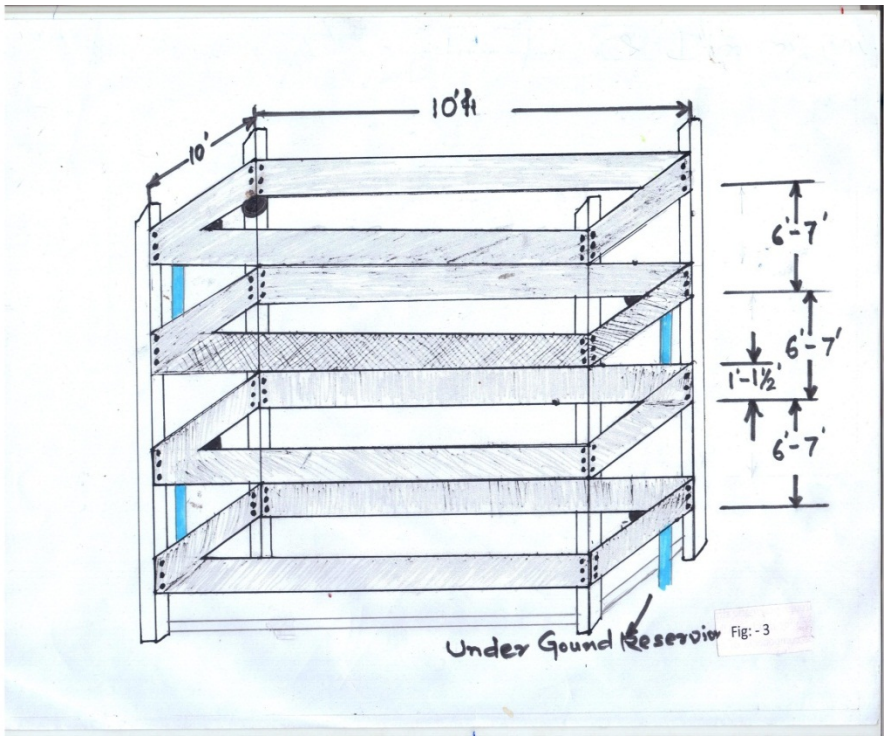

(Dimension of the tier and its guarder)

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8. **Availability and requirement of water:-**In agricultural sector in India, the projected requirement of water on 2025 is 770 cub.km, as compare with 460 & 630 cub.km used in the year 1990 & 2000 respectively. It is aware fact that out of total availability of the water in the world, only 3% water is usable for our world civilisation.**This project helps to reduce about 50% water used in agriculture sector. Wastage of water about NIL and the water used for the crops will recycle fully.**

9. **Air Quality: -**Mass production of crops ensures the up-gradation of Air quality which wills rich in oxygen.

10. **Availability of Sun Rays:-** The sun rays at upper tier is directly approachable but for 1^{st} , 2^{nd}& 3^{rd} tier the sun rays reach to the crop with the help of **series of reflector made of mirror.**These mirrors are used to place at the open spaceprovided & recommended in the structure as per enclosed lay out (Top view). It is necessary to install reflector at the roof of the 1^{st}, 2^{nd}& 3^{rd} tier by which requirement of sun rays for the cultivation & agricultural purpose. It is to be noted that, during the development of saplings, absent of sun rays sometimes require which willmeet in this project. There is no additional arrangement are necessary for the same.

11. **Provision for honey production: -** The Fig. 4 shows the provision of Bee Boxes about 49 numbers comprising the area 7763 sq. Mtr. The main objective to expedite fertilisation result, the good production of crops and increase the ROI. In 49 boxes it is expected to produce about 14000 Kg of honey/ year with multi task employment generation in the area providing little bit training facilities to meet the manual expert in both the field. The large area of land provide introduction of more Bee Boxes ensure more earning. The cost of honey is Rs. 280/- per Kg. The cost of the honey down due to banned of export as a policy matter of Govt. of India.

ADNATAGE OF THE PROJECT:-

1) **ENVIORMENTAL EFFECT**

- **Fully eco-friendly increases the amount of oxygen in nature**:- More the cultivation, more will be the agricultural production ensure more availability of oxygen in the atmosphere result less pollution.

- **Pump and other accessories will run in renewable energy resources**:- The energy require for this model/project meet up by installation of series of solar panel at the top of the tier. Provision of any types of conventional energy resources is NIL in this model/project.

- **As far as possible restrict chemical oriented fertiliser**:- Manures (Animal & plant waste) will meet the requirement of fertiliser but if, expert suggest for chemical base fertiliser the same cannot be ruled out for better production of crops.

- **Misuse of Irrigated water can be stopped. Unused water will be recycle**:- In my model/project water supply for irrigation is delivered through soil at 4^{th} tier and after absorption the residue will automatically transfer to 3^{rd}, 2^{nd}, & 1^{st} tier platform,

afterwards rest will collect at underground reservoir for recycle in future course as & when require.

- **Due to bigger catchment area the rain water harvesting will acted upon automatically and used the same for irrigation or drinking water purpose**.:- In rainy season, the rain water harvesting process can be acted upon to collect the rain water for further use for irrigation as well as drinking purpose. The additional lever port is associated on the delivery line of water between the 4^{th} tier and the 3^{rd} tier platform. It can be access between 1^{st} tier platforms and underground approach. In the rainy season

- **Liberty on selection of soil, as per the selection of crop according to the nature & environment:-**In this model/Project we have the liberty to select the soil as per the crop to be grown which is depends on the climatic acceptability of the crop to be produce. Although it is to be noted that the transportation of the soil can be avoided as we will get ample of soil with the digging of pit for reservoir. This soil may be utilised and accordingly the crop to be produced can be decided. Later for continuous farming, if any fertiliser or chemical to be added to cover up the deficiency for producing particular crops that may be incorporate as per the need. This act minimise the cost of soil as well as the transportation of the same. In my 4 tier crop production system/model the liberty of choosing different soil for different tier fit to production of crop as per wish & desire. But when we consider the economical aspect the probability for choosing the different crops for the tiers will be avoided.
  Degradation of soil restrict the production of crop, which may be avoided and compensate with the liberty of utilising the same in portable manner with the chemical or fertiliser rectification.

- **Even on flood the crop production will not hamper significantly:-**
  As the height of the each tier with each other will 7 ft. During flood main consideration is height of the water i.e. flooding level. If we consider in India, the average flooding level was about below 3ft. (apx) maximum & minimum was around

2) SOCIAL EFFECT

- Multipleproduction on the single plot of land increase profitability of farmer/ organisation.

- Increase of production can be compensating with the non-productive effected area due to drought & other calamities.

- ❖ Agricultural production growth expedite drastically, result increase in growth rate.
- ❖ Poverty level of the country can be reduced.
- ❖ Directly or indirectly employment generation in rural as well as urban area will be increase.
- ❖ Due to rapid urbanisation this project model can be compensate the resulted reduction of agricultural growth.
- ❖ Litigation between the farmer and land acquired organisation reduce without affecting the interest of farmer.

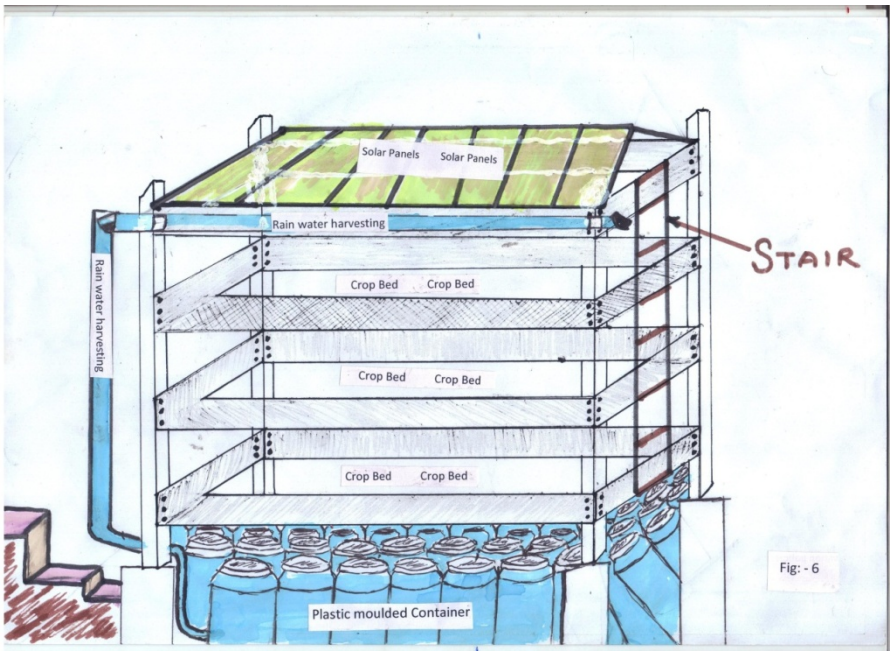
3) GOVT. MACHINARY

- ✓ **Easy monitoring and funding.**
- ✓ **Probable experiment can be followed without effecting the crop production.**
- ✓ **The project can be implemented constructing the farmer co-operative, result reduction of Government professional engagement.**
- ✓ **Technical & scientific knowhow can be imparted in a single window system.**
- ✓ **Once the infrastructure, for Agricultural production is ready, the same can be utilising for 10 years with commendable change, if necessary.**
- ✓ **Easy to accounting the expenditure, from pre-cultivation to cutting of crops.**
- ✓ **Each and every aspect is countable such as quantity of water use, amount of crop production, energy saving in KW, Return on investment, comparison between conventional & portable firming etc.**

4) **SUBSTANTIAL WATER (Surface or Ground) SAVING: -**Generally in agriculture sector ample water is used to require. To meet the requirement we all depend on the surface or ground water. The prposed below structure cnfirm the provision of 'Rain Water Harvesting' during rainy season. The total cathment are will be 5442 sq. Mtr area out of 7763 sq. Mtr of utilise land. The rain water preserve depends on the area

& intensity of the rain time to time. The rain water will seperately preserved at the plastic moulded container (Fig- 6) below for future use in drinking purpose as well as agriculture purpose as per the need as and when require. In the below figure the place where caption of 'rain water harvesing' is pointed out in delevery pipe (vertical) where the filter box is situated. **As a whole in my model the single drop of water will not mis use. Every drop count and will productive one**.

The plastic moulded containers measuring 2000 ltrs each as per the dimension



(Rain water harvesting on rainy season)

In Agriculture of any type of crops the water is used for **1) Land Preparation-** About**36.8%** of total used water consume in this activity which is an unproductive. **2) Seepage and Percolation-** It is also the unproductively used for Agriculture. **31.6%** of total consumed water in Crop production. **3) Evapotranspiration** only is the productively used & takes **31.6%** of total consumption of water.

The water requirement in India may be classified in three groups

- ✓ **DOMESTIC USE**
- ✓ **INDUTRIAL USE**
- ✓ **AGRICULTURAL USE**

(**Units in cubic Km**)

REQOIREMENT	YEAR 1990	YEAR 2000	YEAR 2025
DOMESTIC	25	33	52
I NDUSTRIAL	67	89	228

AGRICULTURE	460	630	770
TOTAL CONSUMPTION	**552**	**752**	**1050**

In my innovative model the use of water reduce by 50% because the water management in my model/project there is not a single opportunity possess for unproductive use of water as in the case of Seepage and Percolation and for land preparation. Although in my model/project only 10% to 16% of total consumed water may necessary for Land preparation. Accordingly in agriculture sector 2013-2014 year the total utilisable water wills 350 Cu. Km in compare with 700 Cu. Km. Actual saving will 350 Cu. Km.

It is to be noted that, about 3000 cu Mtr of water /per ton of paddy production require. As per my water management through Model/Project about 1500 cu Mtr or 15, 00,000 ltr of water saving can very much possible by accepting & implementing this project/Model.

ELECTRICAL ENERGY

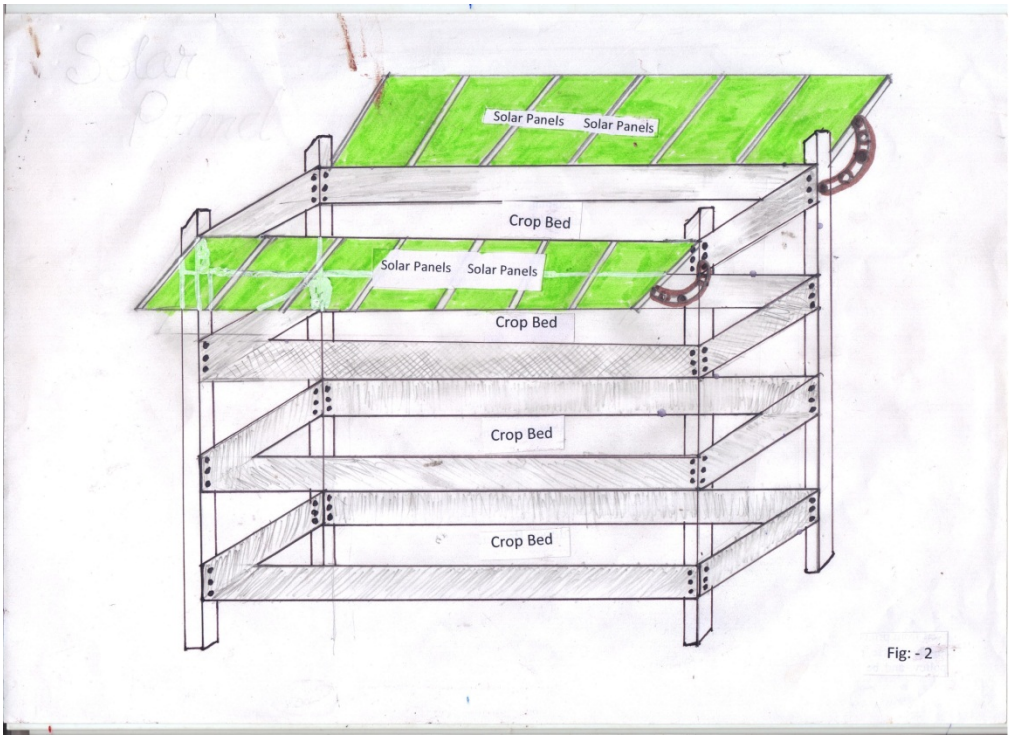
The demand projections on all India basis for the year 2011 - 12, 2016 - 17 and 2021 - 22 Are given below :

YEAR	Electrical Energy Requirement at power station Bus Bars(Gwh)	Annual Peak Electricity Load at Power Station Bus Bar (MW)
2011-2012	968659	152746
2016-2017	1392066	218209
2021-2022	1914508	298253

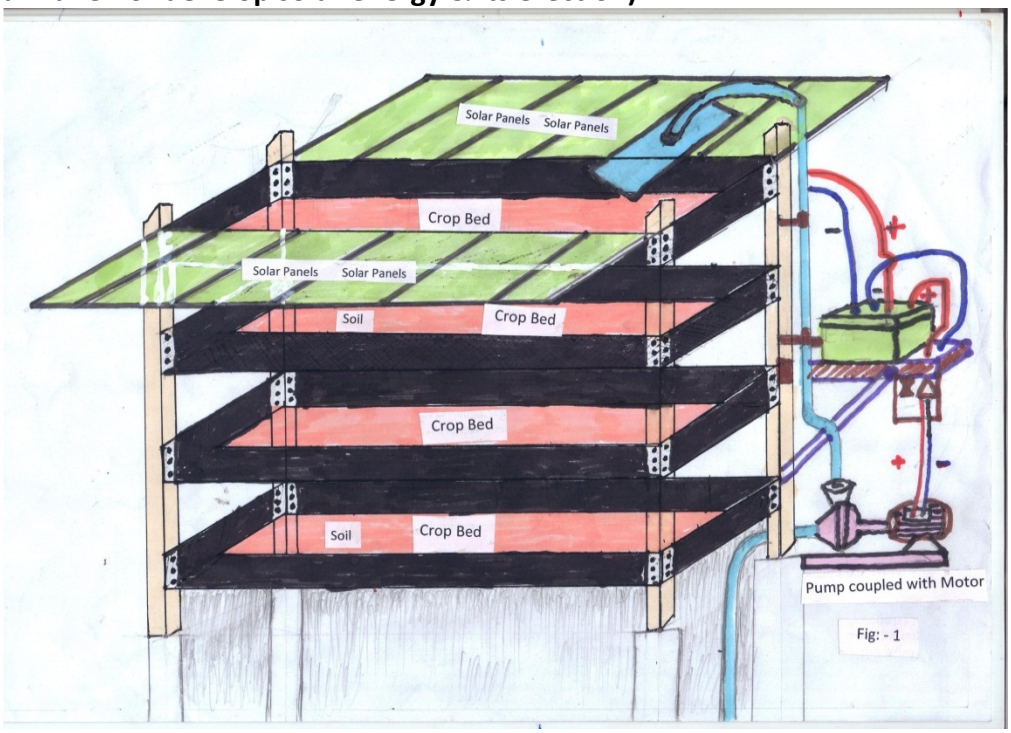
(Source 17th energy report of Ministry of power)

Energy in Agriculture Sector

Agriculture is a key sector in India that employs two-thirds of the country's work forceand continues to be a significant contributor to the GDP, 20% in 2005 (MOSPI, 2007b).Even though agriculture's share in total GDP has decreased over time compared toindustry and services, agricultural value added is still increasing. Its growth rate was2.8% over the last 5 years (2000-2005).



(Solar Panel for develop solar energy & its erection)



After 2005 the growth rate is about 3% in Agricultural sector (include irrigation) each year accordingly the consumption of Electrical energy also increase significantly. As per the demand in Agricultural sector about 20% electricity & 10% oil equivalent energy consume in each year.

Solar Panel & its potentiality:-

The power a solar panel can achieve and the power it delivers are two different matters. If a given panel is rated at 180 watts, then it will perform up to that level in the brightest sunlight (1,000 watts per square meter). However, unless you live on the Equator, the solar panel will not receive that much sunlight. The amount of sunlight that reaches the ground in our region (called "insulation," averaged in watts per square meter) divided industry-standard bright sunlight (1000 watts per square meter) will tell us what fraction of the rated wattage our panel will produce.

A simpler method is to find the number of "peak sun hours" our location receives each day. Any reputable vendor will have this information. A peak sun hour is one hour of 1,000 watts per square meter sunligh. Most locations in the United States receive less than six peak sun hours per day. we can predict how much power a given solar panel can generate by multiplying the watt rating of a solar panel by the number of peak sun hours for the location. It is to be noted that the sun hours will vary by season, and are lowest during the winter.

As per the above table in 2013-2014 the total electrical energy requirement will 1138022Gwh in India as a whole. Now in Agricultural sector the electrical energy consumed is 1138022 x 20% = 2276004 Gwh.

As a result total savings in energy will 2276004 Gwh all the energy will be available through Renewable Energy resources i.e. provision of solar panel. In 1.5988 acres of land ensure about 104878 watt/hr at peak time which is sufficient to meet the energy requirement for agriculture, Irrigation & plant machinery.

1. **Optimum Utilisation of Land :-**

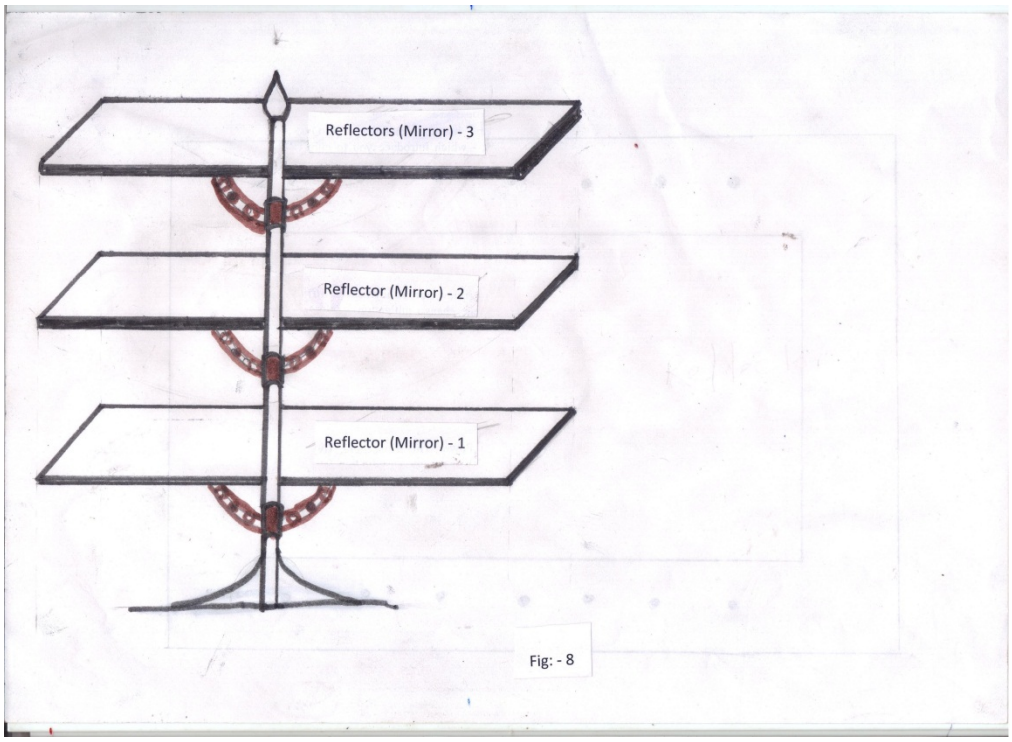
   It depends on the area of land covered by this project 6 x 400 ft x 40 ft covered area with 15 ft free space should be provided at the throughout the covered area comprising the actual utilisable area will be 415x55x6 = 136950 sqft= 7763.00 sq. Mtr= 0.7763 hectare = 1.918 acres. Total crop production area 4x6x400x40= sq. ft= 21768.7 sq. Mtr = 5.379 acres = 2.1768 hectare. Extraarea kept for performing the other activity like installation of reflector to get sun ray, Pump for uninterrupted supply of water, solar panel for uninterrupted energy resources &manual work to look after all the activities and perform the work which are necessary for cultivation and crop production with optimum utilisation of supplied water (surface or ground).

   1 sq yard= 9 sqft, 1 sqmtr= 1.960 sq yard, 1 hectare= 10000 sq.Mtr= 2.4711 acres

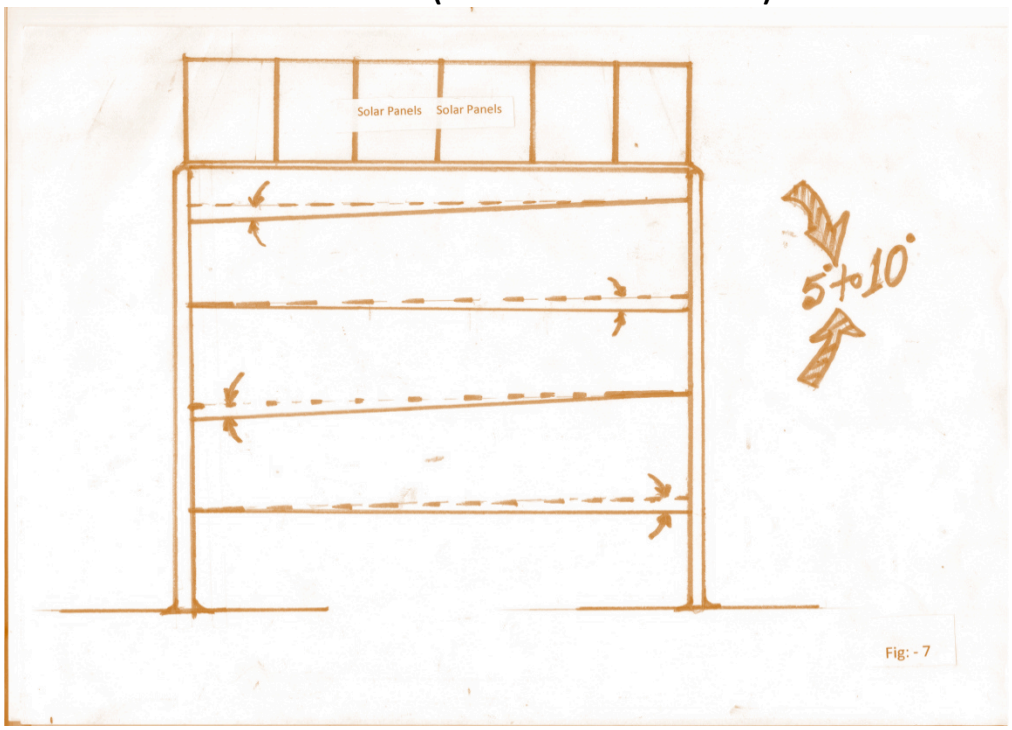
2. **Structural Longevity:- The structural longevity is about 10 years but with minute care the same will increase up to 15 years.**

Disadvantage:-

In a nut shell, primary capital investment is more but the ROI is huge; as a whole if we consider the savings (Water, Energy & Land) in terms of money the investment is negligible.



(Movable reflector stand)



(Tier inclination for water transportation by gravity)

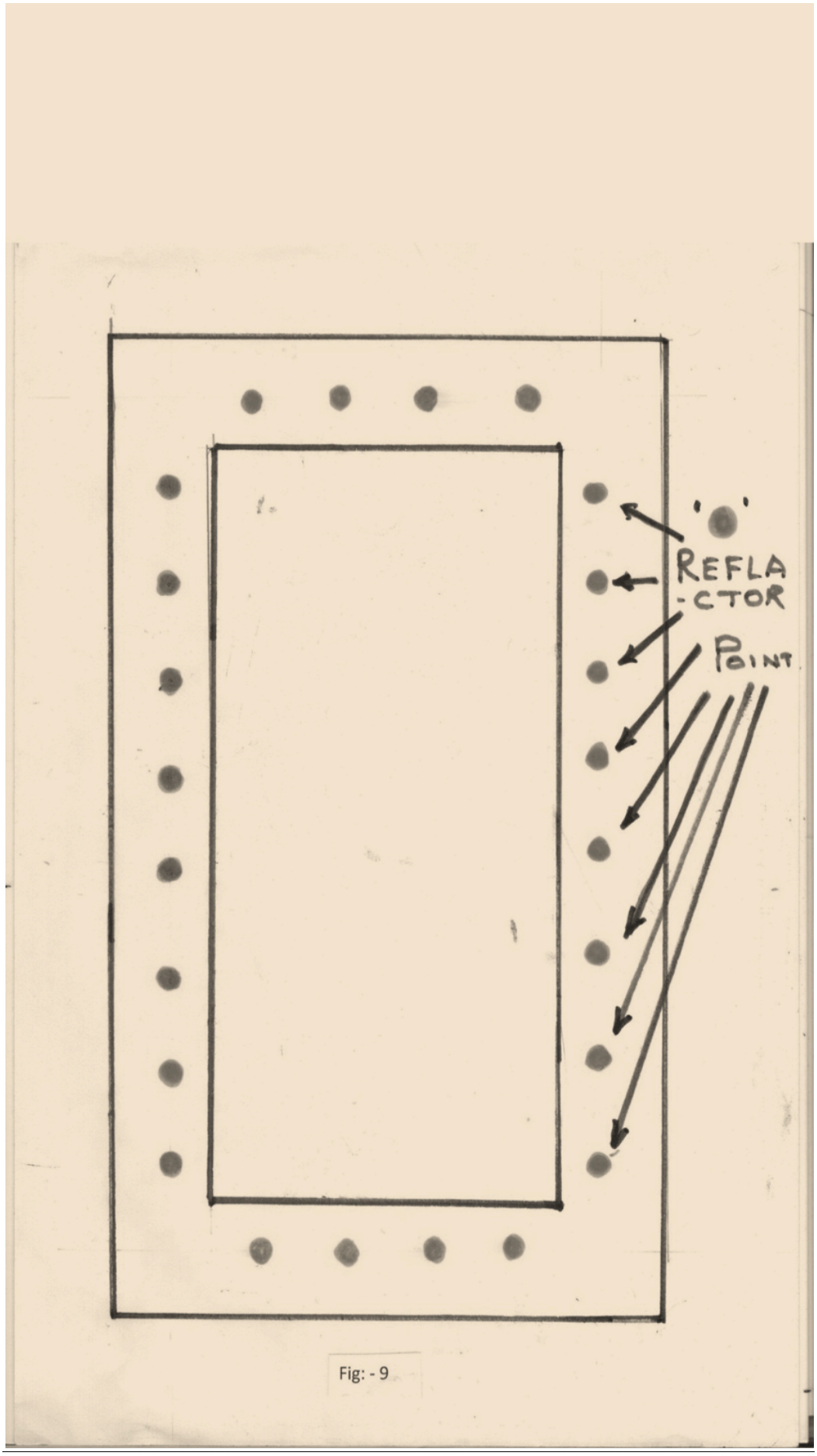


Fig: - 9

Project outcome:-

If we consider the paddy production, in India the paddy production had been done in 42.56 lakh hectare land and the total production was 143.96 million tons and the price of the rice was Rs. 1825/- to 2000/- per 100 kg. The average rice production in India was 2.3 ton/hectare against global production 4.3 tons/ hectare.
If we eager to produce rice, the actual utilisable area is 0.7763 hectare accordingly in India the production of rice is 1.785 ton, if we consider my model the production for 2.1768 hectare will produce 5 ton of rice. Now the actual land use is 0.7763 hectare and production will 5 ton with execution of my model & project. The production rate / hectare will 6.44 ton/hectare which is very higher side in compare with Global production.

Similarly in the case of wheat, the production in India is 2.9 ton/hectare in compare with Global production is 3 ton/hectare as Global bench mark. With my model the production will 6.32 ton / hectare in Indian context with actual land use is 0.7763 hectare.

Sustain of life, for any individual is serious matter,
No one will compromise with food, land & water.

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ABSTRACT

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This project have the ample favourable aspect & effect on Environment, Social & smooth execution on regasification of the Governance of the Central/State/Autonomous body & the stack holder.
On Environmental context the benefit are fully eco-friendly increases the amount of oxygen in nature.

- Pump and other accessories will run in renewable energy resources.
- As far as possible restrict chemical oriented fertiliser.
- Misuse of Irrigated water can be stopped. Unused water will be recycling for the same purpose.
- Due to bigger catchment area the rain water harvesting will acted upon automatically and used for irrigation or drinking water purpose.
- Increase of carbon emission in the nature can be lowered.
- Liberty on selection of soil as per the selection of crop according to the nature & environment.
- Degradation of soil restrict the production of crop, which may be avoided and compensate with the liberty of utilising the same in portable manner with the chemical or fertiliser rectification.
- Even on flood the crop production will not hamper significantly

Similarly on the social, with outcome from the utilisation ofall the activity of Govt. machinery in my projects play a great role in constructing the favourable input to the Nation as well as world.

The portable Agricultural revolutionary project confirms the minimum utilisation of water reduced by about 30% comparing the existence use; confirm huge saving in surface as well as Ground Water with the implication of Renewable energy resources on the project. The Energy render to run the project and establishment fully catch through the resources which are available environmentally.

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