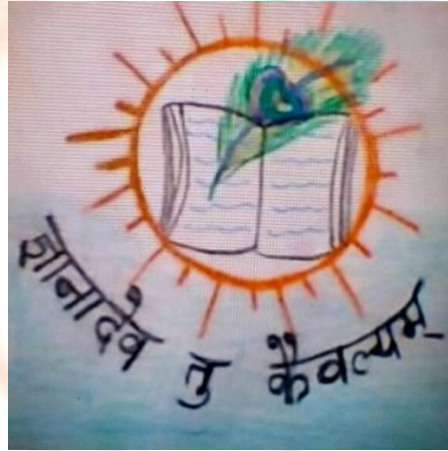




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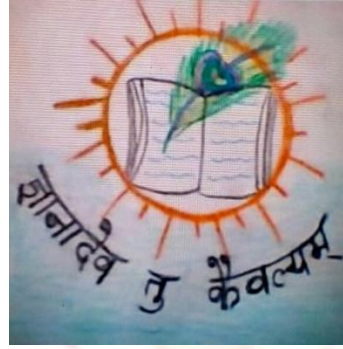
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International Journal of Original Research and Development



An attempt to provide ready to use latest research and development knowledge to the society and to lead human civilisation to Moon, Mars and Beyond, with deadlines of 2030 A.D. Moon colonisation, 2050 A.D. Mars Colonisation, and beyond, with full of ethics, values and sustainable safe growth.

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Our aim, mission, vision and credo are creating free knowledge society on earth and thus inclusive welfare of all the human beings on Mother Earth, and Moon, Mars and Beyond.

We don't publish those articles that harm society or do not contribute positively for the humane development.

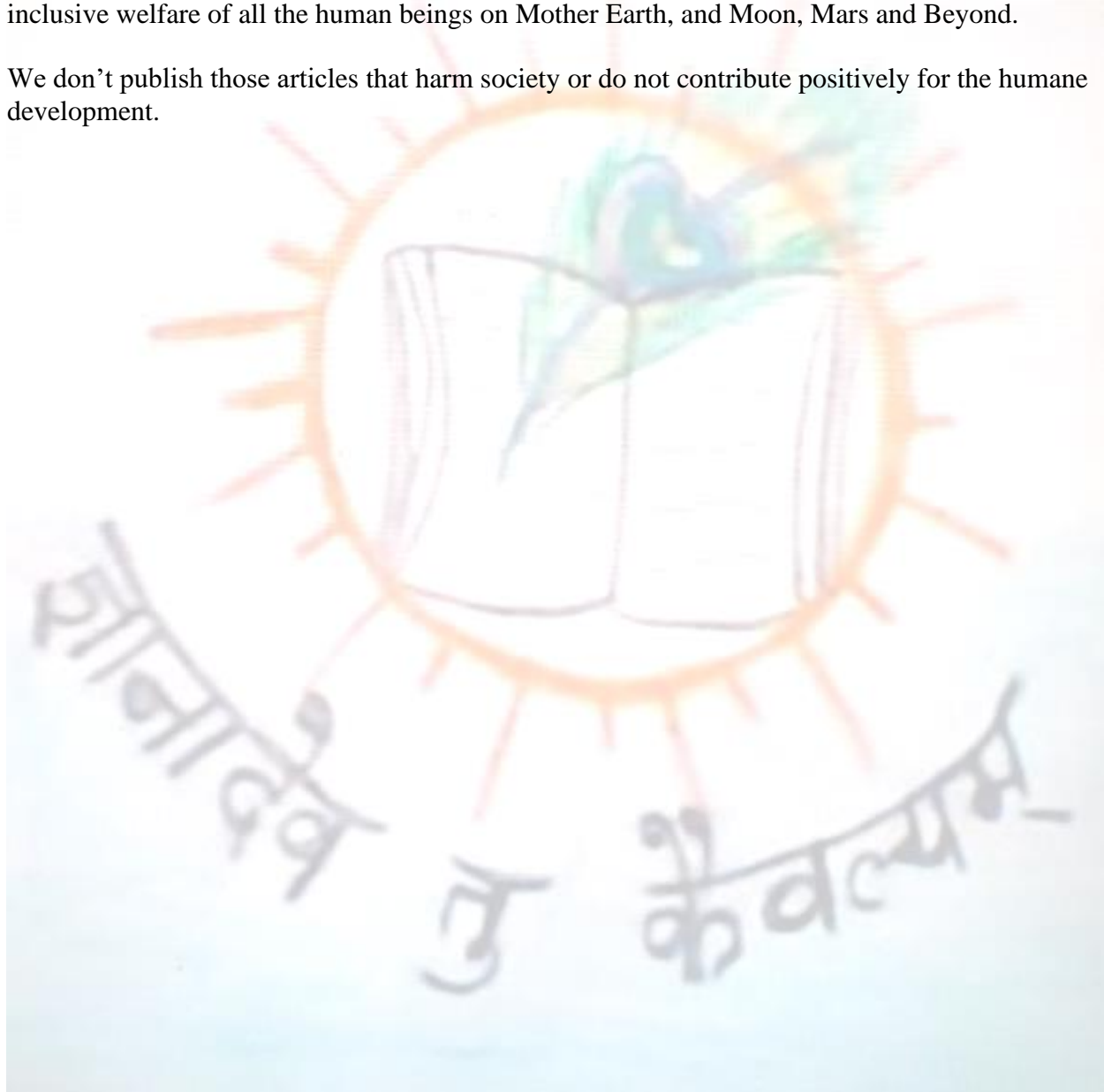


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Agriculture Disaster to Sustainable Development in India

(Research Publication based on the Original Survey by CEO, IJORD and Founder Director, IJORD)

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Agriculture, Farmers Suicides, Crop-Optimization, Stochastic System, Nanotechnology, Laboratory to Farm, Sustainable Development

Abstract:

As per the Field Survey 2006 there are 120 million families and 600 million population involved in farming activities in India. Eleventh Five Year Plan, of the Indian Government figures show that India is producing 22 million tonnes of food grains while the requirement is 23 million tonnes. Since independence in 1947, India have experienced many revolutions in the field of Agriculture and associated industries. Few of them are Green revolution in crop produce/yield, Yellow revolution in vegetable oil, White revolution in corporate milk production, Blue revolution in fisheries and fish farming/ raring, and Golden revolution in horticulture.

However, suicides among the farmers in Vidarbha region of Maharashtra province have forced Indian strategists, policy developers and decision makers, scientists, the Government, and even common citizens, to rethink their approach and rekindle the agriculture sector.

Hence, it is our positive effort to put these problems in an easy format. We conducted our own Independent Surveys and we tried to find viable and implementable practical Solutions at grass root level.

It may help the strategists to find out a method to over come the poverty, but at present our main focus is Agrarians / Farmers and their problems, their Solutions leading to Sustainable Development.

Introduction:

Agriculture and associated industries contributed almost 20% of Gross Domestic Product (GDP) in the year 2006 while in 2014 it has declined to 18.20%.

Also, in spite of India's technological achievements in space and rocket sciences, growth in information and communication technologies, advancement in the agricultural technologies, much of the Indian agriculture still depends on monsoon rain and traditional way of farming and irrigation. After independence, there were many revolutions on the agricultural and associated industries at social and technological fronts. However, many believe that even today individual Agrarian/ Farmer and his benefits are not in focus of Agriculture in India.

Statistics in India shows that urban development is faster and is at the cost of environment, villages and agriculture.

Visionaries tried convincing about powerful farmers, powerful villages and powerful nation, what would be called as the idealistic Bottom-Up approach of healthy and powerful India as ultimately





food, farming, farmers and finance are inseparable part of human life, still even today most of the 600,000 villages in India are left high and dry.

Swami Vivekananda proclaimed 'India must educate masses than classes because classes can take care of themselves' some 125 years ago if it has to progress. However, major knowledge language now a day has been English, and 'Lab to Farming' was failure, in case of BT-Cotton cultivation generated in the Agricultural laboratories could not be properly communicated to farmers. It was major cause of suicides. In one survey it was found that farmers went on to put fertilisers and pesticides in larger volumes than required. It reduced output from expected 15 to 18 quintals to mere 2 to 3 quintals, thus causing a loss of Rs.1725 / Acre i.e. Rs. 4312 / Hectare in the year between 2000 till 2006. Thus, it raised one more issue about genetically modified (GM) crops and their economic viability among the uneducated farmers. Also, in the Knowledge Economy education to farmers has become major issue. It followed a perfect debt trap for the farmers, first debt not over but they have to avail next debt to sow to grow their farms and earn their own livelihood.

As discussed above, the Indian farming depends on monsoon rains. Traditionally it rains between the months of June through August. However, if it rains less a farmer loses crops and if rains more then also the farmer loses crops, a perfect scissors trap fails Indian farmers and it means Indian agriculture dances at the tunes of monsoon. During lack of rains only few farmers use protective irrigation method and only if the facility is available.

In the era of globalisation and disturbed weather pattern, agrarians also face the knowledge gap of about the global market in India, where as in Israel, Saudi Arabia, and Chinese Agrarians are trained to deal with Vulnerability, Uncertainty, Complexity and Ambiguity (VUCA) so that in the desert areas as they are using latest technologies for getting one of the highest yields in the world. On the other hand Indian farmers are still dependant on the Monsoon rains.

To sum up, poor Indian farmer failed at every front in his life. It could be on individual front, on family front, on skills front, on financial front, on social front and at his village level and finally at the national level too farmers have failed and hence India has failed. The situation is at nadir since 2005-06, when more than 1000 farmers are committing suicide every year in the richest province/ state of India, the Maharashtra, especially in the Vidarbha region around Nagpur.

That is why; we are compiling here some critical problems of Agrarians in India mostly with the facts and figures and trying to put Solutions.

Hope together we could find better solutions and implement them and make Indian Farmers and their Associated Industries not only survive but also observe a sustainable growth and achieve Sustainable Development Goals.

Major Problems of Agrarians and Farmers in India and There the best possible Solutions:

1. Problem of Dipping Agriculture Share, in 2006, Gross Domestic Product (GDP) growth in India was 9.2% to Rs. 28, 44,000 Crores, the Gross Domestic Savings were 32%, the Gross Domestic Investments were 33.8%, Industry grew 10%, Services grew by 11%, Infrastructure grew by 8.3% but Agriculture share dipped to 18.5% GDP unlike 21.2% previous year. Thus, may be temporary phase, but Agriculture contribution and woes of farmers has become real matter of concern in the growing economy.

The Best Possible Solution:

Farmers could be trained so well that they start producing the best quality food grains in India, supported by the government and market machinery to help those grains reaching each home.

2. Problem of Reaching to Grass root of Golden Revolution especially in the Horticulture, Egg and Poultry farm could not reach to the deep villages in India. Adding woes were the contingencies. The animal husbandry department could not deal with sudden huge attack of the bird-flu (H5N1-Virus) like communication diseases. Most of the hatcheries are still vacant in 2014, after mass execution of billions of birds during the world wide contingency of bird flu in 2005.



E.g. In Kalmeshwar town near Nagpur city, all the huge hatcheries are still vacant. Some facts from State of Indian Farmers, page 17, published from the Government of India in the year 2005 shows that, in the pre-independent India, horticulture grew steadily. However, from 1948 to 1980 there was no planned growth. From 1980 through 1992 there was consolidation of institutional support. From 1993 through 2003 there has been focussed attention on knowledge era and technology driven heralding that has brought golden revolution. However, few columnists believe that it is mere statistics. Hence, we feel that institutes, scientists, technologists, organisations, students, and banks must go to farmers and allocate the benefits than expecting agrarians to come to them. They must understand the communication gap and knowledge gap and forward their hand for Agrarians' and their own benefit.

The Best Possible Solution:

In the aggressive marketing era when products are sold door to door, why cannot government machinery and banks go door to door and ask the agrarians their problems and solve their problems at their home/ doorstep, like they did while vaccinating children for the Anti Polio Vaccination? If during election people can go door to door and then why can't Going from Door to Door and Solving Problems of each and every farmer, the best Solution possible can't be implemented using latest technology? ICT can ease the record keeping exercise, can improve upon accountability issue, making it result oriented exercise.

3.Problem of food not Reaching to the grass root level: In 1951, India produced 50 million tonne food grains, while it became 210 million tonnes in 2003. Still in India, people below poverty line (BPL) do not have food security. Rationing failed to reach for want of ration card that too due to identification and identity crisis among uneducated masses.

The Best Possible Solution:

There must be AADHAR / Unique ID based simple mechanism to let this food reach to poor and needy at grass root level at right moment, in right place, at right time and in right hands. It has been observed since independence that grass-root level masses are least benefited even if the food prices are reduced for ration-card holders.

4.Problem of less attractive Rural career: The forces of urban revolution in India are more powerful than the up gradation of farming, villages and providing urban facilities to rural area (PURA). PURA is dream project of Honourable President of India Bharat Ratna Dr. A. P. J. Abdul Kalam still its progress is very slow and that too in his tenure. In fact, rural and urban divide has created inequality in socio-eco-political tension. This has resulted uncertainty in the minds of young generation. Agriculture has become the last to the deeply lowest priority of young generation when it comes to career option.

The Best Possible Solution:

Government can establish new department called PURA, which invests in making Rural Career an attractive option for the future generation of youths.

5.Problem of having the greatest ideas, like Ganga-Cauvery Canals, but least political will to implement it: Though plans have been made they have not been implemented. Since long, Indian farming is largely depending on monsoon rain. Out put fluctuates if there is less rain or more rain. Thus there is loss of crops for less rain, and, there is loss of crop if it rains more than required. Since long, it has been one of the major causes of suicides of farmers in India. Now, here lies the gap between the best ideas generation and its implementation. Dr. Rao, generated the idea of connecting Ganga the major Himalayan river having snow melted water 24 / 7 / 365 of north India with the seasonal flowing Cauvery river in South India which mainly depends on monsoon rains. This idea was generated in 1960's but funds could not be generated since last few decades. It shows incompetence when it comes to implementation of ideas in India.





The Best Possible Solution:

May this project be divided into 100 phases, may public-private-foreign investment come into picture but get this job done.

China developed the idea of Three-Gorgeous Dam and implemented it in the span of thirteen years. It irrigates one fourth of China and generated 20,000 Mega Watt electricity, thus, China has shown that biggest projects could be implemented if there is a will of highest authority in the country; even World Bank and other financial supporters came helping China.

Hence, we believe that if Brahmaputra the north eastern and Himalayan snow melting 24/ 7 / 365 river is connected with the main land, it's over flooding in monsoon could be diverted even to the desert part of India. At least let us start this project at par with Golden Quadrilateral, East-West, and North-South corridor kinds of road projects. May be, it looks difficult but once started could fetch attention of World Bank, and other top financers around the world and even the private parties.

Also, looking at the woes of Agrarians in India, it must be the topmost priority, with highest willingness of every Indian citizen to implement.

Not only farming will be benefited but also the problem of drinking water will also be solved as the water could reach each and every house, in each and every corner of India.

6. Problem of education to masses: The interpersonal inequality has increased since the tech revolution has exposed the Indian bare realities.

It is said that India has got divided into Bharat the non urban India and into the modern India the urbanised land.

While Bharat mostly speaks the regional languages, the India speaks English as their main language as knowledge source and transactions.

Also, in both part of the country, the rural India as well as in the urban India, the inequality is quite clear and evident with the haves and the have-nots.

Most of the educated mass cannot transfer their knowledge to uneducated ones due to lack of proper communication medium. Major knowledge transforming language now a day has been English, but Bharat, the villagers, and the non-educated mass living in urban locality hardly understand English.

Hence, the knowledge of BT Cotton cultivation could not be properly communicated in Vidarbha region in the province of Maharashtra in India. It was major cause of suicides as farmers went on to put fertilisers and pesticides in large volumes than required, which resulted in less production as accepted by Bollgard.

Thus, in the Knowledge Economy education to farmers has become major issue. Educate the masses as well as the classes and let us enrich the output. This is what, 125 years ago Swami Vivekananda also tried to put, and he proclaimed that India must educate masses for the real progress. Awareness among the poor farmers due to less education access has led to still more chaos in the situation leading suicides.

In one survey it was found that the illiterate farmers lack the much pedagogy in their farming arena. Especially advance knowledge of monetary input each year and the low-cost technologies or jugad to bear maximum results.

The Best Possible Solution:

Information and Communication Technology and media can play big role in this and social media platform along with personal apps like WhatsApp, Facebook messenger, and Dedicated Agrarian Apps can play a big role.



Original Survey:

Table 1: Survey of Indian Farmers about early monetary input every year and awareness about farming pedagogies:

(Random Sample Size: Vidarbha region of Maharashtra and nearby Madhya Pradesh, Survey cum awareness of 1000 farmers taken in 2006 to 2008, Survey taken in 2013 to 2014 for other 1000 farmers to check percolation of knowledge, Laboratory to Land.)

S.N.	Non-monetary inputs to Farmers	Know (%)	Don't know (%)
		2006-8	2006-8
1	Proper planning time for major crops?	100	0
2	Depth of plant sowing	100	0
3	Optimum plant stand	100	
4	Inter-cropping (line distance between two crops which are sown simultaneously)	100	0
5	Legume in rotation (ground nut, tur, mug, udeed to avoid nutrient exploitation form particular depth)	100	0
6	Farm yard manual	100	0
7	Clean cultivation and use of weedicide	100	0
8	Weed control at critical stage	100	0
9	Guidance from improved farmer	100	0
10	Crop wise optimal use of water, though it, depends on nature	100	0
11	WTO suggested reducing subsidies, it's a government decision	100	0
12	Timely seeds	100	0
13	Timely fertiliser	100	0
14	Traditional Farming Techniques	100	0
15	Timely Loan availability	100	0
16	Possible Cash Crops in their areas and details of farming till produce and selling in the wake of climate change	5	95
17	Technical details of the specific crops, E.g. Difference between T1 and T10 Linseed	70	30
18	Lab to Farm Reach and communication gap	60	40
19	Lab to Farmer, awareness about the latest Extension Methods	70	30
20	Utility of the Latest Farming Technology like Hydroponic Farming	70	30
21	How Crop Insurance Decided?	1	99
22	Green house and controlled atmosphere farming	99	1
23	Fear of Latest Technologies and losing Agrarian way of life	100	0

Description of the Table 1:

It shows some Major Problems detected in the Vidarbha region of Maharashtra and nearby Madhya Pradesh: The crux is, Indians will have to carry a major awareness drive among farmers, especially on the pedagogies of modern farming in the wake climate change, uncertain weather conditions, modified seeds and fertiliser variant in this globalize world.





7. Problem of Possible Cash Crops (Point 16, Table 1) in their proximity areas and details of farming till produce and selling:

Possible Integrated Solution:

Using latest Information and Communication Technologies (ICT) local government, the Gram Panchayat and Agricultural Experts in collaboration with FAO/ UNO can solve this problem. ISRO can provide the Soil pattern, Scientists can suggest the possible crops which can be taken as per the latest climate change, whether pattern using soil survey and testing and irrigation facilities. Thus, it's integrated way the Multilateral Agency like FAO and United Nations of Organisation (UNO) body, Government, NGO, SHO, Scientists, and Experts can come together and solve this problem and make it reaching to 100% in place of 95%.

8. Problem of not knowing Technical details of the specific crops (Point 17, Table 1), E.g. Difference between T1 variant of Linseed and T10 variant Linseed:

The Best Possible Solution:

This knowledge can be provided by the scientists to the farmers in their local language via government machinery, however, it is observed that almost 70% farmers get the latest knowledge in the span of an year but rest of the 30% miss that knowledge as the next technology gets developed and its knowledge dissemination gets boost in place of this past one.

So again, the Gram Panchayat, the Local Government and AADHAR/ Unique ID based awareness drive to reach each farmer thus letting him know these latest variety developed. In fact, if this result-oriented teamwork is trained well they can develop a successful system and machinery, which can become a benchmark for the future awareness drives and farming endeavours.

9. Problem of Lab to Farm Reach and communication gap (Point 18, Table 1):

The Best Possible Solution:

The Survey shows that only 60% laboratory knowledge ever reaches to farmers at grassroot level due to communication gap. It could be about latest variety of seeds, farming techniques, fertilizers, or anything that have impact on farmers produce or efficiency or marketing, etc. and the communication gap could be due to translation of English into local language or too much red Tapism or remoteness of the farming place or any.

Again, the AADHAR/ Unique ID can play a major role, to know details of the individual farmers and local government can help reaching them, with guarantee that their personal details will not reach to wrong hands.

10. Problem of not knowing Lab to Farmer awareness about latest Extension Methods (Point 19, Table 1):

The Best Possible Solutions:

Awareness about the latest technologies and removing the phobia about the latest technological extension methods if any.

11. Problem of not aware about the Utility of the Latest Farming Technology like Hydroponic Farming (Point 20, Table 1):

The Best Possible Solutions:

Farmers feel that it is meant for the labs only and it's a costly measure to implement, hence, they try to avoid even knowing latest Lab to Farming techniques Hydroponic Farming is one of them. The best solution could be the youth who are graduating from Agricultural Institutions should start such venture individually or the best way by forming a Cooperation, make it successful and that model could replicate as a helicopter model.

12. Problem of not knowing, "How crop insurance is decided?" (Point 21, Table 1):

The Best Possible Solutions:

Though crop insurance was started in 1972 in India, still how it is decided and how it works is a mystery for lot of farmers. So, again, best possible Solution is reaching each farmer and each home using AADHAR/ Unique ID and Local Government and Gram Panchayat can play a big role in it.





13. Problem of not knowing, Green house and controlled atmosphere farming (Point 22, Table 1):

The Best Possible Solutions:

Though only few cases are there where Farmers like Mr. Bhushan of Amaravati, Maharashtra who is graduated from Agricultural Institution are using these technologies after learning from Israeli company and implementing it, still masses among the Farmers feel it's a costly affair and rich or highly literate people can only do it. There is some kind of fear is there among the farmers about it, only 1% didn't know about it but even 99% who knew it were sceptical to listen more about it fearing (verbatim), "It's a costly affair why should we gain more knowledge about it and waste our time that we are not supposed to do? Instead let's go to farm, as it's our way of life and these people have nexus with government, big companies, Sahukar (Local Lenders) and rich farmers, who are trying to kill our jobs, business and life style, by bringing latest mechanised technologies and such technologies from foreign countries!"

14. Problem of Fear of the Latest Technology and losing Agrarian Hard working Near To Nature Life (Point 23, Table 1):

The Best Possible Solution:

- a. There should be a compulsory subject on Agriculture in Matric i.e. 10th Grade, because of the fact that most of the students leave education in the agrarian dominating area in India, and in case of any grave situation like war or famine or pandemic, can go back to village and continue farming instead of searching for the job in economic down fall and support the government. Students might be introduced to the high tech in the Agriculture during these days only, so that, in future the most job providing field that is Agriculture is already known to them and they become tech savvy, and if the students are having Agrarian background then they also lose the fear of using technology on their land or can build their own Green House in the climate change, can build their own Hydroponic Farming, can use Drip irrigation using their own local Jugad Technology, there is no limit to this. In fact, their experience can take humanity to Moon, Mars and Beyond if one of such technique and technology can support the space age technology, who knows.
- b. Another suggestion is, in Environmental Studies, one chapter each on Farming can add value to the subject and it solves the communication reaching at grass root level as well. Some of the chapters suggested here are natural ways to for multi-crop, cash-crop, weed free, chemical pesticide free, organic farming, smart irrigation, smart sowing, save trees, milk products, compost, biogas, etc. If children learn this in school, they can communicate same things to their agrarian parents who already know fundamentals of these things, but children might communicate these things at home with the touch of latest knowledge of science and technology, thus bridging the gap and some of them who generate interest can become scientists in agrarian field or can go to land and start smart farming with latest tech and knowledge that can benefit the humanity in long run and next generation can become still smarter in farming, not depending on monsoon rains or even subsidy.
- c. One more suggestion is Colleges and Higher Education Institutions may be built within the proximity of 50 to 100 km with commutation facilities so that villagers can stay together with their family and learn and earn and provide strong Agrarian base for India in future.
- d. From 2008 till 2014, lot of awareness has increased due to WhatsApp, YouTube and other Social Media.

15. Problem of imperialism at the top of the pyramid: Agricultural land dispute settlement is very slow process in India. Many Special Economic Zones (SEZ) or Industrial Areas like MIDC, GIDC, etc. were planned on the rich cultivable lands, just due to proximity with certain industrial zone or location near port or location near the Air Port or location near the Railway station or location near the High ways or location near the megacities like Mumbai or Pune or Delhi or Chennai or Ahmedabad or Chandigarh or Kanpur or Kolkata or Chennai or Bangalore or





Hyderabad or Nagpur or Surat or Indore or Bhopal or Lucknow or Vishakhapatnam or Madurai or Thane or Nasik or Aurangabad or you name it.

Best Possible Solution:

Whereas SEZ or Industrial Areas/ Zones should be put on barren lands or on non cultivable lands, owned by Government as happened in China. This will benefit Government in terms of taxes gained. SEZ should planned in such a way that they will have proximity to rural and urban human resources thus bridging the huge gap between rural India (Bharat) and modern urban India.

Please remember, if agrarian becomes happy, India will be happy at the bottom of the pyramid and at the top of the pyramid as well, otherwise, if the bottom of the Pyramid is thrown into Vulnerability, Uncertainty, Complexity, and Ambiguity (VUCA) the whole Economy goes into VUCA.

16. Table 2: Showing Difference in Plant Distance Required to Normal variant and biotechnologically/ genetically modified (GM) seeds and about their awareness: In Non-Mechanised Farming:

S N	Crop	Normal Variant Seeds (Distance in centimetres: cm)		Awareness Percentage		Genetically Modified Seeds (Distance in centimetres: cm)		Awareness Percentage	
		Non-Irrigated	Irrigated	Aware	Not Aware	Non-Irrigated	Irrigated	Aware	Not Aware
1	Wheat	30 cm	22 cm	99	1	22 cm	18 cm	99	1
2	Cotton	28 to 32 inch or 70 to 80 cm	36 inch or 90 cm	99	1	45 cm	44 cm	99	1
3	Banana	No such variant	Line distance 150 cm to 150 cm and plant distance 150 cm 150 cm	99	1	No such variant	Line distance 150 cm to 150 cm and plant distance 150 cm 150 cm	99	1
4	Soybeans	30 cm line distance 20 cm plant distance or 45 cm line distance 5 cm distance between 2 plants	No such variant bulk of farmers in India are using	99	1	30 cm line distance 20 cm plant distance or 45 cm line distance 5 cm distance between 2 plants	No such variant bulk of farmers in India are using	99	1

Question: How Farmers got aware about Plant Distance:

Answer: The Best Solution Already Adopted: Many Extension Methods used to Educate the famers, such as:

1. Leaflets at Krishi Sewa Kenrda, Agriculture shops, etc.
2. Meetings at Village, Taluk and District level,
3. Agriculture University Campus, before Kharip and After Kharip,
4. On spot, help from the Agriculture Departments Representatives,
5. Krishi Sanjivani and such kinds of Yearly Books from PKDV, Akola kinds of Institutions provided by Government at subsidised cost.
6. As a crop demonstration,
7. Regular Television Programme
8. On Radio as Maza Ghar Maza Vaavar, i.e. My agricultural land my home, etc.

Problem of not been able to reach last 1% as per Table 2:

The Best Possible Solution:

Every extension method has limitations, hence, again the AADHAR / Unique ID based localisation of farmers and reaching each home and each farmer using latest technologies and for keeping the records and in this Local Government and Gram Panchayat can play a major role.



Using latest ICT proper records and compliance can ensure each farmer gets his due respect and knowledge to pursue safe and secure farming.

Please note, this 1% who could not be reached had a factor of more suicides of 2% in our Survey. Hence, also these efforts.

17. Problem of not knowing exact amount of Fertilisers and Pesticides required:

Table 3: Solutions: Optimised Amount of Fertiliser and Pesticides Required:

For normal seeds and GM i.e. Nano Technologically Modified Seeds / Genetically Modified Seeds: For Wheat/ Acre:

SN	Feed	Maximum Amount for Irrigated land		Minimum Amount for Non-Irrigated land		Optimised	
		Normal Seeds	GM seeds	Normal Seeds	GM seeds	Normal Seeds	GM seeds
1	Amount of Chemical Fertilizer required	120 Kg Nitrogen + 60 Kg Phosphorus	80 Kg Nitrogen + 40 Kg Phosphorus	40 Kg Nitrogen + 20 Kg Phosphorus	35 Kg Nitrogen + 18 Kg Phosphorus	100 Kg Nitrogen + 50 Kg Phosphorus	37.5 Kg Nitrogen + 19 Kg Phosphorus
2	Amount of Chemical Pesticide required	Example of disease: Fungus: Carbaxyn 37.5% + Thyrum 37.5% DS 3 Gram / Litre	0 (Zero) Kg. in case immune to that particular disease, Ex. Wheat AKW 4627 is immune to fungus	Example of disease: Fungus: Carbaxyn 37.5% + Thyrum 37.5% DS 3 Gram / Litre	0 (Zero) Kg. in case immune to that particular disease, Ex. Wheat AKW 4627 is immune to fungus	Example of disease: Fungus: Carbaxyn 37.5% + Thyrum 37.5% DS 3 Gram / Litre	0 (Zero) Kg. in case immune to that particular disease, Ex. Wheat AKW 4627 is immune to Puccinia Triticina (Brown Rust) fungus
3	Amount of Organic Fertilizer required	15 tonnes Compost or Cow Dung/ Acre	10 Tonnes compost or Cow Dung / Acre	10 Tonnes compost or Cow Dung / Acre	5 Tonnes compost or Cow Dung / Acre	1 kg/ 100 square feet soil depth 3 to 4 inches	0.5 Kg/ 100 square feet soil depth 3 to 4 inches
4	Amount of Organic Pesticide required	Neem Leaf Extract 50 Kg/ Acre	May not require for a disease it is immune. Otherwise 40Kg/ Acre.	Neem Leaf Extract 30 Kg/ Acre	May not require for a disease it is immune. Otherwise 20Kg/ Acre.	Neem Leaf Extract 35 Kg/ Acre	May not require for a disease it is immune. Otherwise 18 Kg/ Acre.

Question: Why Exact Amount of Fertilisers and Pesticides?

Answer: Excess amount of chemical fertilisers and Pesticides cause damage to Plant, the Soil and to Environment too. Ecological Balance is disturbed humans are exposed to harmful chemicals. So, knowing exact amount of Pesticide is necessary and training from expert on, how much it should be mixed with water is also necessary otherwise most of the time excess amount of pesticide causes health hazards among the farmers.

What are the maximum and minimum amount of Fertilisers and Pesticides required in Normal and GM crops (here wheat) and what could be their optimised quantity, as per the Scientists and Agriculture Expert is mentioned in the table, which can help reduce pollution, environmental and health hazards.

Problem of Suicides by Farmers and impact variables like Rainfall, Subsidies, Selling Price, Central Government's Policy Decision and its impact, State Government's Policy decision and its impact, Profit Earned by Farmers, Eating Habits of Farmers.

Table 4: Random Variables: (Random Sample Size: Survey of 1000 Farmers in Vidarbha region of Maharashtra and nearby Madhya Pradesh)

SN	Random Variable	Excess more than 25%	More but up to 25%	Optimum	Less but up to 25%	Least i.e. Less than 25%
1	Rainfall	11% More Suicides, due to lost crop and burden of liabilities and debt	3% more suicides	Best for farming, still suicides continue	2% more suicides	39% increase in suicides
2	Subsidies on the seeds, pesticides, and fertilisers	Decrease in suicides by 42% in case of more waiver in prices of seeds, fertilizers, water as per norms in that province	Decreases suicides up to 39%	5% less suicides. Suicides continue as other costs and debt burden becomes unbearable	Increase in suicides by 39%	Increase in suicides by 42%.
3	Minimum Selling Price (MSP) of the Produce, and Agrarians cannot take their decision on Selling Price of their own produce.	Least Suicides: 42% decrease in suicides if agrarians get more selling price for their produce	Suicides decreases by 33%	Suicides are still there	33% More Suicides	Most Suicides, in fact, 62% increase in suicides, as they could not decide the cost of produce and depending on the Krishi Utpanna Bazar Samiti of Government
4	Central Government's Policy Decision and its impact	Less Suicides, when laws pertaining to giant irrigation projects, etc. are timely solved. MSP should be declared well advanced before starting the crop season. As the crop is bought by them and stored in Food Corporation of India (FCI) store houses.	Delayed decision increases the risk.	More delays and more Suicides	Still more suicides	More Private Players Looting and More Suicides
5	State/ Province Government's Policy Decision and its impact	Timely Relief Package or Debt Relief or Farm Debt Waiver, Reduces Suicides for that year up to 39%. Also, timely provision of seeds, fertiliser also reduces the suicides.	Delayed in decision by Government even two weeks increases the suicide rates by 11%	Suicides still are there even though subsidies are there due to lack of permanent solutions. The optimum time here is first week of famine/ excess rain/ least rains, etc.	More delayed decision increases suicides by 34%	Most Suicides, increased by 39%, if no such policy decisions are taken on time

6	Profit Earned by Farmers	Least Suicides: With profit margin more than 42%	Less Suicides: With profit margin up to 33%	Suicides are still there even if marginal profit up to 10% is there.	33% More Suicides	Most Suicides, when, crops are thrown on the roads with profit is negative even less than 42%.
7	Eating Habits of Society and Farmers living in proximity (Under study as almost 34% farmers accepted that there is change in eating habit and they do not want to comment on it.)	Suicides are Least when crop is grown in abundance that is part of food in those regions especially in remote areas and if their family also gets more than enough nutritious food to eat for survival.	Less suicides when crop grown is same as that of the eating habit of the population in the proximity up to 250 kilometres.	Mixed crops growers committed least suicides as they had more options having reached their optimum resources and grown according to eating habits of population in proximity. Mixed cropping is need of the day.	More suicides when crops and eating habits did not match in proximity of population, even in this globalisation era.	When different crop is grown which was not part of food, then, selling was through middlemen, and suicides still continued as less profit was earned especially in remote areas.
8	Vulnerability Uncertainty Complexity and Ambiguity (VUCA) due to Climate Change	When crops were lost due to al nino heat or when due to western disturbance caused heavy rains, suicide rates increased by 20% cases in the suicides of farmers	In this case almost increase in 10% cases were there.	When Vulnerability was less, Uncertainty was less and Less Complexity were there and less ambiguity was there in the weather pattern crops were optimum and produce were ok there were less suicides.	Less VUCA less suicides	Least VUCA least suicides

Best Possible Solution from the Table 4:

18. Problem of Suicides due to uneven Rainfall: Rainfall is Natural Phenomenon but providing Irrigation are human efforts. Optimum Rainfall reduced suicides by 42%, thus, Water and Irrigation and/or Rainfall at optimum level can solve most of the problems, of which irrigation is in the hands of human efforts but Rainfall is natural phenomenon and climate change has made it highly unpredictable.

Best Possible Solution:

Providing irrigation facilities is the best solution. It will reduce the dependency on the rains, and Indian Farming will stop dancing at the tunes of monsoon rains.

19. Problem of Inconstant Subsidies on the seeds, pesticides, and fertilisers or on farm equipment and other farm ingredients:

The Best Possible Solution:

Inconstant Subsidies and Debt Trap is the biggest problem of the farmers, if rains well and all other parameters are ok Farmers earn and live good life but if couple of years, he loses income he gets debt trapped.

Thus, the best solution is timely provision of the Subsidised farming ingredients or money required to buy farming ingredients, hand to hand, using AADHAR card and with at home services.



20. Problem of Agrarians cannot take decision on Minimum Selling Price (MSP) on their own Produce and thus over all Selling Price Decision is not at all in the hands of the Agrarians who produce it, with their hard work:

The Best Possible Solution:

- i. First option is taking timely decision and giving **better prices, i.e. M.S.P.** The Government may get rid of the middlemen syphoning away the profit share of the farmers. 100% profit with respect to the MSP should go to the hardworking farmers only.
- ii. Decision on the MSP may be taken as per the inflation, as the other market forces can take their own decision on their products.
- iii. Another option is to let Farmers take decision on the prices of their own commodity / produce, as other market forces do, and this will require high impact Revolutionary Financial Education to Farmers.

21. Problem of delayed or unfavourable Central Government Policy Decision if any and its impact:

The Best Possible Solutions:

- i. Central Government buys the produce at MSP and stores in the FCI, so timely decision with better MSP and more subsidy and home to home delivery can solve most of the problems. Though we know government tries its best but even 1% suicide is there, it become responsibility of all of us, taxpayer, or non-taxpayers all citizens of the country, who are fed by our Farmers.
- ii. Many Irrigation projects were planned but could not see light of the day, even today, so Central Government should take those decision without delay and let the best technological solution providers in infra come together and solve this problem of irrigation forever.

22. Problem of delayed or unfavourable State/ Province Government Policy Decision if any and its impact:

The Best Possible Decisions:

- i. Timely farm loan waiver if any, can solve lot of problems in case of famine, etc.
- ii. Timely provision and compliance of the seeds, pesticides, fertilisers, etc. also can solve lot of problems.

23. Problem of Least Profit Earned by the Farmers:

The Best Possible Solution:

There is inflation everywhere. There is growth in Stock Market but in earning Profit by Farmers is what they complain.

So, a proper Values based Analyses is required by the Civil Society to look into this matter and act, otherwise, India may become dependent on the Food if farmers lose the confidence in their livelihood and Farming way of life.

Every government employee gets Dearness Allowance, etc. and they have 4th, 5th, 6th and 7th Pay Commission but there is No Commission for the Farmers, they sell their produce at constant rate and the money required to produce many a times are not recovered. Hence, lot of suicides were there.

Farmers, wish, if they can get their livelihood by their Agriculture Land and society and government support them then they can create real miracles.

Hope, we stand by them.

24. Problem of Crop grown is not the favourite food in the area its grown and single crop or mixed crop and thus eating Habits of Farmers:

The Best Possible Solution:

Wheat, Jowar, Rice and Tuwar/ Arhar are staple food in and around the Vidarbha Region and if the farmers produce them, they get what they want as food and they can sell at reasonable cost as well. However, if the produce take example of Soya is produced and it's not a staple food then marginal farmers face lot of problems, as they can't sell their produce. Also, a problem is many





farmers didn't grow mixed crop, i.e. different crop is sown between two lanes of main crop, and it benefits the farmer.

Also, Farmers, when get abundant produce and get good profit, their family can eat nutritious food but if they earn less profit, the domino effect affects the education, nutritious food, and life style too.

So, farmers need to be educated on this front for financial planning, changing whether pattern and crops that can be taken.

25. Problem of VUCA due to Climate Change:

The Best Possible Solution:

Vulnerability, Uncertainty, Complexity, and Ambiguity (VUCA) of whether can put an urgency of certain crops that can be grown in one particular area, so Satellite imaging and weather pattern should be analysed at fast paced and decision for certain crops can be taken at faster rate. E.g. If it is Summer but whether scientists predict that it's going to rain for a month due to this phenomenon or that, a cash crop can be decided to be produced.

So the best Solution is faster decisions and implementation among the masses by treating it as national or state or that regional emergency.

26. Problem of not having Each District wise 24 X 7 X 365 Television Channel Programmes dedicated to that area:

It has been observed time and again that in the present dynamic market even the most literate and educated person/s and organisation/s require/s consultancies and guidance. Also, there is communication gap between Agricultural Research Laboratories and in the Actual Farming. Also, communication extension is still very weak and hence 60% farmers never come to know the latest happenings in the laboratories. Hence one medium must be established between the farmers and the scientists and the government agencies and the market and the consumer. Also, there is 'need of the 24 hours X 7 days a week X 365 days of year guidance and consultancies at all these levels.' There could be 24 X 7 X 365 Television Channel which could be guiding farmers is also possible, that to at each district level in India. So that the farmer can watch and learn how he can go ahead with his farming activities.

The Best Possible Solution:

At present moment, especially for the farmers following awareness and input on the basic issues is required:

- a. First and prime Paradigm shift is required among farmers, and that is, from 'Farming is Life' even after successive exploitation, to mantra of success that for Local, Global or Glocal Agrarian Companies 'Farming is a Business.' So, Farmers need to shift their Paradigm to make their Life depending on Farming a Life Long Learning Academy to Learn, to Earn, to Contribute to Society and to live a happy life'.
- b. Soil Testing and Selection of crops for short term/ cash crop and long-term duration/ regular crop.
- c. Dry Farming, can be implemented only with the rich farmers, when it rains 500 kilometres away during the monsoon, then they know that in couple of days it will rain in their areas as well so 1/3rd of the total area available with the cultivator can go ahead with the dry sowing, to save time and get advantage of timely sowing. However, Climate Change has also affected this and hence farmer has to take his own decision now a day.
- d. Sowing and irrigation,
- e. Hydroponic Farming, Environment Controlled Farming, Green House Farming, Computerised Controlled Water-Fertiliser-Pesticide Farming are still at laboratory level in India, and in case some untoward incidence occurs like climate change, India must be ready for such ventures too, and in case these measures have to adopted suddenly then what to do in emergencies and what could be income source of not only farmers but also billion population of India should be planned in advanced.
- f. Re-sowing of crops after calamities.
- g. Inter crop.





- h. Crop Cutting and converting it into fodder and selling it to companies to convert it into alcohols used as automobile fuel and industrial use.
- i. Natural Flowering and faster and better fruit development.
- j. Pesticide and disease control.
- k. Home made bio fertilisers.
- l. Quality Testing and Quality sustenance.
- m. Nourishment Rich Food and Fodder
- n. Hot and Cold Storage methods, packaging and transport mechanism.
- o. Marketing and selling at proper rates above Minimum Selling Price (MSP) assigned by the Government in the domestic or international market.
- p. Asking help at the doorstep from NGO, Government, Agricultural institutes and industries, then only we can say the Democracy has become matured Direct Democracy.
- q. Atmosphere and whether reports and its impact and measures.
- r. Management of pets, domestic animals, and their fodder and diseases and getting optimum benefits.
- s. Minimum resources investment and maximum output pattern.

27. Maximum Indian Farmers are Living Life on Loans and are in Debt Trap: NSSO-Report-2002-03 shows that Farmers has/ had to make multiple trips to loans departments for getting multi-state approvals and clearances from the same loans department. The Field Survey 2006 shows that there are 120 million families and there is 600 million population involved in farming activities in India. NSSO 2014 Report shows more than 52% Agriculture Household debt trapped.

Table 5: Outstanding Loans on farmers as on 2014, as per NSSO Report:

SN	Bank	Farmers Opted For	Reason (Verbatim Quotes of maximum Agrarians-Crux in one liner)
1	Regional Rural Banks	11.5%	“We have our own locality person who can help us at any time.”
2	Cooperative Banks	13.5%	“We have connection of local people there, to guide us.”
3	Commercial Banks	75%	“We Farmers feel secured with Respect to the Central Government Banks are more secure and can waive loans as per the Central Government Policy if any.”

Table 6: Type of Loans: 2014:

SN	Type	Percentage hold
1	(A). Crop Loan	39%
2	(B). Term Loan	61%
3	Total. Farm Loan ((A) + (B))	100%

Table 7: Acre of Land owned by Farmers in India:

(Source: Field Survey 2006)

SN	Farmer	Acres of Land he owns	Land in Hectares
1	Marginal	0 to 2.5 Acres	1 Hectare
2	Small	2.5 to 5 Acres	1 to 2 Hectares
3	Medium	5 to 10 Acres	2 to 4 Hectors
4	Large	10 Acres and above	4 Hectares and above.





Table 8: Time taken to avail Bank Loans and Percentage of Farmers:

(Source: Field Survey 2006)

S.N.	Time Taken in Months	Marginal Farmers	Small Farmers	Medium Farmers
1	0 to 1	75%	83%	100%
2	1 to 3	14%	17%	0%
3	3 to 6	07%	0%	0%
4	6 to 12	04%	0%	0%

Table 9: Yearly size of the Loans among farmers in India:

(Source: Field Survey 2006)

SN	Loan Size in Indian Rupees	Loan size in USD (\$1 = Rs. 45/=)	Percent of Farmers
1	Below 1000	Below \$ 22	17%
2	1001 to 2000	\$ 22 to \$ 45	29%
3	2001 to 3000	\$ 45 to \$ 67	25%
4	3001 to 5000	\$ 67 to \$ 111	19%
5	5001 to 7500	\$ 112 to \$ 166	05%
6	7501 and Above	\$ 167 and above	05%

Table 10: Our findings show that Farmers borrow loans for following purposes:

(Random Sample Size: 1000 Farmers in Vidarbha region of Maharashtra and nearby Madhya Pradesh)

S. N.	Consumption purpose	Production purpose
1	Food Expenditure	Transportation
2	Water	Fertilisers
3	Social Expenditure	Seeds
4	House repairs	Pesticides
5	Farm Maintenances	Education
6	Cloths	Water
7	Supporting Activities	Supporting Activities

Our findings are similar to NABARD General Manager for the year 2006 for Micro-Credit Mr. Muralidhar Rao. He says, “Credit in case of poor is demanded for consumption as well as production purpose. It is mainly used as food expenditure, health expenditure, and for the social purpose”. Table 5 to Table 10 shows that it’s the Marginal Farmers, holding less than 2.5 Acres of Land goes under the Higher Debt and / or get Debt Trapped. Taking loans for daily consumption and even for living day to day family life, which led them to extreme poverty, even few have led to suicides. This is Humanitarian Emergency hence these efforts.

The Best Possible Solution:

Vigorously on war footing, Financial awareness, and complete Agriculture and Farming Solutions as per the region or even at the villages level must be found out and implemented using scientific methods, otherwise it can become death trap for the farmers in coming future.

Except for the Discarding Subsidy, which is essential in India in certain areas, there are very good suggestions India might get from all across the world, a Dedicated Supercomputer can find out the best possible Solutions to solve those problems.

Faster implementation is the way out in this ICT explosive era, where, the cell phone technology becomes older in one year and outsourcing companies and education companies find new ways to reach students, why cannot we reach farmers at faster pace and solve this problem head on?

This only can ensure the Sustainable Development Goals (SDG).





28. Problem of poor reach of Health care at the bottom of the pyramid: NSSO data shows, only 1% of GDP is invested in Healthcare in India. It is one of the lowest in the world. At the same time, Private expenditure on the healthcare is one of the highest in the world which is not good for poor. It means better health facilities are not accessible to urban poor, leave aside rural poor and the farmers.

The Best Possible Solutions:

- i. Government Hospitals in the Villages, District Head Quarters should be upgraded faster, for any eventuality, as Farmers deal with livestock and bird flu or swine flu kinds of pandemic are very common now days, as we faced in first decade of this century. Already, Dr. Ashish has raised this question since 2004 till 2015 for 5 times, “We are polluting the environment like never before and if some viruses⁸ or bacteria come out of their den and infect the humans, it will be very difficult for us to find the medicines over that before millions of death occur. Thus, also we need to build at least 100 Serum Institute of India kinds of facilities across the world, to research and develop vaccines or medicines in case such epidemic or pandemic attacks humanity. Also, since last 2000 years the Pandemic occurred regularly in the or near to the 2nd Decade of every century. So, we must be more than prepared for that and we humans have technology and will and WHO, UNO having experience in dealing with Zika Virus kind of Pandemic.”
- ii. Generic Medicines shops having far and deep reach in the country, is need of the hour.
- iii. Medical Insurance could be provided at the cheapest possible subsidised costs to Marginal Farmers, Agrarians, which can reduce the burden of farmers and can save lives of their children and family.
- iv. Children of Farmers or Farmers having at least 10th Grader certification can become emergency health workers if they get the short-term trainings. Government can work on this issue.

29. Ageold Social Problems: Panel Findings headed by Dr. R. Radhakrishnan, the Director of I.G.I.D.R. Head of the Prime Minister Dr. Manomohan Singh’s Report 2007, which is done prior to the Annual Budget, have clearly stated the following facts and figures about Agriculture in India. The highlights are stated in the form of the following points:

- a. Land reforms and feudal forces in certain states pose major problems for Agricultural growth. Whereas some rich farmers take loan for Tractor sale it and buy one luxury car and one small car to donate it to the groom in the marriage of their daughter.
- b. Most of the farmers, who committed suicides in Vidarbha area of Maharashtra, belong to backward class mostly Schedule Cast, Schedule Tribes and Nomadic Tribes and few belongs Upper Castes as well, proving Farmers suicides is a major issue beyond castes, religion and creeds.
- c. Interest rates on Cars and Homes in India in 2005-06 was 10% however farmers still pay 18% to 24% to bank on their loans. Thus, high interest rates, low return on produce, and loans, leave farmers indebted for successive years.
- d. 80% farmers in India are Schedule Caste and Schedule Tribes, and own marginal lands.
- e. Borrowings from money lenders are still high that too with higher interest rates and above all credit from formal sector declined in last 3 years.
- f. Farmers as migrant workers sending money to their homelands.

Possible Solutions:

- i. “Declining Social values and playing with the Social Pressure of Values Based System and manipulating the legal system to benefit themselves is the game of rich and influential people, and government must deal it with as strictly as possible and as soon as possible. Delays will have dangerous ends, as already people are losing faith in the legal system for not getting decision faster”, is a Solution provided by an illiterate farmer.
- ii. Problem of interest rates for the Loans can be solved by the government considering 80% marginal farmers among farming population in India who provide us food and declining their rights will pose a problem in future. Please it was Farmers problems that posed a big problem for British India and it took big stride and British had to leave India in few decades.





- iii. Money transfer could be done authentically using trustworthy system based on AADHAR/ Unique ID and an App also can do it, but proper security, authenticity and reliable system and a Standard Operating Procedure (SOP) should be inbuilt to avoid fraudulent activities.

30. Problem of Carrying poor from Nehruvian Socialism to Western Capitalism: Honourable Deputy Prime Minister of Israel Mr. Shimon Perez, in his interview on January 29, 2007 in the Economic Times has said, “Today driving force in India is economic but there are different levels of development and this is where India suffers. In some areas like Information Technology, India is doing well, but in the change from Nehruvian Socialism to Western Capitalism, the poor must be carried along”. Later he added, “Israel is also very much concerned about the suicides by farmers in India”.

The Best Possible Solution:

Our Survey Shows, “Globally, Both Capitalism and Communism/Socialism have failed in inclusive growth and to reach each one”.

An Authentic, Reliable and Secure Standard Operating Procedure (SOP) could be built using Unique ID/ AADHAR, to reach, teach, and get benefit to each citizen of India, that will benefit not only farmers and children but everyone. Thus, the gaps in Capitalism and Communism should be filled by this way and then only we will be able to Achieve Sustainable Goals, otherwise, it might get stretched to millions of years draconian vicious cycle of up and down where poor gets crushed at the hand of rich and influential people.

31. Problem of lack of vision of inclusive growth: NABARD – 2001 Report shows that there are number of societies, to be precise, 1072 societies registered under NABARD. But the maximum members registered till date was just 100 million out of more than 600 million farmers in India. The major reasons we found out in one independent survey was that the registration fees are too high. The reserves stand above Rs. 3325 per farmer and borrowings were Rs. 11410 per member. In the monsoon dependant farming even, middle-income farmers cannot afford to payback leave aside the marginal farmers. Thus, we lack the vision of inclusive growth of taking poor and rich farmers towards common goal of self sustenance.

The Best Solution:

NABARD should reduce this gap with the help of coordinated and cohesive efforts of all government non-governmental agencies, and again AADHAR/ Unique ID can be of great help.

32. Problem of not capitalising age-old farming knowledge of Organic Farming: China has taken Jatropha plantations very seriously in the wake of oil crisis and increasing demand for the petroleum. It has crossed 10 million-unit sales in automobiles sector. Hence, in January 2007, China has reserved some 10000 square kilometres of land simply for the Jatropha plantations. Whereas we in India, still have not given serious thought on this issue. Indian farmers can grow it as cash crop with some modifications in the seeds and in cultivating procedures, as relatively, Jatropha is common plant in India known to common Indian farmers which has even Ayurvedic medicinal values.

The Best Possible Solution:

Organic Farming knowledge of India will die for not taking care of it, so it could be well documented like Ayurvedic Knowledge and authentic knowledge can help to coming generations. Non documented things are lost, we know it from the history, and it could be stored at multiple places is also the solution in case some fire or flood or any catastrophic event happens. Later, this knowledge only becomes part of practice or theory is a well-known fact.

33. Problem of not realising human potential: Government of China has announced one more programme of USD 116.9 million to benefit 100 million farmers at grass root level on 82 million hectors of land. Success of previous year plan has encouraged China to take this step. This 2007-08 plan is set up on the direction of successful 2005-06 plan, which used 64 million USD to implement this transparent project on the 42 million hectares of land. It saved 5 million tonnes of chemical fertilisers and raised USD 25 million for the benefits of farmers.





The Best Possible Solution:

In future, India need to have focus on how every benefit reach to the grass root level as China is doing. In fact, the rate at which China is realising the human potential if India do not catch up then most of 'poor men's market' will be captured wholly by China around the world, including India. Instead of using we are abusing our human resources is what we saw in our own Survey.

There are many Jugad Technologies used in Farming, those have not reached at grass root level or are used in few places, there are many frugal technics and technologies those farmers could be made aware to reap more benefits.

34. Utilisation of Talent, a lesson from China: China has educated, trained, and moved its population where it is needed and used it for developmental cause. Population earlier was considered negative, but China utilised it in a positive way, so we must learn from China.

The Best Possible Solutions:

Most Ph.D. holders are from China, the most patenting and Intellectual Property Right (IPR) country is China, the biggest market as an individual country is China, the biggest Economy is China, in Agriculture also China is top 10 in most of the produce.

China goes for Patent but also utilises it as soon as possible whereas in the other parts of the world most of the patents are dumped knowledge.

Look at any cheaper games of the kids, it is always 100% made in China, why? China used its patent and converted it into cheaper practical format. It's frugal, made at just few cent costs and is sold at several dollars. The patent holder earns, the manufacturer earns, the government of china earns, and globally Chinese products gets recognition too as the roadside retail vendor also earns, globally.

That's the power of reaching at the grass root level and using Talent pool from top to bottom of the Pyramid.

35. India is the oldest country to start farming, socially in an unorganised as wells as in an organised way: Indus Valley Civilisation with locations of Mohenjo-daro, Harappa, Lothal or any other places, there are evidences that Indians were good in farming and agricultural technologies. It is also a fact that Indians have not used their farm/ agricultural land/s and the large human resource working on present farmlands, as judiciously as other developed countries have used. Despite the fact that India has the least arid land in the world, in spite of India does not face snow fall on most of its land, despite India has regular monsoon/ seasonal rains, in spite of India has most percentage of human resources working on the fields, and despite the fact that India is the oldest country to start farming.

The Best Possible Solution:

Optimum Utilisation of land, farmers, and resources, with in-depth consideration of climate action, and benefits reaching to each farmer and each citizen of India.

Going beyond why not India become Farming nation for the World?

As Punjab became wheat bowl of India, India can become Vegetarians Food Plate for the world.

Indian farmers and government together can overcome the above-mentioned problems and grow variety of grains needed to feed the world from every corner of the world. Let China become manufacturing hub, let's make India the food hub of the world, having all the advantages benefitting the farmers.

Who knows, they might help in Achieving Sustainable Goals and some techniques and technologies might be useful in space age developed in India.

36. Problem of Youth and students not taking interest in farming and agrarian activities and find agrarian life/ career/ job / entrepreneurship less attractive:

The Best Possible Solutions:

i. 'Motivating Farmers Task Force', Initiative:

There is major revolution required on the education/ awareness front especially at the grass root level in the villages and at the bottom of the socio-economic pyramid. This will boost the confidence of the agrarians in many folds on multiple-levels and in multiple domains of life. They



will be able to live their life successfully on their individual level, family level and social level. Especially in the down and out phase of life of Agrarians committing suicides, for them Psychological boost is what is more required.

ii. The Government Machinery having well trained, 'Youth Task Force':

It is the time the government of India should reach to the needy at faster rate. Needy should not travel haplessly to the government. The Government machinery should fetch positive results in every rural task assigned to them, in prescribed time frame and with allocated resources. Any delay should be a punishable offence.

Exuberating Youth and students are faster to reach at any place, so 'Youth Task Force' could be the future.

iii. Social Responsibility of students through internship in villages:

Another way to do the achieve the educating the farmers, task is, using young talent. Young generation must be encouraged to contribute to the nation, via, six months well planned internships programme in the rural areas after graduation.

The enthusiastic young generation can boost the awareness drive by many folds, even better than any matured government machinery. Student community can contribute a lot.

They just have to spend just six months as internship after graduation with the poor and needy. It would be a holiday with social responsibility.

These students can act as a guide, philosopher, educator, planner for the uneducated farmers in the villages, during their internship.

They can streamline the yearly plan of farmers and help them implement. It will give them sense of belonging to the nation and society.

The students could be pursuing MBBS, BE, BA, BSc, ME, MBA, B.Parm., M.Pharm., B.Arch, M.Arch. MA, MSc, or PhD or any kind of curriculum.

37. Problem of CSR funds not being used properly.

The Best Possible Solution:

Adopting a village as a Part of Corporate Social Responsibility (CSR). Also, there must be clause for the private sector who is earning more than one hundred million rupees profit, their 2% might be invested in this cause of improving Farmers' lives. The clause should be to adopt a village as a part of corporate social responsibility and develop it at par with providing urban facilities to rural areas (PURA), the concept developed by former President of India, H.E. Dr. A.P. J. Abdul Kalam. Their best benchmark in India itself could be, the Tata Nagar. Mr. JRD Tata, founded the factory in 1907 and in 2004, the village turned into the best planned and the best maintained city in India. Thus, what corporate social responsibility can do is amazing.

38. Problem of not implementing Inclusive Agriculture and Rural Growth Plan:

The Best Solution Possible:

Vision 2020 A.D. was put forth by Honourable Dr. A. P. J. Abdul Kalam, hence we suggest here policy, an Agriculture Plan of USD 10 Trillion for the 2030 A.D. Thus, even if any party or coalition government persists (many experts suggest here that), this plan should not be altered in the bigger cause of the nation. As there is involvement of larger mass of populations, we have valid reason to suggest. In Journal, The Economist, of March 10, 2007, it is confirmed that Electronic Trading in the Agriculture Futures is only three years old in India, however, still its yearly turn over amounts to whopping 8.85 Trillion rupees, which comes out to be USD 195 Billion.

Earlier Agriculture was the way of life and a kind of a culture, now we are deviating from this physical work-based culture to more office work and mechanised farming culture. We'll be at loss in case this shift of paradigm is not done in a phased manner or without taking care of Agrarians.

39. Problem of Accountability and feedback system putting desired result:

The Best Possible Solution:

Empowering Village Authorities with transparent feedback system, and those will be responsible success or failure.





Just take example of Private Organisation, is it possible for anybody to get rid off any responsibility? No. Then why it's not applicable to the government employees working in those areas, why they are not accountable for the farmers' suicides?

At least some accountability should be there and that will make the positive difference. IT might help even to Achieve Sustainable Development Goals as well.

40. Problem of most of the Government Institutions have become Spending Institutions than earning institutions and producing little results even on Humanitarian causes:

The Best Possible Solution:

In the year 1992, Panchayati Raj Bill and 73rd and 74th amendment to empower local bodies like Municipal Boards and Corporations were passed.

However, still in the year 2015, local bodies have not become financially independent.

As they are not profit centres or are not business centres or are not collecting taxes or are not able to levy taxes.

Hence, these institutions have remained spending institutions.

Hence, in our opinion, these local bodies must become powerful than any other landlord or local politician or businessmen, so that they can generate enough revenue and distribute it to empower villages. There must be a provision that every house at grass root level must get the benefit of tax they pay. Thus, it must replace the bottom up approach of tax collection and tax going to Federal/ Central Government from the grass root level.

Instead, if our suggestion is followed most of the problems could be solved at the place and if asked Centre can provide required help.

41. Problem of Corporate Running Farmers Television or Radio Channel.

The Best Possible Solution:

Farmers running their own local 24/7/365 Television Channel: By the Farmers and For the Farmers in Certain Square Kilometres or certain Crop Specific Farming Area in India, with proper feedback and accountability to implement.

"There are 24/ 7/ 365 television channels in India. However, there is not a single Agriculture Channel dedicated to the cause of 600 million farmers of India," Dr. Ashish Manohar Urkude, said in the 2006 UNESCO Conference on Engineering Education and Mr. Shriram Thosar said in many Consumer Forums across India, lot of articles were published lot of interviews, government and private authorities, corporate noted it.

Then, some 24/7 Television Channels were started.

Of course, Radio programmes were already there of few minutes per day or a couple of hours per week, but dedicated Radio Channel is also not there till date for Farmers, in 2015.

There are programs on few channels just for an hour in the morning or in the evening, that too when the farmers are on their field or are commuting between their houses and field. It shows the negligence towards the Farmers, and lack of Corporate Social Responsibility (CSR) among the business houses.

Hence, we proposed a dedicated farming channel and government implemented it. However, there must be 24 / 7/ 365 channel for the farmers with language specifications, area specifications, crops and soil specifications, is not taken care of properly.

Using AADHAR/ Unique ID of India, there must be a provision for individual farmer to watch a program he wishes/ desires for his purpose, and it can be done has been proved several times.

Also, Radio and Television are not there just to spread awareness but should collaborate with Government and produce Results with proper follow up to the feedback by the citizens.

Result based Media To Achieve Sustainable Development Goals should be our Aim otherwise it will be biased media having no goals but just useless timewaster entertainment of the people.

Each farmer's problems can also be solved if the media is used properly and made responsible.

E.g. There are channels like Discovery, National Geographic for the science and nature lovers.

Also, there are channels for spiritual lovers the Astha, and Sanskar. People having specific interest watch the programs they wish as per their needs. Similarly, we suggest a channel for Agrarians and Farmers. In fact, like AMUL an organisation run by agrarians, this channel would be run by Farmers themselves, by the famers for the farmers and society, if they wish.





Let Farmers run the Farming Channel, within the parliamentary framework, but decision should be taken at faster rate than today's speed of ant race.

42. Making Agriculture an organised sector reaching deep and benefitting at grass root level: Let us make agriculture an organised sector and it must be accommodative and inclusive like Indian culture which has become powerful and fathomless after acceptance of multidimensional and multiple cultures around the world.

To make Agriculture a well organised result-oriented sector we need to think head-on with following problems and solutions to it:

Problem/ Question i. Why can't Minimum Selling Price (MSP) as well as Maximum Retail Price (MRP) for Agriculture products in India be there?

Probable Solution:

It will solve the problem of Minimum Selling Price (MSP) for all the farmers, that will guarantee the basic minimum price plus will generate income for them thus will avoid the farmers grave suicide problems existing in the country, which has become a big socio economic and political problem in India. Whereas Maximum Retail Price (MRP) if fixed can solve the consumers/ customers/ common citizen's problems as well.

Problem/ Question ii. Why can't Organised communication be there in the era of ICT explosion era?

Probable Solution:

1. Like Krishi Darshan Television Channel all the Privately owned entertainment media should also run the Farmers Programmes regularly for advising them on their local problems. However, frankly, no Channel and media is held responsible for failure of the farmers in that area, is also a truth. So in the ICT explosion era, every Media should be held Responsible along with local authority for any good as well as bad happening in farming as well as other social and infrastructure issues.
2. Interactive one to one communications and solutions are also be made possible.
3. Proper Revenue Generation Model should be developed for that.

Problem/ Question iii. Why cannot communication reach at 100% grass root level?

Probable Solution:

1. There is grave communication gap between the Government Schemes and the Farmers.
2. In regional languages Phone-In programmes can solve this issue to a great extent.
3. Professors in the area may be requested to visit the villages regularly and meet the Interest Groups and as per "Delphi Method" conduct the workshops to solve their problems.
4. The successful time proven example of Pulse Polio Drive of WHO-UNO and Government of India, may be followed in the Agriculture Sector as well.

Problem/ Question iv. Do you think Concerned Authority may be given more powers and held responsible to handle this grave situation?

Probable Solution:

1. The Concerned Authority should take Pro Active Actions to Answer the grievances of the farmers in his area under his jurisdiction, daily or every week.
2. The Concerned Authority should try to solve the problem faced by the farmers regularly, hence, he should be given extra powers to handle the problems faced by the farmers is also true.

Problem/ Question v. Why cannot each acre of land be planned in India, if each home can be reached for Anti Polio Vaccination and when we have so powerful satellites those can see wrist watch from the sky?

Probable Solution:

Using Delphi Method the farmers problems can be addressed and solved for each acre of land. Also, all are aware of ISRO and its satellites, which are so powerful that they can watch wrist





watch from the sky. This will help, farmers and government of India in long run, and agriculture land will be used for farming where as arid land can be used for the non-farming purpose. Thus, what is happening at present that even agriculture land is sold at higher price for urbanisation will be stopped. Otherwise after 50 years no land will be left for farming, you may have to go for hydroponic farming but it would be shifting to indoor farming or in a controlled environment. So, clear distinction of agriculture land and non-agriculture land should be done at highest priority.

Problem/ Question vi. Why cannot Agriculture knowledge reach at each home if Anti Polio Vaccination can reach?

Probable Solution:

Government Representatives in collaborations with NGO, SHG and UNO representatives, should reach each home / farmer to give them latest knowledge about the day to problems s/he faces. There is more chance to Achieve Sustainable Development Goals, planned by all the governments around the world and if each human is literate and aware than illiterate. Thus, Experts and Classes having knowledge should reach Masses of farmers is the best Solution on this.

Problem/ Question vii.

Do you think, Farmers should be encouraged to raise their problems and issues in front of higher authorities?

Probable Solution:

1. Yes, obviously, otherwise how will the problems/ issue will be tackled? Another Question is, “Why they feel so helpless?” and “Who is stopping them from raising such issues?” and “Who they are afraid of?”
2. Farmers should also be trained to raise their issues and problems in an organised manner so that locally as well as nationally the issue of farmers suicide be stopped.
3. It makes no sense that a party in power blames other party for this nadir situation because both opposition as well as party in power and whole humanity has failed, on this front, as they could not encourage farmers to raise their issues.
4. Another failure is Agriculture Institutions and Government Departments not held responsible for this, even it is student’s failure and Media failure, and UNO’s failure too, why not students learning agricultural courses and their teachers and experts and media persons along with experts, in collaborations with UNO, be sent to the highly affected area to help building awareness and Agriculture literacy in that area where farmers are committing suicides or having affected by some calamity?
5. National Disaster Response Force (NDRF) is planned for floods and Earthquake kind of disasters, but, for 600+ million Farmers no such official force is there, even after such a grave situation.
6. Why always needy should reach the Authority, when Authority can reach the needy along with ICT tools and resources that can solve the problems?

Problem viii. The Handling of issued of the farmers by the higher authorities.

Probable Solution:

Farmers are also citizens of India hence on humanitarian ground their problems must be addressed and solved by the higher authorities.

Problem/ Question ix. Why perfect distance between each plant is not known for each seed?

Probable Solution:

An appropriate technology must be developed so that farmers can send SMS/ MMS/ voice mail to the Agricultural Department and the auto generated reply can tell him what is the proper distance between each plan he sows in his farm.





Problem x. Problem of not using the correct amount of insecticide.

Probable Solution:

Optimisation methods must be used while deciding about amount of insecticides and must be conveyed to farmers by suitable communication technologies say Short Message Services (SMS)/MMS / WhatsApp Group.

Problem xi. Problem of not getting support for organic farming.

Probable Solution:

Organic and Traditional Farming must get full support from all the authorities. It could be well Archived as a Traditional Farming Knowledge of India like Ayurvedic Treatment.

Problem xii. Problem of not knowing the exact amount of water required for each crop in its each version, and thus leaving the water pump on throughout the day consuming extra electricity and wasting water and damaging the crop and crop pattern and damaging the adjacent farms too.

Probable Solution:

Using Stochastic Analyses along with Optimisation this problem may be solved for each acre of land and can be communicated by proper means at grass root level.

ISRO along with its Satellite Data in every Farming Area could solve this problem, along with water required for each crop and each plant in that area charts or via live satellite and drone inspection and providing solutions to each farmer. Even local authorities, NGO, SHO and Public Sector as well as Private Sector also can help in this area. Frankly, Early we realise, if 600+ million Farmers the Food Providers are Happy India and the world at large will be happy.

Problem xiii. Formulating the Research Problems for optimum farming and conveying to farmers.

Probable Solution:

In our Survey we observed that Distance between laboratory and actual farming has grown a lot, hence this question. In fact, few scientists feel the actual knowledge of next generation seeds reach only 60% of the farmers in India. This has happened due to compartmentalisation of departments and each department acts independently.

When the situation grave, compartmentalisation should be avoided as much as possible.

National Investigation Authority (NIA) like Authority may be formed to solve such problems which can work in integrated way avoiding compartmentalisation.

Problem xiv. There are many policies and discounts and subsidies farmers are unaware and hence they are discouraged to take bold decisions for taking new variety or produce.

Probable Solution:

Like Agricultural Knowledge even policies and discounts and subsidies should also reach each and every farmer in India on regular basis by best possible modes discussed above.

Why not the Authorities use AADHAR/ Unique ID of each farmer and why not each Department be held responsible for not letting reach these policies and subsidies reaching at grass root level?

Thus, Accountability is missing, and Result Oriented but Humane Approach is required at all the fronts.

Problem xv. Optimal Storage Capacity not built

Probable Solution:

Cold and Hot Storage should be built near high producing areas on war footing, to avoid food wastage, and it will also help in reducing the loss due to rains and other natural calamities.

Even the Food Corporation of India (FCI), go-downs should also get roof at high producing areas, where most of the times the Grains are wasted in the untimed rains or are exposed to sunlight, domestic animals, birds, and get lost.





Problem/ Question xvi. Why millions of tonnes of tomato, potato, onions, and milk are thrown on roads for not getting proper prices? Instead why can't they be used by factories or exported to earn foreign exchange? Why there is no minimum selling price for each agricultural produce? Is it not insult of hard work of Farmers and Agrarians? BJP in 1998 when Ms. Sushama Swaraj was Chief Minister, lost the power in Delhi for not giving proper prices to onions. That's the power of Agrarian community.

Probable Solution:

The Optimal Storage should be built at appropriate places so that the farmers can store their valuable produce in them.

It will help in exporting the produce and may be given appropriate price in India.

Problem/ Question xvii. Why students of Agriculture courses don't opt for the Farming than opt for organised sector job? Why can't they themselves make the Agriculture Sector a well organised sector to avoid suicides of the farmers? What's wrong with the Agrarian University Education, if they can't reach at the grass root level?

Probable Solution:

The Agricultural Engineering / Scientists should be given enough incentives, facilities and salaries to go to the villages and work there.

Sample:

Maybe they are given 4 days a week working with normal hours and stay rest of the days at their home near the villages, etc.

Problem/ Question xviii. Why can't the satellite data from Indian Space Research Organisation (ISRO) reach to the grass root level at each home if polio drops can reach to each home?

Probable Solution:

WhatsApp and M.M.S. kind of technologies can be used with GPS locator and AADHAR/ Unique ID, each farmer can get data of weather for daily/ weekly basis for his area.

Problem/ Question xix. Why cannot the individual farmer get the video of their own training for their own lands, for variety of produce and requirement of water, electricity, fertiliser, pesticides, and support for those produce?

Probable Solution:

On the spot on their own land, farmers can be trained to solve their problems, just authorities must reach at farmers doorstep, a video also can be produced which he can keep for 5 years or till the weather pattern in the climate change do not force to change his crop pattern. This can be a Sustainable Solution and a Game Changer in long term, having micro planning for each farmer. It can be Video Recorded as well and Farmer can store this video about his land and details and can show it while buying farming needs and can use it while availing the Government subsidies or loans, etc. and reap benefits. Every 2 or 3 years in the climate change this can be updated or upgraded, as per the need.

Problem/ Question xx. On un-irrigated land or wherever the water is scarce, why can't they be taught to take produce those crop which require less water?

Probable Solution:

Any produce which is possible with less water (un-irrigated) may kindly be promoted, may be with Delphi Method or which ever is suitable at that place.

Problem xxi. Data Acquisition and Supervisory control

Probable Solution:

NSSO should collect exact data of each and every farmer with clear AADHAR / Unique ID using certain easy app or through WhatsApp kind of technology, the way Anti Polio Drive reaches each home, including data of Farmers' Suicide as well.





Problem xxii: Farmers think Farming is a way of living nature friendly life whereas Market Economy looks at Farmers as Primary Producer (Annadata) aka Manufacturer of Food Grains for human civilisation.

Probable Solution:

Those who have passed their lifetime in farming should not be forced to live with other jobs than farming or rather search for non-existing jobs.

If these farmers leave farming then they are not aware about any other skills and hence they will be unemployed leading to more to suicides, is what seniors in the villages feel. Many have spent life and upgrading at senior age becomes difficult with less facilities around.

Daily wage farmers need some supporting business to live life without dependency, and they live hand to mouth, so they should not be treated at par with middle class or as they treat in developed countries where if a person works for around 1000 hours per year and if person loses job then government provides the living expenses by providing USD 1000/month to survive.

These are farmers and they like to live life like going early in the morning on the farmland, working hard there, living with nature, take his cows and ships there, and in the evening come back. Look up in the sky for rains. Let the crop grow. With team efforts collect the produce and sell. They like this environmentally friendly life, and they are requesting please don't force us to leave this life as 51% farmers are above 45 years age now, in our survey.

Problem xxiii. Instead of paper tigers we all government, private sector, NGO's, SHO's and Multilateral bodies must evolve to make farmers/ agrarians feel they are inclusive part of pulsating society. They commit suicides as they feel excluded from the masses as well as classes.

Probable Solution:

The Farmers should be made capable of taking out multiple crops throughout year suitable to their land and weather in this climate change.

“Why in India, ‘Village = Poor Farmer’, concept is there?”

Why not PURA department be established?

What is wrong with Civil Society, why Farmers feel they are excluded from the society?

Why Farming Institutions, Media, Government Departments are not held responsible for this Failure, and if they are not then who is responsible for this Failure, just individual farmer?

There are more questions to face while finding the Solution.

Problem xxiv. Globally, with the advent of just launched 4G or upcoming 5G Cell phone networks, the communication can reach at grass root level, using Software Applications/ APPs the WhatsApp, Facebook, Instagram, Telegram, LinkedIn, Hike, you name it and Social Networks are there why such a strong nation like India can't use it, or can't design their own App and provide Solutions to Farmers, is a big question, when millions of Farmers have committed Suicides, till date.

Probable Solution:

Agricultural Experts, Scientists and the Apps Developers should seat together and develop a single App for the benefits of Farmers with GPS location, language, area, crop, and other details and for application of the individual farmer.

Example:

If a farmer speaks in his App that he wants to grow the Sesame 11 so he wants the details to produce. The app immediately gives the details solving his problem. It covers exact amount of water required for his crop, the insecticide and fertilisers, etc. There must be provision to get live discussion 24/7/365 to farmers. If Local Trains in Mumbai can run 20 to 22 hours, then why not pool of experts be given 1 hour each time for 365 days? There are less than 100,000 hours in an year and India already have more pool of experts in the form of 500,000 students passed out till date plus Agricultural Scientists plus Professors teaching in Agricultural Universities. So as per their expertise, they just have to devote their 1 hour for nation for this cause per year.





Problem/ Question xxv. Why can't weather details reach to Farmers on their cell phones so that they are ready for remedial measures? If useless advertisements from different sources can reach each cell phone why can't government machinery reach each farmers phone for mutual benefits?

Possible Solution:

The Regular Weather Forecasting Reports must reach the farmers in advanced Daily/ Weekly so that they can plan their Agricultural Activities. If one entity can't do then it must be handed over to other entity is the best Solution on this. It can be outsourced, and must be done with result-oriented approach, otherwise, criminal case should be launched against those organisations. However, job must be done. Otherwise, it will be difficult to Achieve Sustainable Goals.

Problem xxvi. Problem of Land Hold at various distinct places.

Possible Solution:

Authorities can work proactively and talking to concerned people and solving this problem amicably is the best and faster solution to get best of both the world as early as possible. Again land records with Unique ID/ AADHAR can be a useful document.

Problem xxvi. Problem of Top Quality and Latest Quality of Seeds, Fertilisers and Pesticides are not supplied on time at feasible price to farmer

Possible Solution:

Gram Panchayat / Local Government should provide seeds on feasible and subsidised price and like Anti Polio Vaccination are provided at the door step like that even not only seeds but also fertilisers, pesticides can also be provided at door step of the farmer, with AADHAR Card/ Unique ID could be his identification.

Problem xxvii. Soil Erosion

Possible Solution:

Nano Dams of couple of feet high could be built at every 100 Hector to avoid Soil Erosion.

Problem xxviii. Agricultural Marketing

Possible Solution:

- i. Individual Farmer Marketing: WhatsApp or Social Media or App that can with individual buyer seller.
- ii. Collective Farmer Marketing: Television, Cable TV Channels and Radio could be used.

Problem xxix. Inadequate Storage and Transport facilities.

Possible Solution:

Gram Panchayat and Local Government can take care of this issue efficiently in the era of explosive information and communication technology.

Problem xxx. Scarcity of Capital and Financial Trap.

Possible Solution:

Gram Panchayat and Local Government can go home to home and train the farmers.

Problem xxxi. Less investment in the Agriculture.

Possible Solution:

Once Agriculture become profitable business investors will automatically follow, and hence local government and Gram Panchayat are the best just for the locality, apart from big investment can be done by the Governments.

Problem xxxii. Crop Insurance is not adequate

Possible Solution:

- i. Crop Insurance is required to take care of Crop Failures and /or other agrarian problems. That's why Insurance Companies and Government Agencies should come together by keeping the farmers in the loop so that latest problems in their areas are covered, otherwise, farmers will be reluctant to opt for it and may get debt trapped in the clutches of local lenders.





- ii. Universal Crop Insurance is failure. Area Specific, could be the best option with some tweaking like they did covered the diseases like Influenza or Cholera or Typhoid or certain other pandemic / epidemic even certain accidental Hospitalisation cover in the Health Insurance in some part of the world.

Problem xxxiii. Problem of Agriculture Debt

Possible Solution:

Financial awareness and on job training by the local government is need of the hour, otherwise, old age bonded labour system might overtake present system. Why Farmer's debt as bad debt could be the part of economy?

In fact, the same farmers can give profit and taxes to the government if they export their produce to places across the globe. Such kind of confidence building measures are required and we need to work on that.

Problem xxxiv: Many Problems coming under Vulnerability, Uncertainty, Complexity, Ambiguity (VUCA) in Farming on own marginal lands.

The Best Possible Solution:

Clarity is better than VUCA for Marginal Farmers is what they feel, when explained about VUCA. Farmers feel, (Verbatim), "VUCA is ok for Rich farmers, Rich people, and Government Authorities and other classes, but masses and marginal farmers not capable of handling VUCA.

Another farmer said, (Verbatim), "In case, Farmers are trained, it will be, as well as a degree for them", jokingly they claim.

Another farmer said, (Verbatim) "Even biggest authorities can't predict the weather, can't solve our farming problems coming under VUCA, how can you expect poor, devastated farmers facing VUCA successfully?"

An old farmer said, "Boys together we stand, but, if we are buried none could be there to feed the society. Let's face these problems together, government try its best but as P.M. Rajiv Gandhiji said, "Only 85% of government funds reach to poor and needy. In case, it reaches 100% we might see light of the day, and we might be able to handle VUCA very well."

Problem xxxv: Rural Unemployment

The Best Possible Solution:

Unemployed youth who are trained for up lifting of Farming and related field activities or any constructive ability that leads the nation in nation building and can become a force¹⁵ to reckon with.

Problem xxxvi: Indecision on the FDI or Domestic Investment should be attracted in the Agriculture sector

The Best Possible Solution:

Attracting Employment⁹ generating Industry could be the best solution and wise decision, in place high tech, less human intervention industry, looking at the population of India, and hence in place of FDI domestic investment could be the best solution.

We are not against FDI but high-tech industry wherever required could be generated by domestic people and in case it takes more time then high tech FDI could be the best Solution, for a specific time frame.

43. Farmers feeling only God is their saviour and there is none to look after them, and lack of trust on government or private or non-governmental entities.

The Best Possible Solution:

Moral Support from various sources to think positive in life: It has been found in the farmer's suicide area 'Vidarbha' region of Maharashtra that there is a need of reaching in every house and providing moral support. In developed countries the number of cells farmers get is and were beyond India can offer.

In fact, George Washington in his first speech became prophet of farmers and said that USA is going to develop farming activities and going to build roads to reach at every nooks and corners





in the USA. The reason he said was nation runs on food for energy and with roads every citizen could commute and communicate. After 200 years his prophecy has come true.

Similarly, to fight with global competition Indian farmers should get subsidies on farming activities, and for education to family it includes electricity, irrigation, fertilisers, and farmers must get the insurance back for every activity.

Otherwise, the suicides will cause such a moral damage that new generation will avoid career in Agricultural Sector. Already it is too late to start this activity but further delays would damage India's human rights image. All citizens, NGO, SHG, and Organisations could do this job. Farmers are already convinced that Farming is the best way of living life, they just must be pumped with positivity that's all.

We suggest here that it might be conducted at more places for millions of farmers living in every corner of India, helping farmers develop positive thinking abilities in every mode, phases, and events in life.

44. Lack of Rural way of humane communication

The Best Possible Solution:

Yearly or Half Yearly Planner Fair/ Mela at every 100 or even 25 kilo-meters distance:

If possible, there must be twice in the year (Rabi as well as Kharip crop) Agrarian Mela/ a Farmers' Fair, be arranged for the farmers in proximity of 20 to 25 kilometres radius area.

It could be an accommodative one and comprehensive, which could buy the produce from the farmers and sell the daily needs to the farmers.

It will enhance the communications among the farmers and will benefit one and all. At present in this erratic climate change a VUCA kind of atmosphere is generated and there is a huge communication gap among all the farmers and among government and famers.

Hence, in our "Energy-Economy-Infrastructure-Education Model for development of Rural India" we have built a transparency in the transactions. We believe more the input more is the output. There will be I-Card for the farmers with bio-identification and a full proof mechanism of the transparent record keeps from the government of India.

Thus, there will be fine blend of rural infrastructure with the alternative energy sources, as a model, which can replicate elsewhere and build the India as a developed nation within the span of a decade.

Yes, India need to work faster, otherwise, the way the education is exploding with the social media, sooner or later, the 1 billion literate population could be called wasted, may be in the year 2021 to 2025 A.D./ C.E.

We are putting here the "Farmers' Fair For The Farmers: Energy-Economy-Infrastructure-Education Model for development of Rural India" Model developed by Dr. Ashish Manohar Urkude.

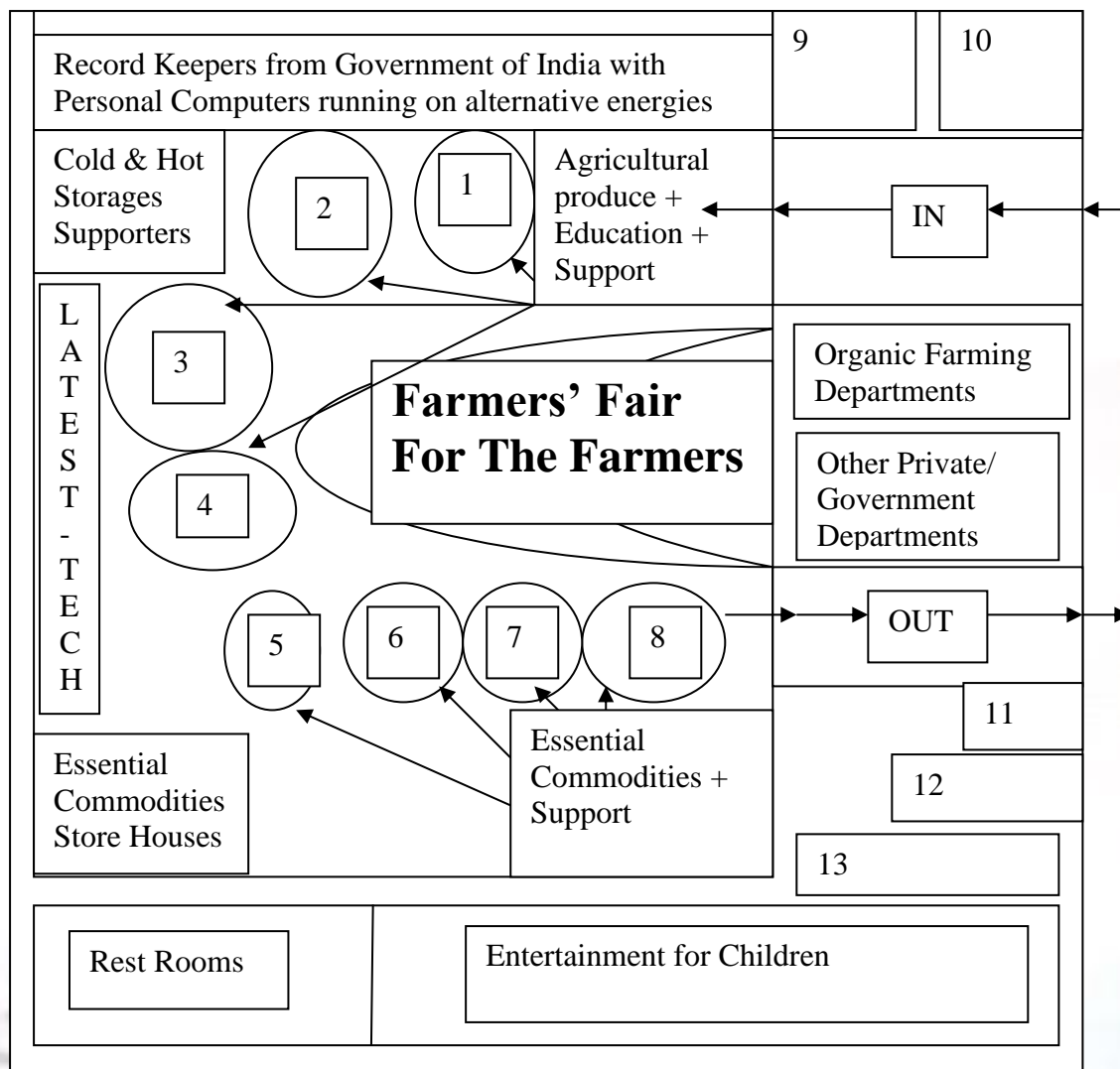
Here it will be a detailed affair for the farmers. Agrarians and Farmers will be getting every kind of knowledge about their health, and family health.

They could take advice on veterinary problems as well.

The fair will so comprehensive that there will be entertainment wing, children education wing, bank, NGO, SHG, and even there will be record keeping on the computers which could be useful for the years to come. These computers will be running on the solar cell batteries or on the electricity generated by the biogas or gohar (cow dung) gas or on the alcohol from the nearby sugarcane factory.

Thus, there will not be any stone unturned for the next six months in the work and in the life of those farmers attending the Agrarian/Farmers Fair we are suggesting here, including seeds, insecticides, children education, contingency planning, health check-up of family and cattle, energy planning with bagasse bricks, planning of the villages, etc. and awareness would be improved among all. To enhance the reach and range of people's participation the fair also has the fair and entertainment wing. Thus, children to old farmers could take advantage of this opportunity to prosper in life.





“Farmers’ Fair For Farmers: Energy-Economy-Infrastructure-Education Model for development of Rural India” Model developed by Dr. Ashish Manohar Urkude, 2006 A.D.

Diagram shows the Numbered Circles and Cubical which indicate the following:

Cubical: 1. Identification is checked on records like photo identification, and biometric analyses, is done by the government people even may be native trained boys

Cubical: 2. Coupon usage essential commodities, Energy coupon, Ration card with bioinformatics chip and GPS Locator

Cubical: 3. The agricultural produce is being inputted and stored according to the requirements

Cubical: 4. Information is given about children development and self-development and other programs

Cubical: 5. Essential Commodities like yearly raw-food, yearly energy products etc.

Cubical: 6. Feedback is taken

Cubical: 7. Facilities and information about what to do next

Cubical: 8. Other necessary activities like selling home-grown items, ideas, etc.

Cubical: 9. Expert Panel to solve problems in the Agriculture field

Cubical: 10. Veterinary Doctors and advisers.

Cubical: 11. Expert panels, Banks, and to solve Financial problems.

Cubical: 12. Doctors and Medical Advisers for Humans

Cubical: 13. Self Help Groups (SHG), Non-Governmental Organisation (NGO), Children Education Advisors, and Mutual Solving Groups (MSG).



Conclusion:

It is high time India must think ‘powerful villages make powerful nation’ and happy farmers – happy nation, otherwise, in next decade or so it will be too late to even refurbish the policies right from the scratch.

India has missed the bus of becoming part of global technological revolution during 1950’s and 1960’s, hence, now we feel let us not miss the bus of higher inclusive growth rate.

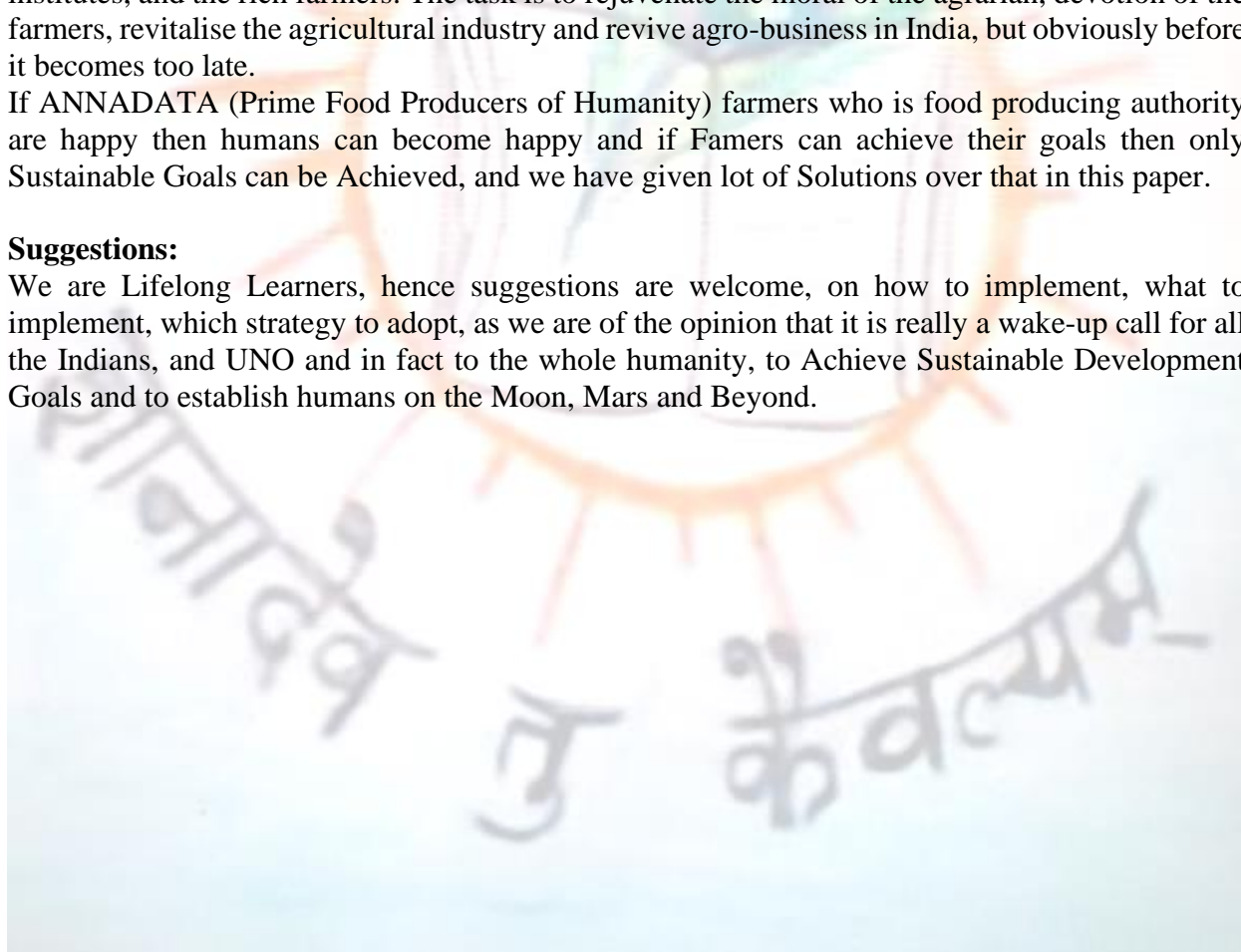
In simple words, if every individual farmer is happy, Indian population at large would be happy, because, in the Indian society every one is interlinked by some cohesive or coercive force, hence any further agrarian crisis can jolt further progress of the nation. A nation cannot ignore 60% of its population having agrarian background. 10% growth of GDP is better on the paper and to show to the world, but not better option to show to the farmers who are hitting the bottom and heading towards suicides as common Farmer is getting nothing out of that growth. If farmers are living in penury and are not getting their due share of their contribution, then they will stop farming. Remember, that will be the dooms day for India as India will become dependent on the foreign sources for food like petroleum products, in fact India will lose its total independence.

Thus, there is a major task ahead with all of us, the government, the researchers, the corporate with their corporate social responsibility (CSR), the Non-Governmental Organisations (NGO), the Self Help Groups (SHG), the student community, the wise learned in the villages, the banks, the institutes, and the rich farmers. The task is to rejuvenate the moral of the agrarian, devotion of the farmers, revitalise the agricultural industry and revive agro-business in India, but obviously before it becomes too late.

If ANNADATA (Prime Food Producers of Humanity) farmers who is food producing authority are happy then humans can become happy and if Famers can achieve their goals then only Sustainable Goals can be Achieved, and we have given lot of Solutions over that in this paper.

Suggestions:

We are Lifelong Learners, hence suggestions are welcome, on how to implement, what to implement, which strategy to adopt, as we are of the opinion that it is really a wake-up call for all the Indians, and UNO and in fact to the whole humanity, to Achieve Sustainable Development Goals and to establish humans on the Moon, Mars and Beyond.





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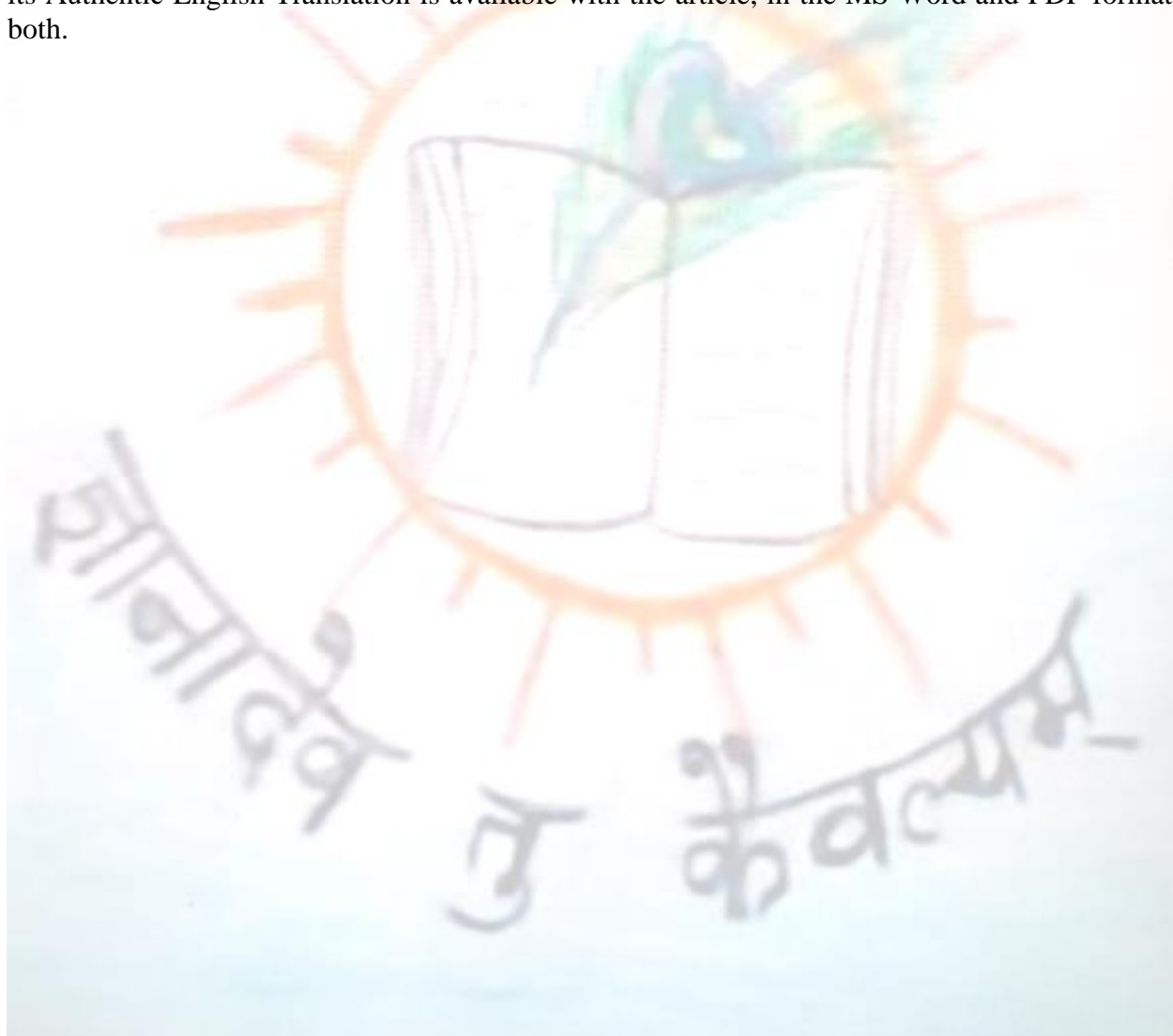
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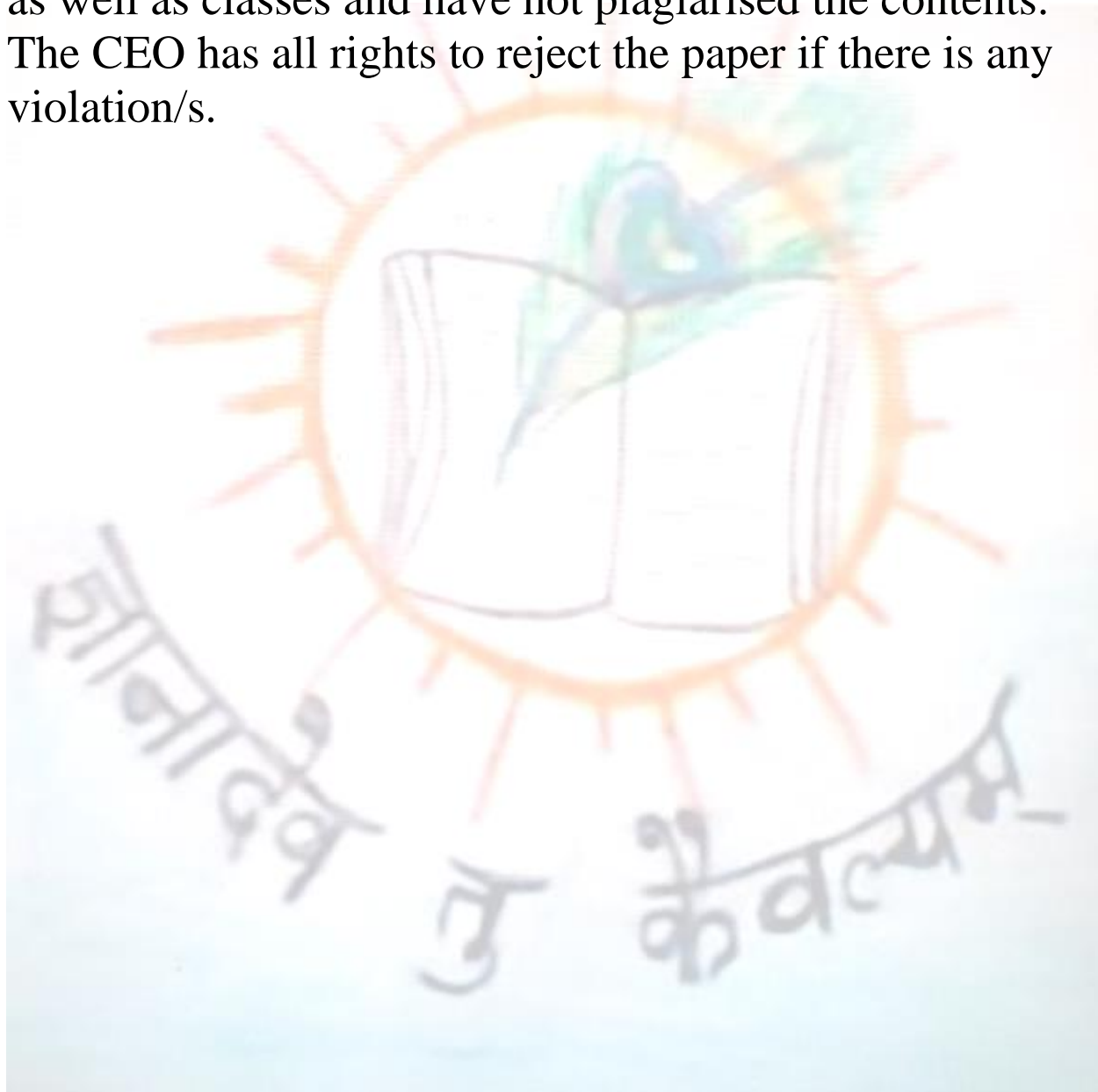
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