e ISSN–2321–7987 | ●●● Article ●●● |Visit us : *www.researchjournal.co.in*|

Irrigation water: Starting point of agriculture

Hiralal Jana

Department of Agricultural Extension, College of Agriculture, Bidhan Chandra Krishi Viswavidyalaya, Agricultural Farm, Burdwan (W.B.) India
(Emial : janahiralal@yahoo.in)

There is no option except to produce more food and other commodities under conditions of diminishing per capita arable land and irrigation water resources."—Prof. M.S. Swaminathan. Irrigation is the method in which a controlled amount of water is supplied to plants at regular intervals for agriculture. It is used to assist in the growing of agricultural crops, maintenance of landscapes, and revegetation of disturbed soils in dry areas and during periods of inadequate rainfall. The world over, the irrigation sector is the largest user of water –almost 80 per cent of the water in the world is taken up by irrigation. In India, the irrigation sector uses 85 per cent of its available water resources. The average rainfall in India is 1170 mm and given the geographical area of 3.3 million km, gives India 4000 cu km of water. Almost 50 per cent of this water is lost to evaporation, percolation, sub-surface flows to ocean and only 1953 bcm is accounted for. The population of our country in 2050 AD will be around 1593 million for middle variant growth, as projected by United Nations (2004 revision) and corresponding food grain requirement will be about 450 million tones. Development of irrigation coupled with high yielding varieties of crops and increased use of fertilizers may possibly be the only strategy available to achieve the required level of production. Availability of water for irrigation is thus critical to self-sufficiency in food. In –basin water resources development alone cannot increase the irrigation area beyond certain limits. The ultimate irrigation potential that can be achieved from in-basin development is estimated to be around 140 million hectares. But, for achieving the food production level of about 450-500 million tones, it is imperative that an irrigation potential of at least 130 million hectares for food crops alone and 160 million hectares for all crops is created. One of the major strategies for achieving such a massive increase in irrigation potential could be inter-basin transfer of water.

Importance: Irrigation water is essential for keeping fruits, vegetables, and grains growing to feed the world's population, and this has been a constant for thousands of years. Estimates vary, but about 70 per cent of all the world's freshwater withdrawals go towards irrigation uses. In several developing countries, irrigation represents up to 95% of all water uses, and plays a major role in food production and food security. Additionally, irrigation also has a few other uses in crop production, which include protecting plants against frost, suppressing weed growth in grain fields and preventing soil consolidation. In contrast, agriculture that relies only on direct rainfall is referred to as rain-fed or dry land farming. Irrigation systems are also used for dust suppression, disposal of sewage, and in mining. Irrigation is often studied together with drainage, which is the natural or artificial removal of surface and sub-surface water from a given area. The irrigation system helps the farmers to have less dependency on rain-water for the purpose of agriculture. The necessity and importance of irrigation is highlighted below in points:

Variety of climate :Indian climate and weather conditions experiences a varied range of climate.

Irregular and uncertain monsoon: India is a land of monsoon. But monsoon is irregular and erratic in nature.

Agriculture based economy : Indian economy is based on agriculture. A large portion of Indian population depends on agriculture.

Winter crop : India is a vast country with fertile plain lands suitable for rabi as well as *Kharif* crops. But there is no rainfall during winter months in several places.

High breed seeds : At present because of high breed seeds, crops can be produced at any seasons. But the production of crops is totally depending on water.

Soil character : In many places, the soils have less water-retaining capacities.

Jute and paddy : Irrigation is needed for growing some thirsty plants like jute and paddy.

Hence, irrigation is of outmost importance for a agriculture based country like India. To feed a population of over one billion people, there is a need for production of crops round the year. But for this purpose, irrigation water is needed. So, for the production of food crops and cash crops, irrigation is a must.

Water resources for irrigation : Water used for agriculture comes from natural or other alternative

sources. Natural sources include rainwater and surface water (lakes and rivers). These resources must be used in a sustainable way. Rain water resources rely on the atmospheric conditions of the area. Surface water is a limited resource and normally requires the construction of dams and reservoirs with a significant environmental impact. Alternative sources of irrigation water are the reuse of municipal wastewater and drainage water. However the use of recycled water for irrigation may have some adverse impacts on the public health and the environment. Irrigation water can come from groundwater (extracted from springs or by using wells), from surface water (withdrawn from rivers, lakes or reservoirs) or from non-conventional sources like treated wastewater, desalinated water or drainage water. A special form of irrigation using surface water is spate irrigation, also called floodwater harvesting. In case of a flood (spate), water is diverted to normally dry river beds (wadis) using a network of dams, gates and channels and spread over large areas. The annual precipitation including snowfall, which is the main source of water in India, is estimated to be in the order of 4000 km^3. The annual potential evapo-transpiration in the country is 1775 mm, but it varies from a minimum of 1239 mm in Jammu and Kashmir to a maximum of 2052 mm in Andhra Pradesh. The total catchment area of Indian rivers is estimated to be 252.8 mha. Thus a total of 1050 km^3 of utilizable surface and groundwater is available for irrigation.

Types of irrigation : Various types of irrigation techniques differ in how the water obtained from the source is distributed within the field. In general, the goal is to supply the entire field uniformly with water, so that each plant has the amount of water it needs, neither too much nor too little.

Surface irrigation : In surface (furrow, flood, or level basin) irrigation systems, water moves across the surface of agricultural lands, in order to wet it and infiltrate into the soil. Surface irrigation can be subdivided into furrow, borderstrip or basin irrigation. It is often called flood irrigation when the irrigation results in flooding or near flooding of the cultivated land. Historically, this has been the most common method of irrigating agricultural land and still used in most parts of the world.

Sub-surface irrigation : Water is applied to the subsurface soil through underground perforated pipes. Water is also applied through deep trenches at 15 to 30m intervals. Water gradually wets root zone through capillary movement. The surface soil is dry even when the root zone is wet and thus minimizing or eliminating evaporation losses. Weed problem is less due to dry surface soil. The trenches are also used for drainage. However, maintenance of pipes is difficult and they interfere with cultivation. Subsurface irrigation through trenches causes deep percolation losses.

Sprinkler irrigation : In sprinkler irrigation, water is sprayed into the air through a sprinkler nozzle and allowed to fall on the land surface in a uniform pattern at a rate less than the infiltration rate of the soil. Sprinklers were introduced in India during the early 1950s. Initially, the sprinklers were used on high value plantation crops such as tea, coffee, chicory, cardamom and in orchards. Their use is gaining popularity on food crops, orchards, cotton and vegetables in areas where sprinklers are economically justifiable and technically feasible. Sprinkler irrigation can be used for almost all crops (except rice and jute) and on nearly all soils.

Drip irrigation : Drip irrigation, also called trickle irrigation, involves slow application of water to the plant root zone. The losses by deep percolation and evaporation are minimized. A precise amount of water is applied to replenish the depleted soil moisture at frequent intervals, for optimum plant growth. The system enables the application of water and fertilizer at an optimum rate

to the plant root system. The amount of water supplied to the soil is almost equal to the daily consumptive use, thus maintaining a low moisture tension in soil.

Area of irrigation : India's irrigation covered crop area was about 22.6 million hectares in 1951, and it increased to a potential of 90 mha at the end of 1995, inclusive of canals and groundwater wells. However, the potential irrigation relies of reliable supply of electricity for water pumps and maintenance, and the net irrigated land has been considerably short. According to 2001/2002 Agriculture census, only 58.1 million hectares of land was actually irrigated in India. The total arable land in India is 160 million hectares (395 million acres). According to the World Bank, only about 35% of total agricultural land in India was reliably irrigated in 2010. Bhakra Canal system in north India irrigates over 4 million hectares of land.

Problems of irrigation : Overexploitation of groundwater resources has caused continuous decline in water level, decline of well yields, drying of shallow wells, deterioration of groundwater quality, seawater intrusion into coastal aquifers and increase in cost of energy required to lift water from a greater depth.

The major water quality problems are :

Salinity in coastal areas : The Gujarat government records show that 950 villages suffer from coastal salinity ingress.

Excessive fluoride causing fluorisis : Thirteen states in India have evidence of fluorisis and it is reported that about half a million people in India suffer largely due to excessive fluoride.

Nitrates : Excessive nitrate is a problem in twelve states, though in some cases it is not only caused by excessive groundwater withdrawal for irrigation but because of high mineral content in the aquifers as a natural condition.

Arsenic : This is found in West Bengal and is also caused by extraction of deeper aquifers.

Solutions possible : In Israel and USA, saline groundwater has been used for irrigation to a limited extent after diluting it with good quality surface water. There is scope for adopting such practices in certain areas of Gujarat and Rajasthan where the groundwater is brackish.

The following five core programmes of MoWR have been identified as important :

– River management activities and works related to Border Rivers.

– Command area development and water management

– Accelerated Irrigation Benefit Programme (AIBP)

– Repair renovation and restoration of water bodies.

– Flood management programmes other than Border Rivers.

Currently, there is no policy framework governing the use of groundwater. In 1974, the central government had introduced the Ground water Act which was not adopted by any state. In any case, most policy makers feel that regulating thousands of wells is operationally not possible. However, the first requirement for evolving effective policies is to shift from water resource development to water resource management as in many areas, development has already taken place and if not managed, will lead to collapse of the ground water resource. Options which can be considered are a combination of legal measures with indirect regulation through power supply. The major problem of irrigation water in our country can be solved, if the inter linking rivers project is implemented in time and managed in an appropriate manner. The implementation of ILR programme is not going to be a cakewalk. The many hurdles on the way include arriving at consensus, addressing environmental concerns, sourcing funds and so on.

Critical crop stages of water requirements: Growing crops use water continuously but the rate of use varies with the kind of crop grown, the age of the crop, the temperature, atmosphere conditions, special treatment to the crop (use of anti-transpirants and growth modifiers) and the moisture status of the soil. It is not possible or desirable to supply water uniformly throughout the life span of the crop. There are certain critical periods of water requirement for each crop. If the crop experiences stress conditions during these periods, there is a drastic reduction in yield. These periods are mostly specific. Therefore, irrigation should be scheduled centering around such critical stages of water requirement of the crop provided there is no other source to recharge the root-zone with moisture.

Different growth stages of different crops have been recognized as critical stages of water requirements. They are as follows :

Crop	Critical stages
– Rice	: Tillering initiation, flower primordial and flowering
– Wheat	: Crown root initiation (CRI), milk.
– Maize	: Silking, cob-development.
– Sorghum	: Seedling, flowering.

- Barley : Early tillering, boot, grain filling.
- Oat : Ear emergence
- Pearl millet : Flowering
- Finger millet : Flowering, grain formation.
- Soybean : Early seedling, flowering, pod development
- Peas : Start of flowering, pod formation.
- Red gram : Flower initiation, pod filling
- Gram : Pre-flowering, flowering.
- Sunflower : Flowering, grain filling.
- Safflower : Flowering, branching development
- Rape and mustard : Pre-flowering, capsule development
- Linseed : Pre-flowering, capsule development
- Groundnut : Pegging to pod formation
- Potato : Stolonization, tuberization, and bulking.
- Sugarcane : Emergence, tiller formation and elongation.
- Cotton : Commencement of sympodial (fruiting) branches, flowering and boll formation
- Tobacco : Topping

Management of poor quality water : Selection of crops, their varieties and salt tolerance at various stages of their growth are also important. Detailed guidelines for using saline irrigation water in India are available. In the extreme cases of waterlogging and salinity, the seeds may not germinate and the plants may wilt permanently. Waterlogging and salinity of agricultural lands are due to a natural process or man-made activities. In irrigated areas, chemical degradation of land is a subsequent development on account of long duration waterlogging. Besides the erratic rainfall distribution, inundation of coastal areas by back-water flow from the sea and absence of proper soil and water-conservation measures in the catchments are also important factors leading to drainage congestion and related problems in the agricultural lands. There is a lack of up-to-date and methodically monitored information on the type, severity and extent of drainage problems in the country. Estimates of waterlogged areas in India range from 2.5 to 16 mha, and those for salinized areas from 3.3 to 10.9 mha. Beyond the above gross estimates for the whole country, very few published records based on rigorous monitoring exist on the progressive development of waterlogging and salinity in India.

Management of rain water resources : The technologies of rain water management are highly location-specific and are determined by physiographic, environmental, technical and socio-economic reasons. The main features are to conserve rain water where it falls, *i.e.* in the soil profile upto its maximum capacity and in storage structures for crop irrigation at a later stage. The technologies practiced are (i) *in situ* water conservation, (ii) supplemental irrigation by run-off recycling, (iii) watershed management including agriculture, (iv) pond culture adjunct to canal system, (v) construction of high tidal-dykes, (vi) rice-fish integrated farming, (vii) using pressurized irrigation system, (viii) groundwater management, (ix) flood water management, (x) management of drainage and water-logging. Needless to say, ultimately the approaches have to be compatible with socio-economic adjustments of the target population.

Broad reasons for low performance of irrigation projects :

- Poor economic status of small and marginal farmers.
- Non-availability of assured power supply.
- Highly subsidized water rates in canal command, whereas, no provision of subsidy for development of groundwater.
- In hard rock areas, probability of obtaining groundwater resource is low.
- Over-extraction in critical areas which has caused depletion of water tables resulting in failure of wells.

Irrigation sector terminology : The term used by the Ministry of Water Resources (MoWR), Ministry of Rural Development and the Ministry of Agriculture (MoA), the ministries within the government responsible for irrigation are as follows:

Major irrigation : Cultivable command area above 10000 ha.

Medium irrigation : Cultivable command area between 2000 ha to 10000 ha.

Minor irrigation : Cultivable command area less than 2000 ha.

The importance of irrigation in the Indian economy: Till the 1990s, Finance Ministers used to say that "Every budget is a gamble on the monsoon.' For the more than 70 per cent of the Indian population, living in rural India and dependent on agriculture directly, the monsoon controlled their purchasing power year after year. Even now, when agriculture contributes less than 20 per cent to the national economy, more than 600 million people are dependent on agriculture for their livelihood. In terms of food security in India, the 35 per cent irrigated area

Table 1 : Sector –wise demand scenarios of water in India

Sr. No.	Sector	Water demand (bcm) in the year		
		2010	2025	2050
1.	Irrigation	688	910	1072
2.	Drinking (including livestock)	56	73	102
3.	Industrial	12	23	63
4.	Energy	5	15	130
5.	Other –Forestry, pisciculture, tourism, navigation and so on	52	72	80
	Total	813	1093	1447

(bcm=Bllion cubic metre)

Table 2 : Water resources scenario in India

Sr. No.	Average annual precipitation	4000 bcm (3000bcm during June-Sept.)
1.	Average runoff in all the rivers	1869
2.	Utilizable surface water (by conventional means and replenishable ground water.	1122 (690+432)
3.	Present utilization	605
4.	Future demand by 2025 AD	1093
5.	Future demand by 2050 AD	1447
6.	Possible additional water utilization through inter basin water transfer scheme of GOI	170-200

Source: MoWR-2003

provides more than 60 per cent of the food production. Therefore, irrigation infrastructure, which has the potential to insure the farmer against the vagaries of the monsoon and increase his income from a small and diminishing land holding, is the most critical infrastructure for rural India.

Demerits of irrigation:

– Submergence of land.
– Displacement of people.
– Over-extraction of ground water.

Advantages of watershed development:

– It reduces siltation of the large dams by soil conservation in the upper catchments.

– Watershed treatment helps in recharging the local aquifers and makes investments in groundwater irrigation by farmers more viable.

– Watershed treatment provides a low cost decentralized option to rainfed remote villagers that are not part of any irrigation schemes and do not have access to power and capital to scale up groundwater irrigation.

The International Crop Research Institute for Semi-Arid tropics (ICRISAT) analysis of 311 watershed programmes finds that soil loss reduced by 0.82 tonnes/ha/year, irrigated area increased by 34 per cent, cropping intensity increased by 64 per cent, there was additional employment of 182 person days/ha/year, and the benefit to cost ratio was 2.14 (MoRD, 2006).

Benefits of micro-irrigation:

– The increase in yield for different crops ranges from 27 per cent to 88 per cent and water saving ranges from 36 per cent to 68 per cent *vis-s-vis* conventional flow irrigation systems.

– It enables farmers to grow crops which would not be possible under conventional systems since it can irrigate adequately with lower water quantities.

– It saves costs of hired labour and other inputs like fertilizer.

– It reduces the energy needs for pumping, thus reducing energy per ha of irrigation because of its reduced water needs. However, overall energy needs of the agriculture sector may not get reduced because most farmers use the increased water efficiency to bring more area under irrigation.

Conclusion: The flood plains in the vicinity of rivers can be good repositories of groundwater. A planned management of groundwater in the flood plain aquifers

offers an excellent scope of its development to meet the additional requirements of water. The development of groundwater in the Yamuna flood plain area in Delhi is an example of scientific management of water resources.

As urbanization increases in India, demand for water from the urban sector will increase. Already water conflicts are rising with irrigation water being diverted for urban drinking water supplies in times of scarcity. Farmers in Rajasthan have not allowed dam waters to be drained to the Bharatpur Sanctuary. With an increasing population and growing needs, the gap between the demand and availability will only widen with time. Hence, irrigation as a sector will be under increasing pressure from other sectors to share scarce water. The irrigation sector will be compelled to introduce reform towards better water management and minimization of wastage to be able to meet its growing demands from progressively less water availability per capita. Groundwater is the primary source of irrigation water. Farmers naturally behave in an economically rational manner in response to the realities created by well-meaning but dysfunctional policies. Since electricity is cheap, they use large amount of it. And since poor quality power ruins high efficiency pumps they use rugged, low cost but very inefficient pumps. The perverse result is a system that induces the wasteful consumption of two precious resources; water and energy. Shifting from flood to drip irrigation has the potential for reducing total annual groundwater use by 42 per cent and for further reducing annual power consumption by an additional 20 per cent. All the political leaders in these states give priority to these programmes, and the schemes are part of the election manifestos and self – promotions campaigns of all political parties. If the micro-irrigation devices achieve their potential of about 20 to 30 million ha, and even if water savings are on an average of 30 per cent, then an area of almost 6 million ha can come under irrigation with almost no additional irrigation infrastructure. Considering the huge subsidies required, both under surface and groundwater irrigation for bringing additional ha under irrigation, investing in micro irrigation is probably the most economical and environment friendly option. But there are many reasons why drip is not expanding despite its many benefits. It is obvious that unless the government, financial institutions and NGOs devote quality human and financial resources, scaling up may not occur. The time is ripe for most institutional reforms such that (1) irrigation institutions reflect changing approaches and technologies, (2) Institutions focus not only on increasing the amount of water available but improving the irrigation efficiency of the farmer so there is more crop per drop, (3) Irrigation institutions are so structured and incentives evolved such that there is a link between water rate, water recovery and irrigation system performance. MoWR has prepared a National Perspective Plan for interlinking of rivers of the country for transferring water surplus basins to water deficit basins. National Highways Projects have been undertaken and the same is nearing completion and the inter-linking of the rivers is complementary to the said project and the water ways which are constructed will be immense benefit to the country as a whole. To accelerate the country's GDP rate of growth to 8-10 per cent, it is essential that agricultural sector productivity be raised. Making use of water which runs off during monsoons is one of the ways to assure supply of water in a timely and equitable manner. The ILR project has the potential to catalyze socio-economic transformation of rural masses and alleviation of poverty. It is focused on providing water for drinking, irrigation, and agro-based industries which will benefit rural people. Of course there are some important issues such as submergence, environmental concerns, and displacement which need to be addressed amicably. There are a number of successful examples of water resources projects such as Bhakra, Rajasthan canal, and the Sardar Sarovar Project which have been instrumental to the overall well-being of the hinterland. ILR project is expected to emulate these projects in transforming the water resources development scenario in the country, both spatially and temporally. Development of local water resources through watershed management must be carried out in tandem with interlinking of rivers to gain the true benefits of existing water resources. Watershed management measures are site specific and cannot be applied universally. Particularly, when the normal rainfall itself is quite low in the region the scope of watershed development in semi-arid and arid regions is not very significant. This strategy alone may not be able to solve the massive water availability problems which the interlinking of Rivers Project is attempting to do. Integrated Water Resources Development plans must take into account all the options in meeting the prevailing as well as projected demand for water in the country. Also, it must be appreciated that conservation of water for its prudent use round –the- year will pay rich dividends. Below are the few considerations regarding availability of irrigation water:

Bringing more uncultivable land area under

cultivation : Due to pressure of population, per capita land holding is day by day decreasing and arable land is decreasing due to housing, industries, road, railways etc (per capita land holding in 1950 -0.50ha, 2002 -0.15ha and 2020 it will be 0.08 ha). Therefore, there is need to bring more uncultivable land area under cultivation which is only possible through the provision of irrigation water.

Education is needed : Education is the manifestation of perfection. Literacy in our country is 74.04 %; means 25.96 % are illiterate and in the world, maximum illiterate people live in India. Majority of the illiterate persons are in agriculture and they are dealing agriculture where in recent time more scientific aspects are included. Therefore, what way these illiterate people dealing their scientific aspects, it is easily understandable. Hence, mismanagement is happening in agriculture, mismanagement is happening in case of proper utilization of natural resources especially most important resource in agriculture that is irrigation water.

Population control : For increased population, increased food-grain production is needed. For increased food production, increased water resources are needed, though the water resource (especially ground water resources) is day by day decreasing. One day disaster will happen and that day is not so far away. We know it very well though our policy makers, politicians; administrators are not so vocal on this aspect. Therefore, it is my clarion call to every Indian –it is your country; how to save the country from the forthcoming danger –it is your responsibility also as a responsible citizen of the country. Do not through your life and luck in hands of others bypassing your responsibility.

One life–one dream : Natural resource is fixed to reducing. Population is ever-increasing. Therefore, problem is creating in societal life, country's life. One life means one dream. Every individual has dream in life that is dream of success. When population is more, competition is more, dreams are more. To fulfill the dream at any cost (when it is not possible in straight way) an individual will follow negative ways to success *i.e.* reprinting dates on expired drugs, adulterate food items for sale, cyber crime, involvement in various illegal activities which ultimately make instable his life, society and nation. Cutting plant and selling wood, poaching, illegal mining etc. he/they assume (s) the ways to success in life which ultimately effect the natural resources. In this way whole society is hampered. Therefore, population control is now-a-days need of the hour, essential, urgent, must to do activity that is the true fact especially in our country. Therefore, how many days we will neglect, avoid or hide the basic truth?

Realization is needed : Day by day due to flood of technologies we are losing slowly our realization. Radio, T.V.., Tape, home-theatre, computer, laptop, mobile etc. now-a-days persons have very less time to think, to think deeply regarding any aspect. Farmers by using technologies –water pump, motor, Mini (placing the motor underground) etc. sucking so much ground water for irrigation mainly as well as domestic use also. But, what will be consequences after few years, very less number of persons thinks on it. Until 1960s, the common perception was that water was an infinite resource. At that time, there were fewer than half the current numbers of people on the planet. People were not as wealthy as today, consumed fewer calories and ate less meat, so less water was needed to produce their food. They required a third of the volume of water we presently take from rivers. Today, the competition for water resources is much more intense. This is because there are now more than seven billion people on the planet, their consumption of water-thirsty meat and vegetables is rising, and there is increasing competition for water from industry, urbanization and bio-fuel crops. To avoid a global water crisis, farmers will have to strive to increase productivity to meet growing demands for food, while industry and cities find ways to use water more efficiently. Successful agriculture is dependent upon farmers having sufficient access to water. However, water scarcity is already a critical constraint to farming in many parts of the world. From the year 1960 onwards mainly groundwater irrigation has got importance and in 2016, we are telling ground water availability has reduced drastically and just few countable years later, ground water availability for irrigation will be a history. So, (2016-1960) =56 years duration we have finished whatever the valuable water resources was there upto a great extent. Out of total irrigation water, 80% comes from groundwater – therefore what will be the situation of agriculture in near future? Therefore, the time has come to realize the matter deeply and take proper measures (policies) to groundwater conservation and utilization.

Responsibility of the panchayat: It is the responsibility of the panchayat to ensure water availability in his/her village. In village level village panchayat is the main functioning body of village development, considering the importance of water in life – a role is to be imposed on village panchayat to conserve and utilize the village water resources properly.

Use vast resources for enhancement of GDP : In

monsoon period due to heavy rain, flood happens in many parts of our country. That means we have enough water resources. If we able to conserve that resource properly and utilize properly for agriculture, industry purposes, obviously, the GDP of our country will enhance. The matter depends on efficient management of water resources. Therefore, it is an important focus area of Govt. to make economy prosperous. On the other hand, availability of quality drinking water will be conducive for quality life of citizens.

Irrigation infrastructure : We are taking lot of measures to develop our country in every respect *i.e.* moon mission, mars mission, polio eradication, women empowerment, sarba siksha abhiyan, launching satellite, modernizing forces, inter-country train and bus linking, conducting high level seminar on climate change, sending peace soldiers to Sri Lanka, United Nations, conducting high level meeting with arch-rival countries for maintaining peace in this continent, conducting IPL, sending 150 members laden team for Olympics, taking all efforts to make India (Team India) cricketically superpower in the world etc. India is an agriculture based country where agriculture is the centre of all activities. Again irrigation water is the centre of all agriculture activities. Hence, there is need to develop a strong and efficient irrigation infrastructure in our country and obviously it will be stepping stone or bedrock of all development activities of our country.

Make India proud : United States of America is good, Germany is good, Australia is good, Switzerland is good for living. Our country's educated, intellectuals, politicians, acting personalities, sport personalities are rushing to those countries to settle there or make there a second home. America, Germany, Australia and Switzerland people by their hard labour, perspiration, intelligence and administration, make their country beautiful and attractive. So, why we not? Why Americans, German, Australian and Swiss people are not attracted to our country? Oh. My dear Indians, my countrymen, if we all unitedly try then obviously reverse thing will happen. Oh, my dear NRI persons in U.S.A., U.K. Switzerland and other countries –your heart do not cry when you listen the news that over 100 farmers suicide in drought-prone Marathawada region of Maharashtra in the first two months of the year -2017. Come back to your own country and make your country proud. Great politician and philosopher Chanakya told –"Living other country is always disrespectful". So, why are you throwing your life in step mother's lap? Come back to your own mother's lap where you will get real love, affection and empathy, because you all are her creations. Japanese love their mother so much for that the country is third economically strong and prosperous country in the world. Similarly, if we love our mother so much our country will also be obviously prosperous. If we love our mother, we will not deposit money in Swiss bank or Panama panel, but will deposit in Indian banks.

"If conservation of natural resources is gone wrong, no else other will go right." - Dr M. S. Swaminathan.

Received : *23.03.2017* ***Revised :*** *03.10.2017* ***Accepted :*** *17.10.2017*