Agriculture - Arc a new approach to Farming

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Abstract: This paper proposes a novel method and approach to the current farming techniques and methodologies that are in practice in India. To this end, we give statistical data about the current agricultural output in various states of India. We focus on helping the farmer select a proper crop so that he can invest his money and resources in a crop that will yield him the most profit. We believe that with proper data regarding the soil required, weather, the time of cultivation, and current price in the market the farmer can choose in which crops he should invest

IndexTerms **- Agriculture - Arc, New Agriculture Technologies, New Agricultural Technique, New Farming Methods, Agriculture.**

I. INTRODUCTION

There is an immediate need for new farming techniques in India. Given the current situation of farmers protest with no solution yet discussed, we need to have a different approach to this problem. Apart from the current situation, the farmers of India have always complained about the low price of their crops. In this paper, we have tried to implement a new idea and technique which will surely help the farmers of India to get a good profit from their crops. The main problem regarding the pricing of the crops is that they don't follow an MRP system which most of the other commodities follow. So, the price always fluctuates, which makes it difficult for the farmer to get a good profit from its harvest.

A. Problem and Cause

Of course, there are many schemes and programs offered by the Government for the farmers to use a scientific approach towards farming but very little amount of it is used in the field. But most of the time these schemes try to focus on only one aspect of the problem. So, we thought, we can try to look at both problems simultaneously and try to find a solution that will keep both the new scientific approach and also make sure that the farmers get maximum profit from their yield.

Slow agricultural growth is a matter of concern as most of India's population is dependent on rural employment for a living. Current agricultural practices are neither economically nor environmentally sustainable and India's yields for many agricultural commodities are low. Poorly maintained irrigation systems and lack of good extension services are among the factors responsible. Farmers' access to markets is hampered by poor roads, rudimentary market infrastructure, and excessive regulation [2]. ("India Country Overview 2008").

India has inadequate infrastructure and services because of low investment. Farming equipment and infrastructure are scarce outside the provinces of Punjab and Haryana. Because many of the farms are small, the farmers cannot afford irrigation systems that would increase productivity. Most big farms are family-owned and run and do not take advantage of economies of scale - the concept that the cost per unit falls as output quantities increase, because the problem of land absenteeism in big farms which hinders the development of land to increase productivity because the tenant who cultivates the land has little care for its development or productivity [1].
Low investment in big and small farms leads to lower production, inefficiency, and higher costs, one of the causes of food inflation in India [1].

B. The poor socio-economic condition of farmers

Illiteracy, the root cause of farmers' poor socioeconomic conditions, should be tackled vigorously. Though the government is taking the initiative by adopting policies like universal education, a highly centralized bureaucracy with low accountability and inefficient use of public funds limits their impact on poverty. Lack of technical knowledge and awareness are also responsible for low productivity, adding to the problem of poverty among farmers. Other causes are the slow progress in implementing land reforms, inadequate or inefficient finance and marketing services for farm produce, and inconsistent government policy. Agricultural subsidies and taxes often change without notice for short-term political ends [1].

C. The use of technology is very less

Adoption of modern agricultural practices and use of technology is inadequate, hampered by ignorance, high costs, and impracticality in the case of small landholdings. In India, farming practices are too haphazard and non-scientific and need some forethought before implementing any new technology. The screening of technology is important since all innovations are not relevant or attractive to all areas. It is important to screen them according to the geographical area and the local context of agriculture and let the local Kisan Vigyan Kendra promote it. Appropriate technologies need to be adopted [1].

D. Lack of proper management of irrigation

Irrigation in India can be broadly classified into two parts, each having different issues. There are a few major problems with surface irrigation. Irrigation facilities are inadequate and there is no effective system management for how much water is stored, how much is used for irrigation, or what value can be added to this water. Consequently, farmers depend on rainfall, specifically the Monsoon season. A good monsoon results in robust growth for the economy as a whole, while a poor monsoon leads to sluggish growth [1].

E. No appropriate administration of water system

Irrigation in India can be extensively ordered into two sections, each having various issues. There are a couple of serious issues with the surface water system. Water system offices are insufficient and there is no compelling framework on the board for how much water is put away, what amount is utilized for the water system or what worth can be added to this water. Therefore, ranchers rely upon precipitation, explicitly the Monsoon season. A decent storm brings about powerful development for the economy all in all, while a helpless rainstorm prompts slow development [1].

F. Role of Weather in Agriculture

Agriculture in India and many other developing countries depends on the monsoon because irrigation facilities are not fully developed. If the monsoon fails or it rains heavily or untimely, it ruins agricultural production. Agriculture is also a gamble with temperature. Too high a temperature negatively affects the productivity of a crop. The present insurance system in India does not cater much for any loss of crop due to unfavorable and unavoidable climatic conditions or pest epidemics. Small farmers who have taken loans to raise crops fall into heavy debt in such situations and if this continues, the poor farmer may starve and sometimes even commits suicide as reported in Maharashtra and Andhra Pradesh [1].

Weather plays an important role in the agriculture field, and if we are talking about India its part is much more prominent than other factors. As India is a tropical country, the distribution of rain is not evenly throughout the Indian Subcontinent. Some parts receive more rainfall than others for example the Western Ghats and the North-Eastern states receive more rainfall than the North and the Thar Desert.

This uneven distribution of rainfall makes it difficult for agriculture to happen evenly throughout the country. The natural vegetation of India is a very good example of this pattern. We can find evergreen forests in the Western Ghats and the North-Eastern states, tropical forests in the central and eastern parts of the country, thorny plants in the Western and Thar Desert region, and mountainous trees and tundra vegetation in the Northern Himalayas.

So naturally, this also dictates the type of agricultural plants that are grown in different parts of India. We have known these things from our high school geography that some places are famous for a particular type of crops over other places, for example, Punjab and Haryana are famous for wheat and mustard, South India for its spices, Maharashtra for cotton, West Bengal for Jute, Uttar Pradesh for sugarcane.

Although the majority of farmers in these states are indulged in the cultivation of these mass-produced crops. Some farmers try to cultivate different varieties of crops. This can be anything horticulture crops or plantation farms for more profit. The point is that we have a variety of options available with us for farming. So, we need to invest our resources and money in the crop that will yield us more profit.

As we know in India mainly two types are grown i.e., Kharif crops and Rabi crops.
Kharif Crops also known as monsoon crops are those crops that are sown at the starting of the monsoon season, April to June, and are harvested after the monsoon season. The plantation time and period may differ because these crops are dependent on monsoon water. As monsoon reaches at different times in the states of India so the time differs from state to state. For example, monsoon reaches the Southern states early in April or May but it reaches at the end of May or at starting of June in the Northern states so the harvesting period also differs. Naturally, these crops depend on the rainfall patterns and require a lot of water and hot weather to grow. The harvesting of these crops takes place at the end of September or in early October. Some of Kharif crops are rice, maize, jawar, bajra, sugarcane, cotton, pulses, and groundnut.

Rabi Crops also known as winter crops are those crops that are grown at the starting of the winter season, October to November, and are harvested after the winter season and the beginning of the spring season in March and April. These crops are cultivated in the dry season, so it becomes important to provide irrigation at the proper time for the healthy growth of these crops. They require the proper amount of water and cool and dry weather for proper growth and are not dependent on rainfall. Some of the Rabi crops are wheat, mustard, sunflower, etc.

G. The agriculture sector faces many challenges

Unique geo-climatic conditions make India defenseless against dangers and calamities, both common and human-actuated. Normal regular dangers are floods, tornadoes, avalanches, timberland fires, torrential slides, tremors, tidal waves, and vermin/sickness flare-ups in plants and creatures. Artificial catastrophes incorporate fire, misleading seeds, manures and pesticides, and value variance. Common risks are occasions that happen inside the space of hours with heartbreaking outcomes. The dry season, which is described by lower than typical precipitation and moderate opening, is a reformist wonder brought about by soil conditions and barometrical changes throughout some undefined time frame. It impacts yields, domesticated animals, and people just as non-farming areas

reliant on it. In such situations, with deficient danger relief support and practically immaterial nonfarm work, a rancher's life (particularly little and minor ones) is mind-boggling and troublesome. One can't have any authority over catastrophic events yet with better readiness, we can moderate synthetic debacles and the misfortunes to ranchers.
About 60% of the landmass is inclined to tremors of fluctuating forces, more than 40 million hectares are inclined to floods, about 8% to tornadoes, and 68% to dry season. The super twister in Orissa in 1999, The Bhuj quake in Gujarat in 2001, the torrent in the Bay of Bengal in 2004, and ongoing floods in Punjab and Haryana are instances of huge scope calamities lately (Ghosh&Chowrasia, 2010). The results are sad to such an extent that occasionally ranchers bargain their ability to face challenges in ranch business venture [1].

H. History and Characteristics

Agriculture in India has a long history, dating back ten thousand years. It began in 9000 BC as a result of the early cultivation of plants and the domestication of crops and animals (^ Gupta, page 54). With the development of agricultural implements and techniques, settled life soon started (^ Harris & Gosden, ^ Lal, R.). Double monsoons led to two harvests being reaped in one year (^ a b agriculture). Until British Rule, the Indian economy had been known for centuries for its self-contained village communities, consisting of agriculturists, cottage industrialists, village craftsmen, artisan professions, unskilled workers, and village officials. These communities played a major role in not only conference the needs of the village economy but producing and exporting various products to foreign countries. During those times agriculture was a way of living and the farmer produced merely for self-consumption. Food crops like wheat and rice were the most important. Since plants and animals were considered essential to their survival, people started worshipping and respecting them (^ Gupta, page 57).

The middle ages saw irrigation channels reach a new level of sophistication in India and Indian crops affecting the economies of other regions of the world under Islamic patronage (^ Iqtidar & ^ Shaffer). Land and water management systems were advanced to provide uniform growth (^ Palat & ^ Kumar). However, during the British Period, when the industrial revolution was going on in England (1780-1820), the British forced farmers to switch over to commercial crops like cotton and indigo and started providing financial assistance to farmers through zamindaris and British agents to export the surplus cash crops to England. There was continuous exploitation of natural resources and economic wealth from India till Independence was achieved. Due to this economic drain, there was a permanent loss of India's national income and wealth. The result was that by the mid-nineteenth century, traditional handicrafts were completely wiped out and artisans lost their hereditary occupations. This led to their migration to agriculture for their livelihood and made this sector overcrowded, a process called 'deindustrialization', which led to stagnation in the Indian economy. Nevertheless, independent India was able to develop a comprehensive agricultural program (^ Roy & ^ Kumar). The first agricultural census was started in 1970- 71(July-June) as part of the 1970 World Agricultural Census Program sponsored by FAO. It collects agricultural information such as number, area, and tenancy, land utilization, cropping pattern, and irrigation particulars of different sizes [1].

I. Problems of Indian Agriculture

One of the paradoxes of the Indian economy is that the decline in the share of agricultural workers in total workers has been slower than the decline in the share of agriculture in GDP. The share of agriculture and allied activities in GDP declined from 57.7 percent in 1950-51 to 25 percent in 1999-00 and further to 20 percent in 2004-05. The share of agricultural workers in total workers has declined slowly, from 75.9 percent in 1961 to 59.9 percent in 1999-00 and further to 56.7 percent in 2004-05. Between 1961 and 2004-05, there has been a decline of 34-percentage points in the share of agriculture in GDP, while the decline in the share of agriculture in employment has been of 19 percentage points only. As a result, the labor productivity in agriculture has increased only marginally, while that of nonagricultural workers has increased rapidly. There were about 259 million agricultural workers in the year 2004-05; about 42 percent of them were females. A structural transformation has happened in four Indian states, viz. Kerala, Tamil Nadu, West Bengal, and Punjab – the share of agriculture in employment being less than 50 percent in these states (Table 1) On the other hand, the share of agriculture in employment in eight states was more than 60 percent in 2004-05. It may take some more years for these states to achieve structural transformation. In terms of growth, the performance of agriculture has been quite impressive during the post Freedom time.

States	Share of agriculture in total (Rural+Urban) employment (%)	Rank based on employment share	Share of agriculture in GSDP (%)	Ranks based on share in GSDP
Kerala	35.5	1	16.5	3
Tamil Nadu	41.3	2	12.5	2
West Bengal	45.7	3	23.5	7
Punjab	47.6	4	38.6	16
Haryana	50.3	5	29.3	12
Maharashtra	53.2	6	9.6	1
Gujarat	54.9	7	20.1	5
Andhra Pradesh	58.5	8	24.7	8
Karnataka	60.7	9	19.2	4
Uttar Pradesh	60.9	10	33.3	15
Rajasthan	61.7	11	27.6	9
Orissa	62.4	12	28.2	10
Himachal Pradesh	64.1	13	20.5	6
Assam	66.0	14	32.0	13
Bihar	68.8	15	32.7	14
Madhya Pradesh	69.2	16	28.3	11
All-India	56.7	-	21.7	

Source: 61st Round of NSS Employment and Unemployment Survey and CSO data for GSDP.

Table - 1

Then a pre-autonomy period. The all-crop yield development of around 2.7 percent per annum during the post-freedom time frame (1949-50 to 1999-00) was a lot higher than the unimportant development pace of around 0.4 percent per annum during the principal half of the earlier century. Therefore, India could accomplish independence in food grains at the public level by the mid-1970s. The development in GDP in horticulture was around 2.2-2.5 percent per annum during 1950-51 to 1980-81. It recorded the most elevated development pace of more than 3% per annum during the 1980s. In the post-change time frame, the development rate declined to 2.76 percent per annum. The development in agribusiness GDP, which was 4.7 percent per annum during the Eighth Plan (1992-97), declined to 2.1 percent.

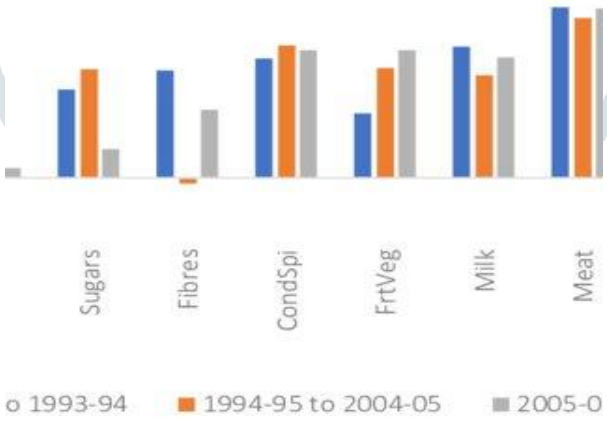

Fig – 1

J. The growth rate of output of various sub-sectors in agriculture: 1980-81 to 2004-05:

During the Ninth Plan (1997-2002) and further to 1.8 percent per annum during the Tenth Plan (2002-07). Consequently, there has been a huge weakening in the development pace of farming since the mid-1990s. Nonetheless, there are indications of restoration of farming development to more than 3% per annum during the previous few years. On the off chance that we take a gander at the estimation of the yield of different subsectors, the harvest area which showed a development pace of 3.2 percent during 1990-91 to 1996-97, decelerated to 0.8 percent during 1996-97 to 200405 (Table 2). On account of animals and leafy foods, there has been a deceleration in their development rates since the mid-1990s, yet at the same time, these are over 3% per annum [2].

Territorial Disparities:

There are wide local aberrations in yield across areas in India. Certain districts like Punjab, Haryana, western Uttar Pradesh, portions of Andhra Pradesh, and Tamil Nadu had profited really during the underlying period of the green insurgency than others could. This had complemented local variations in the prompt post-green insurgency time frame. A significant element of the 1980s and the mid-1990s, notwithstanding, was a fairer spread of horticultural development. In the wake of performing inadequately during

the early long periods of green unrest, a considerable lot of the states, where neediness is boundless – Assam, Bihar, Orissa, Madhya Pradesh, and West Bengal, have shown critical development during the 1980s. Oilseeds have likewise been acquired in the dry belts of Rajasthan, Madhya Pradesh, Karnataka, and Maharashtra [2].

Growth rates of agriculture SDP in different states (ranked by percentage of rained area)

State/UT	1980-81	State/UT	2005-06
Haryana	53.4	Punjab	32.4
Uttar Pradesh	50.4	Uttar Pradesh	28.5
Orissa	50.2	Assam	26.7
Punjab	49.1	Bihar	25.9
Madhya Pradesh	48.9	Rajasthan	24.4
Himachal Pradesh	46.8	Madhya Pradesh	24.4
Bihar	46.0	Andhra Pradesh	22.6
Assam	45.4	Haryana	22.6
Arunachal Pradesh	44.5	Orissa	21.9
Karnataka	43.1	Himachal Pradesh	21.1
Andhra Pradesh	42.9	West Bengal	20.6
Rajasthan	41.6	Arunachal	20.4
All-India	**38.1**	**All-India**	**19.6**
Gujarat	37.3	Karnataka	17.8
Kerala	36.6	Gujarat	16.8

Table – 2

II. Conclusion and Further Work

India is the 2nd most populated country in the world and its population is increasing rapidly. With the increase of population, the demand for food and water is going to increase, without the use of new technologies and approach it will be very difficult to meet the demand for good and healthy food, which is already suffering [2]. We have discussed a new approach to farming for the betterment of agriculture as a whole. We planning to expand our area of coverage to other aspects of agriculture also so that we can include as much as possible for the betterment of agriculture in India.

There are two ways to look at a situation, we either look at it from a positive perspective or a negative perspective. So, if we look at the positive aspect, we can do some groundbreaking work in the field of agriculture, by using this new approach we can have maximum output from minimum input and can have sustainable growth.

We won't say that this paper will solve that problem but we can say that this will surely help to mitigate some of the problems that are faced by the farmers in our country.

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IV. References

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