

A STUDY ON STARTUPS OF AGRICULTURE

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ABSTRACT - Agriculture in India is composed of many crops, mainly with the food staples being rice and wheat. It also includes pulses, tuber crops, sugarcane, oilseeds, and such non-food items. India is holding many ranks in production of crops, aquaculture, horticulture, fruits & vegetables and animal husbandry. The percentage of agri-workers in India is decreasing year by year. Approximately 29 farmers killing themselves per day in India. The paper is about to discuss the problems behind the suicides and the startups which can overcome those problems.

Keywords: Agri Startups, Agri technology, Farmer Suicides, Production

I. INTRODUCTION

Agriculture in India is composed of many crops, mainly with the food staples being rice and wheat. It also includes pulses, tuber crops, sugarcane, oilseeds, and such non-food items as cotton, tea, coffee, rubber, and jute (a glossy fiber used to make burlap and twine). India is a fisheries giant as well.

Rankings:

- India ranks second worldwide in farm outputs. As per 2018, agriculture employed 50% of the Indian work force and contributed 17–18% to country's GDP.
- In 2016, agriculture and allied sectors like animal husbandry, forestry and fisheries accounted for 15.4% of the GDP (gross domestic product).
- India ranks first in the world with highest net cropped area followed by US and China.
- As per the 2014 FAO world agriculture statistics India is the world's largest producer of many fresh fruits like banana, mango, guava, papaya, lemon and vegetables like chickpea, okra and milk, major spices like chili pepper, ginger, fibrous crops such as jute, staples such as millets and castor oil seed.
- India is the second largest producer of wheat and rice, the world's major food staples.^[10]
- India is currently the world's second largest producer of several dry fruits, agriculture-based textile raw materials, roots and tuber crops, pulses.
- India is ranked under the world's five largest producers of over 80% of agricultural produce items, including many cash crops such as coffee and cotton, in 2010. India is one of the world's five largest producers of livestock and poultry meat, with one of the fastest growth rates, as of 2011.
- Aquaculture and catch fishery is amongst the fastest growing industries in India. Between 1990 and 2010, the Indian fish capture harvest doubled, while aquaculture harvest tripled. In 2008, India was the world's sixth largest producer of marine and

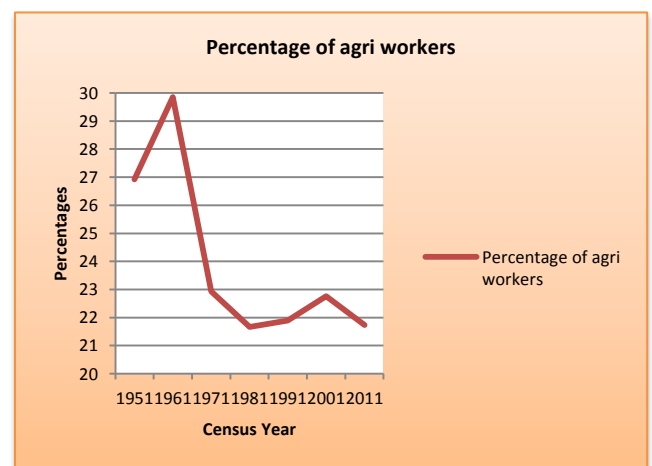
freshwater capture fisheries and the second largest aquaculture farmed fish producer. India exported 600,000 metric tonnes of fish products to nearly half of the world's countries.

- The farm suicide rate was 12.9 suicides per 100,000 farmers, which was higher than the general suicide rate at 10.6 in India.

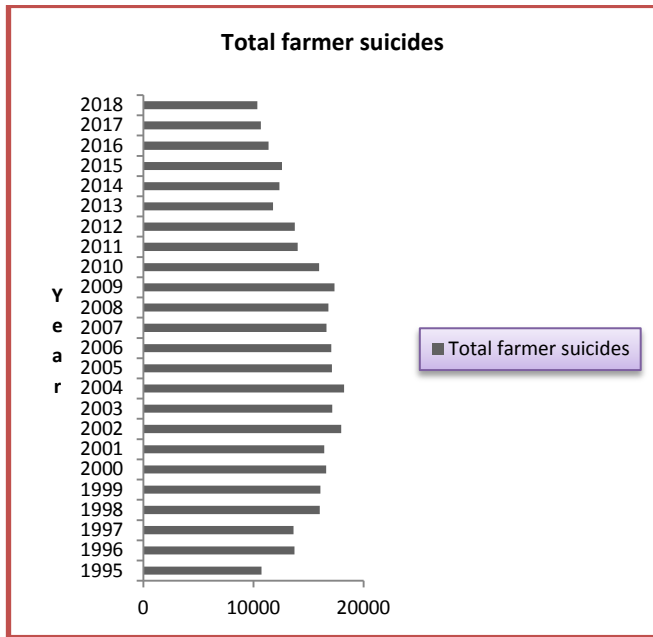
II. BACKGROUND STUDY

According to census of India, the following data shows about the percentage of agriculture-workers in total population

Year	Population (in millions)	Total agri workers (in millions)	Percentage of agri workers
1951	361.1	97.2	26.92
1961	439.2	131.1	29.85
1971	548.2	125.7	22.93
1981	683.3	148	21.66
1991	846.4	185.3	21.89
2001	1028.7	234.1	22.76
2011	1210.9	263.1	21.73



The following data shows the farmer suicides year wise in India



IV. THEORETICAL ANALYSIS

Reasons behind farmer suicides:

- 1) Failure of crops: In India, 17% of the farmer suicides are due to this reason. There are again several factors for failure of crops
 - a. Unseasonal rains
 - b. Genetically modified seeds
 - c. Quality less seeds
 - d. Impure fertilizers
 - e. Droughts or floods
 - f. Marketing system in India
 - g. Labor cost
 - h. Market prices
 - i. Mediators
 - j. Lack of proper storage or warehouse facilities.etc.,
- 2) Loan and debt burden
- 3) Losses in non-farm activities
- 4) Borrowing too much for other activities
- 5) Continuous Stress from bankers and financiers.

EXISTING STARTUPS OF AGRICULTURE:

Agricultural startups in India are still at a embryonic stage, with approximately 300 agripreneurs trying to solve the emerging problems of agri business.

The following is the list of few agri related startups in India which are at early stages only.

S.No	Name of startup	Focus Area and Services
1	Bohecod	Bombay Hemp Company assist regional farmers in cultivating the crop by providing optimum seeds, best practices
2	Gold Farm	The aim of this company is to facilitate the doubling of farm income for a million farmers in India by 2022
3	FASAL	It is an AI powered IOT platform for agriculture system that records growing conditions of farm
4	Ninjacart	Agri marketing platform which connects fruits and vegetables from farmers to businesses
5	EM3 Agri services	They provide pay-per use farm services for the information related to preparation of land, seed sown, planting, harvesting, post harvesting etc through mobile application
6	Crop In	Its gathered information on 265 crops and 3500 crop varieties which can be used by farmers for their farming.

V. SUGGESTIONS

AGRICULTURE STARTUPS REQUIRED IN INDIA:

S.No	Focus Area	Focused Services
1	Farm to home	This startup makes farmers to sell their farming outputs directly to the consumers without any mediators. Reason to establish: To benefited with more profits and no existence

Year	Total farmer suicides	Year	Total farmer suicides
1995	10720	2007	16632
1996	13729	2008	16796
1997	13622	2009	17368
1998	16015	2010	15964
1999	16082	2011	14027
2000	16603	2012	13754
2001	16415	2013	11772
2002	17971	2014	12360
2003	17164	2015	12602
2004	18241	2016	11379
2005	17131	2017	10655
2006	17060	2018	10349

From the data, we can see that approximately 29 to 30 farmers are killing themselves per day.

III. RESEARCH GAP

- 1) There are many research papers concentrated on how an agri-startup works and how to funding it.
- 2) This paper focused on agri startups to minimize the farmer suicide rates.

DATA COLLECTION:

Method of collection: Secondary data

Data Sources: Different organizations authorized websites, Census of India

RESEARCH OBJECTIVE:

The main objective of this paper is to study about the reasons behind farmer suicides and to minimize the suicide rates, this paper mainly focuses on providing the list of startups required in India which are related to agriculture and how it works.

		of middle man.
2	Rental Equipments	In the current decade technology plays more role in every field. So Government or agri entrepreneurs has to take initiative to supply farm tech equipments for rental purpose with affordable prices. Reason to establish: Lack of human resources, time saving and to get more yield.
3	Agri education (during day time or evening time)	Not only agricultural universities, startups has to take a initiative to teach farmers with new methods of farming, technologies, trends and techniques. Reason to establish: To create awareness in farmers regarding new techniques.
4	Preparation of own seeds	Quality of seeds decreasing day by day. To eradicate this farmer has to learn how to prepare the seeds for their own crop. Reason to establish: To reduce cost and to increase the quality of seeds and crop.
5	Fertilizers (Vermi-compost manufacturing)	In olden ages, farmers used to prepare their fertilizers by themselves for good quality of crop. Due to lack of time and knowledge, farmers buying unpurified fertilizers which makes soil erosion, diseases for crop and unhealthy problems for consumers. Reason to establish: To use purified fertilizers (chemical free fertilizers) for the crop to get more yield
6	Organic Farming	To teach the farmers about organic farming techniques. Reason to establish: Eco-friendly farming, healthy food and one of the recent trends in farming
7	Weekend farming	To take the initiative of working officials to work on the field on weekends Reason to establish: Every person can close to be nature which makes more fit.
8	Water management	A new startup teaching the technologies to save water while farming. A technology of Israel called water gel which will be given to soil once in a year which will produce water to a plant entire year. Reason to establish: To utilize less water and to get more yield.
9	Smart farming	Data collection, Rainfall patterns, information about crop yields using smart phones Reason to establish: To know new trends in farming and seasonal plantations.
10	Mobile Application (Safeguarding from thieves and animals)	Sensors should be fixed in and around of farms, which is connected to mobile application to the farmers. Reason to establish: To reduce

		losses
11	Schemes and Insurances	Teaching farmers about the schemes and insurances providing by government of India Reason to establish: Without knowing schemes farmers taking loans from financiers which leads to deaths.
12	Agri courses to school students	Reason to establish: A startup to teach the agriculture related courses for the school students as they can know the value of agriculture and food.

VI. CONCLUSIONS

Digital transformation and start-up ecosystem playing a vital role for bringing new innovation in agriculture sector. Since last five years more than five global Agritech companies started in India. Still, the suicide rates are not decreasing, if more agri startup's are focusing market linkage, digital agriculture, better access to inputs and financing are gaining attraction, these technological mechanisms help local farming become a sustainable and profit yielding enterprise, then there is a possibility of decreasing farmer suicides as well as to increase the farm production rates.

REFERENCES

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- NCRB reports for farmer suicides
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