

# Lack of Irrigation Facilities, Draught Conditions and Farmers Suicides in *Marathwada* Region, India

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**Abstract** Marathwada region of Maharashtra state is drought prone area of India. The draught conditions are affecting the farmers in region. Until Oct 2015, 800 suicides were reported. In this study, farmer's financial positions, choice of crops, irrigation facilities, loans and their repayments are responsible for the farmer's death. We found that farmers were facing nonproductive, non-irrigated and very low land holdings. The family problems like daughter's marriages one of the main reasons behind the overburdened socially and economically conserved farmers. In conclusion, of this study, we propose a complete solution for preventing the farmer's suicide in Maharashtra and India.

**Keywords:** farmer, suicide, drought, loan, agriculture

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## 1. Introduction

In India, most of the public attention has been focused on the farmer's suicides [1]. The age- and sex-specific death totals, rates and risks and the mode of suicide in India's markedly diverse socio-demographic populations are not well understood.

In India, farmer suicides had been reported from various states, viz. Andhra Pradesh, Punjab, Karnataka and Orissa [2]. Maharashtra, one of India's most prosperous states is currently facing an epidemic of farmer's suicide especially in the Marathwada region. Studies in India, Sri Lanka, Canada, England and Australia have identified 'farming' as one of the most high-risk industries when it comes to suicide rate higher than in the general population [3]. In India, national data show that the suicide rate was 9.7/100000 population per year in 1995. A report by the Tata Institute of Social Sciences, Mumbai identified the reasons for farmer's suicides i.e repeated crop failures, inability to meet the rising cost of cultivation, and debt [4] even when the government announced relief packages for the affected families and remedial measures, this did not lead to any immediate positive effect on suicide behavior. It was reported that farmer's concerns were not taken into account while designing these relief packages [5].

The recent status of agriculture crises revealed that Maharashtra state that to particularly Marathwada region has recorded highest numbers of farmer's suicide in 2014. In 1983, Dandekar Committee was constituted by Government of Maharashtra to study the economic condition of the districts in the state. It evaluated that Marathwada region has the poorest districts. In 1992, P. C.

Sarkar committee again reported the same. E. A. Sharma committee of central Government also listed eight districts of Marathwada region as the most down trodden districts. R. Radhakrishna committee mentioned Marathwada region as the high-risk districts in agriculture sector in 2007. In recent, Kelkar committee clearly mentioned that Marathwada region has consistently witnessed decreasing per capita income. However, the committee has not emphasized concrete suggestions for the poverty reduction and development measures for Marathwada region.

## 2. Methods

### 2.1. Study Designs

Details of the study design, assignment of the underlying causes of death, statistical methods and preliminary results for various diseases and risk factors have been published elsewhere [6,7,8,9,10].

In brief, we have selected randomly 90 farmers who committed suicide in the region. From each house, a death had been recorded and one field-surveyor visited to collect information about the cause of death as well as information on marital status, occupation, alcohol use and education. The underlying cause of each death was sought by an enhanced form of verbal autopsy, known as the routine, reliable, representative, re-sampled household investigation of mortality with medical evaluation (RHIME). The RHIME method involves a structured investigation of events prior to the death, including a written report in the local language of the household.

The data was collected from farmer families having one suicidal death by survey method using interview schedule with respect to issues like, landholding, irrigation facilities,

supplementary business, choice of crop, seed source, technical facilities availability, sale of the product, indebtedness, monthly income and expenditure and reasons behind suicides.

## 2.2. Subjects

The data was collected from 90 identified families for farmer suicide from Marathwada region. Interviewers, who were known to the communities from previous rounds of fieldwork, were trained to collect information on the causes of death from any close associate/relative of the deceased. The most common respondents for the 90 male suicides above age 15 years were the parents of the deceased, his wife or neighbours; the remaining informants were usually other household members.

## 2.3. Analysis

We had calculated total suicidal deaths (to inform health planners), age-standardized rates (to understand variation), and risks (to inform individuals). Analyses focused on ages 15 or older. We applied the age- and sex-specific proportion of suicidal deaths within the 2001–03 survey to the 2010 United Nations (UN) estimates of absolute numbers of deaths (and age-specific risks) for all causes in India.

The 2010 UN totals of 9.8 million total deaths were used to provide contemporary comparisons with other diseases such as cancer and vascular disease. Moreover, the use of the UN totals corrects the slight undercounts reported in the total death rates in the SRS15–16 and for the 12% of SRS deaths missed in the survey [7].

We used logistic regression to compare the following variables for each gender: age at death (15–19, 20–29, 30–44, 45–59, 60–69 years); education (below primary, primary or middle, secondary or higher); geographical region (Southern states, rest of India); occupation (non worker, cultivator, agricultural labor, business/professional); alcohol drinking status (drinker, non-drinker); religion (Hindu, Muslim, Buddhist/Jain, Christian); residence (rural, urban); and marital status (never married, married/remarried, widow/separated/divorced) and, as a measure of community wealth, the household fuel type used (gas/electricity/kerosene versus coal/firewood/other) in each SRS unit.

## 3. Results

### 3.1. Land Holdings by Farmer Families

We have studied farmer financial position with respect to the suicide cases. The comparative analysis of the land holding of the farmer shows that the 2.5 to 5 acre landowners, which are more proven for suicides. We found that 33% of the total farmer population doesn't hold any land. This clearly shows the poor economy of the farmers which drag them to do suicide (Figure 1).

The agricultural products are depending on the water facilities. The irrigation facilities are mainly responsible for the better yield. The major portion 43% of the land is non-irrigated; this is followed by 32% of land, which is seasonal irrigated. Most of the suicidal cases were reported in the non-irrigated land owners/regions (Figure 2).

The water management facilities are not available and the production depends upon weather conditions.

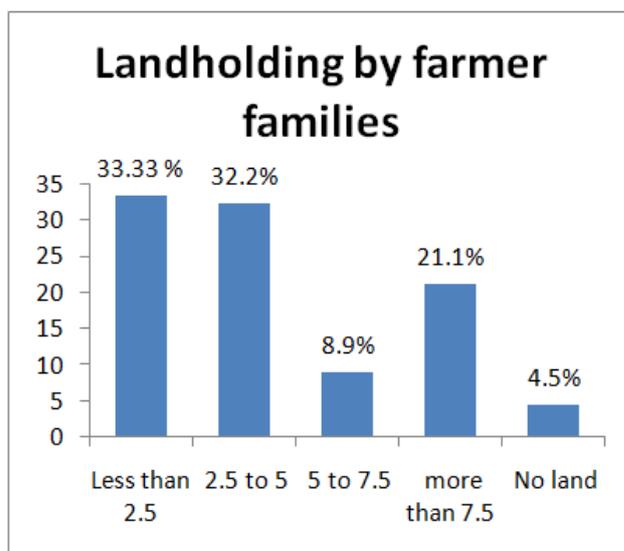


Figure 1. Percentage of land holds of farmer's family

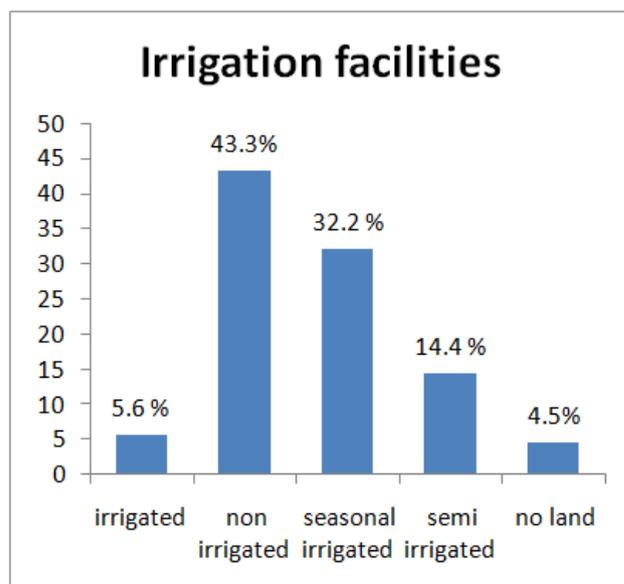


Figure 2. Percentage & type of Irrigation facility available in farmer's family

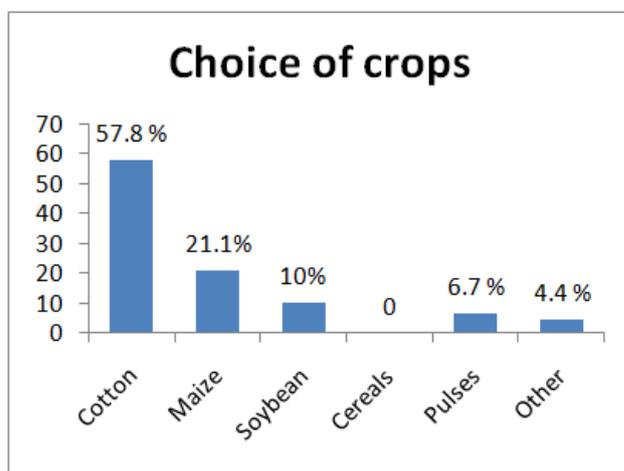


Figure 3. Percentage of crop choice by farmers

More than 58% of the farmers opted for cotton as their favorite cash crop. This is because it is the largest market-holding crop in India. The farmers are also growing crops as maize (21%) and soybean (10%). These crops are totally depended on the water facility (Figure 3), Due to lack of water facilities, the farmers may lose their crops, and the annual income will be low. Therefore, farmers have to take loan for their daily household expenses and other needs.

In this study, we found that the daily needs are responsible for the suicides. Loans are taken by the farmers for the purpose of agricultural expenses (56.7%), daughter marriages (41.1%), health problem due to heavy use of pesticides (24.4%), and educations (6.7%) if the farmer loses its cycle of crop production due to water shortage or draught condition (Figure 4). The conditions were found very depressing and the loan repayment was not achieved due to the low yield income.

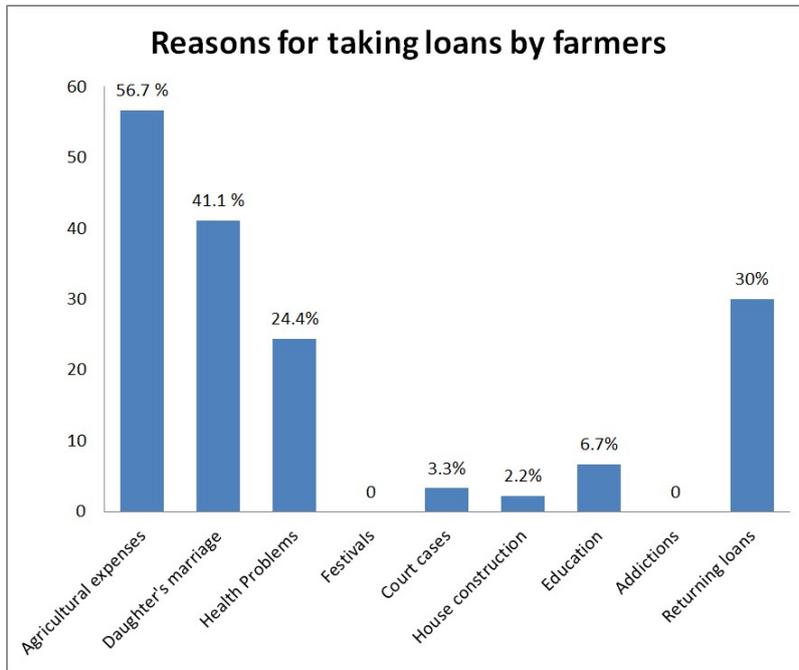


Figure 4. Percentage of causes of loan lend by farmers

We found that 57% of farmers were not able to repay their loan amount (Figure 5). These amounts lead to majority of the suicide in Maharashtra. The low land holders cannot repay their loans and therefore cannot prefer extra additional loan from the same banks or other banks from the region, therefore farmers prefer to move towards the private illegal loans. The interest rate of non-bank loan is very high (24 % to 60% per annum) as compared to Govt acquired banks (Crop loans 4% per annum).

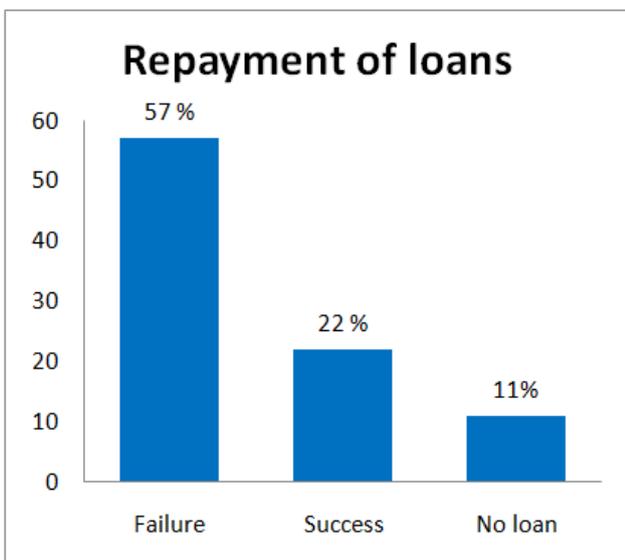


Figure 5. Percentage of repayment of loans by farmers

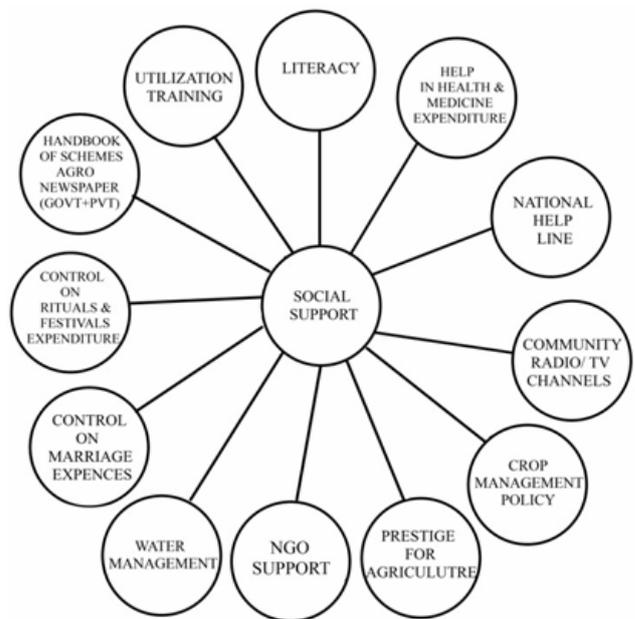


Figure 6. Farmer's suicide preventive measures

### 3.2. Preventive Measures

Repeated crop failures, debt hassles, lack of alternative sources of income, absence of institutional finance have left the farmers with no other solution other than ending their lives. We have proposed a model with 11 different types of support for the prevention of such leading

suicidal cases. Some major preventions includes literacy, medical facilities, control on ritual and festival expenditures, control on marriage expenses, easy availability of technical and financial support for the agricultural production. Water management policy for available sources of water for crop productions should be developed at national level. The government should restrict the share of available water supply for each farmer in that particular region. Restrictions should be made on extra-unwanted use of water. According to national water policy, the crops selection and pattern should be changed regularly. A national level budget for the agricultural development should be developed separately, just like the railway budget. The production enhancement with minimum expenditure will prevent the suicidal cases in Marathwada region.

#### 4. Discussion

The most significant reasons for farmer's suicides are debt, stress and family responsibilities, poor irrigation, and increased cost of cultivation, private moneylenders and crop failure.

Indira Gandhi Institute of Development Research, Mumbai, had also found various reasons for farmer's suicides such as debt, crop failure and low return, illness of family members, failure to arrange marriage of daughters and a lack of alternative sources of income [12].

The studies describe that the participating farmers perceived suicides as a complex interplay of four main reasons, including social and water constraints. The market price for a quintal of cotton last year was Rs 5,000 whereas the minimum cost of production for a quintal of cotton is Rs 5,200. Participants observed that the man-made activities such as excess use of chemical fertilizers and use of genetically modified seeds cause a loss of land biodiversity and repeated crop failure, which subsequently lead to high costs of cultivation and debt. This was aggravated by draught conditions, crop failure and exploitation by private moneylenders, which ultimately leads to suicide.

Even though government has developed various policies, they have failed to design and implement proper policies for majority of small farmers who are depended on agriculture for their survival. Due to improper management of irrigation facilities, there is rampant exploitation of ground water, as farmers turn to bore wells and tube wells. Different states have offered different financial relief packages only to those were unable to manage payments on their bank loans. Only provision of relief facilities is not sufficient, as it has been observed in the case of Andhra Pradesh where farmers committed suicide, as they were unable to partake the benefits of relief packages [12].

As per the present situations, farmers have suggested to develop monitoring system for identifying vulnerable farmers and offering them timely help. Due to the absence of institutionalized finance, the farmers prefer to borrow money from private moneylenders. Generally, the loans taken from such private moneylenders are difficult to repay due to high interest rates. Hence, the government should ensure institutional finance and crop insurance to the farmers belonging to small or poor families. The State Government of Maharashtra had designed a plan to

alleviate debt, provide fresh crop loans for farmers, disburse loans through the farmers' Self Help Groups, provide subsidy of the crop insurance premium, promote agro-processing industries, provide financial assistance for community marriages and encourage organic farming [13]. In the United States, there was increase in farmer's suicidal cases due to long-term depression. To control this problem, the government had started federally managed insurance program for farmers. Normally, genetically modified seeds are grown by using chemical fertilizers and pesticides, which destroys the nutrients present in the soil. This kind of degradation may result in the loss of land productivity, thus putting future generations of farmers at higher risk of poverty and famine [14]. From previous studies, in rural China, chronic pesticide exposure was the only subject that led to an increase in suicidal cases. [15]. Due to such high level of pesticide exposure and high suicidal risk, a proper clarification has been given to develop appropriate interventions for public health and health policy.

Further, stress relief camps and counseling services for farmers was explained. Walker et al reported that even in the absence of psychiatric morbidity, farmers were more likely to report that life is not worth living compared with the general population [16]. A comparative studies has been done between droughts and suicide rates among farmers in Australia. Therefore, as soon as drought is predicted, there will be rapid mobilization of social workers, psychologists and psychiatrists to the drought-hit region along with other supportive measures, whereas in India, action is predominantly limited to political announcement of ex gratia benefits and not towards prevention strategies. National Mental Health Program in India must be focused at primary health care level so as to provide support and counseling to vulnerable farmers in rural areas.

Field-based programs may benefit to find a solution behind the farmer's suicidal cases. At local level, these findings can be useful for policy formulations. The limitations of the present study should be kept in mind. This was a small-scale study conducted at a particular geographical area. Hence, before studying at higher level it is first important to confirm our findings. At the end, it can be concluded that the farmer's suicides in Marathwada region are due to the complex interplay of social, political and environmental constraints. Therefore, to prevent farmer's suicides in future, it is necessary to ensure self-reliance and capacity building of farmers in modern farming techniques, a monitoring and support system for vulnerable farmers and a transparent, village-level system for disbursement of relief packages. According to the recent recommendations by an autonomous administrative training institute by the government of Maharashtra, these suggested interventions are consistent [17]. Excluding this, there is also a need to strengthen the National Mental Health Program at primary health care level to educate as well as offer support and counseling to vulnerable farmers in rural areas.

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