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FARMER SUICIDES IN PUNJAB: CAUSES AND SUGGESTIONS

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PREFACE

The media has recently highlighted the spurt increase in the number of suicides by the farmers in Punjab. The various reasons responsible for these suicides as quoted by media were the changing agrarian structure, failure of crops particularly cotton in recent years, increasing debt among the farming community, increasing unemployment, depleting water resources, increasing spending on social functions by the people etc. In order to understand this situation, one needs to look into the causes of distress as reported in the media and check them on the ground. The present study is undertaken to study the causes leading to farmers' suicides in Punjab and to recommend suitable policies to alleviate the incidence of farmers' suicides. We hope that findings of the study will help the policy planners and researchers alike to evolve pragmatic strategies to contain such kind of unfortunate incidences among the farming community.

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Authors

FARMER SUICIDES IN PUNJAB: CAUSES AND SUGGESTIONS

Abstract

The present study was under taken to study the causes leading to farmers' suicides in Punjab and to recommend suitable policies to alleviate the incidence of farmers' suicides. The study was confined exclusively to those farmers who are cultivating - either their own land or on lease basis - at the time of survey by taking a sample of 30 victim families. The number of farmers' suicides in Punjab, according to NCRB data, which was merely 26 in the year 2003 showed more than 3 fold increase and reached to an alarming level of 98 suicides per annum in 2014. Amongst the 30 respondents contacted from the victim households, all the suicide victims belonged to Sikh religion in which 97 per cent were from general category. The victims were largely concentrated in the age group of 31-60 years (about 73 per cent). Majority of the victims (70%) were literate. Majority of the victims (73%) committed suicide by consuming poison. On an average, the existing family size of victims' family was 4.53. Land holdings of the victims' families shows that 33 per cent had marginal farm size, 27 per cent small farm size, 17 per cent medium farm size and 23 per cent had large farm size (more than 4 hectares). Overall, on an average, operational holding of the victims' families was 6.64 acres. Out of which, 3.70 acres land was of their own, 3.11 acres leased in land and 0.17 acres land was leased out. Gross cropped area was 13.28 acres per household and the cropping intensity was 200 per cent. All the cultivated area had the irrigation facilities. Amongst the various sources of irrigation, about 33 per cent of area was irrigated through tubewell, about 9 per cent through canals and about 58 per cent area was irrigated through both tubewells and canals. The average annual income of the victims' families was about Rs. 194000 and the average annual expenditure of victims' families was to the tune of Rs. 125900. Total percent of expenditure to income was 64.85 per cent. Kharif season occupied two major crops i.e. paddy and cotton. Out of total households, 23 had cultivated paddy on 6.26 acre with yield of 26.51 qtl/acre. The per acre gross return from paddy was Rs. 38443 with the total variable cost of Rs. 12211. About 13 households had cultivated cotton on 5.30 acre with yield of 0.90 qtl/acre. The per acre gross return from cotton was Rs. 3376 with the total variable cost of Rs. 7190, which was due to decreased productivity of cotton in the region due to the attack of white fly. Further, wheat was the major rabi season crop in the study area grown on about 47 per cent of the total cropped area during the season. All the households had cultivated wheat on 6.22 acre with yield of 16.70 qtl/acre. The per acre gross return of wheat was Rs. 28601 with total variable cost of Rs. 9761. Amongst institutional sources of loans, it was observed that 37 per cent households had taken loan of Rs. 95000 from Co-operative society for the purpose of farming. About 57 per cent households had taken loan from commercial banks in which 94 per cent households had taken loan for farming purpose, which was of Rs. 4.33 lakhs/household and 11 per cent households had taken loan of Rs. 8.47 lakhs/household for non farming purpose. Amongst non institutional sources of loan, about 67 per cent respondents had taken loan from traders and commission agents for farming and non farming purposes. Before the suicide was attempted in the family, it was noticed that even though the victim was sufficiently mingling with the family, community and the neighbourhood but the sleep pattern of the victim was misaligned. There was also a change noticed in the food consumption of the victims, as they were found consuming less food than usual. As far as the social causes were concerned, the causes of suicides were largely attributed to the family problems and commitments (37 per cent) followed by poverty (30 per cent). In the farming related causes of the suicide, majority of respondents attributed the cause to failure of crop (43 per cent) followed by fall in expectations of higher output/price (40 per cent). However, a large majority of the respondents attributed the cause of the suicide to indebtedness with around 87 per cent of the respondents blaming the institutional and non-institutional sources of indebtedness. A suicide not only caused insecurity in the family but also in many cases led to stopping of agricultural activities. Also, in many cases a suicide robbed a family of an earning member which in turn had its consequences on the economic well-being of the family. Some land including other assets definitely was sold after a suicide happened in the family but the serious consequences of the suicide was its effect on other family members who has a tendency to slip into depression or fell seriously ill after witnessing a distressing incident in the family. To alleviate the incidence of farmers' suicides in future, the increase in non-farm employment was the most important suggestion, opined by 63 per cent of the respondent households. Possibly engaging the labour in productive work rather than as disguised unemployed in agriculture would lessen the incidents of suicides in the farming sector. It was also believed that the regularization of non-institutional credit by the Government would help in lessening the incidents of the suicides. The victim families who have take loan from the institutional sources, the recovery of such loans should be delayed by one crop season and this should be treated as interest free period. The victim families who have taken loan from the non- institutional sources, these can be diverted to the institutional loan under the Debt Swap scheme of NABARD. Other suggestions put forward to prevent the suicides were increase in MSP for all the crops, crop insurance to overcome any unforeseen calamities, compensation for crop damage during a bad crop year or pest/disease attack, provision of education for the children of the farmers, crop diversification etc. Besides the monetary compensation, the Govt. should also adopt the suicide victim family to provide the benefits of various Govt. Schemes in the state on priority basis. The family may be considered eligible for the benefits of BPL families, Atta dal scheme, MNREGA, family medical insurance, widow pension, grant for marriage of the wards of victims, scholarship/grant for the education of children and various subsidy schemes of the state agriculture department. Such families may be associated with Self Help Groups formed by ATMA/KVK or some other Govt. Agency so that the family members may be provided with the trainings to promote subsidiary activities on the farms. A low rate Crop Insurance Program can be initiated for these families at the plot level whose premium may be paid 50% by farmer and 50% by government. The co-operative societies should provide the subsidy up to 50% on all the inputs sold by them.

Chapter-I

Introduction

1.1 Background

Farmer suicide has turned out to be a major socio-economic concern in India that has resulted in profound implications on the quality of life of affected farm families. According to the United Nations Commission on Sustainable Development (UNCSD), one farmer committed suicide every 32 minutes between 1997 and 2005 in India. The prominent causes recognized for farmers' suicides were bankruptcy or indebtedness (20.6 %), 'family problems' (20.1 %), failure of crops (16.8 %), illness (13.2 %) and drug abuse/alcoholic addiction (4.9 %) (National Crime Records Bureau, 2015). Farmers feel a repeated sense of hopelessness due to the loss of crops, dwindling income levels, shrinking lands and even the loss of a way of life. Another factor that increases suicides is the potential for social isolation emerging from the loss of communities as well as geographical remoteness. Rising trend of nuclear families leading to non sharing of problems or tensions causes mental stress. The lack of access to mental health services in rural areas and the stigma attached to treatment is also a contributing factor. Exposure to agro chemicals/pesticides due to their easy availability on the farm itself may increase the risk for mood disorders and ultimately suicide.

The Situation Assessment Surveys of the National Sample Survey Organization (NSSO, 2013) has reconfirmed the worsening situation of farm households which indicated that about 51.9 per cent of the farm households in India are indebted. Indebtedness is highest in AP (93 %), followed by Telangana (89 %), Tamil Nadu (82 %), Karnataka (77 %) and Rajasthan (62 %). It is to note that NSSO in its 59th round survey has revealed that given the choice, 40 percent farmers will quit farming because it is not profitable, risky and it lacks social status (NSSO, 2005). Interestingly, indebted farmers have availed higher credit from institutional sources (60 %) as compared to the non-institutional sources (40 %) (NSSO, 2013).

The Intelligence Bureau in its report to the Government of India had submitted that there was an upward trend in the number of farmers resorting to the extreme measure of suicide in states like Maharashtra, Telangana, Karnataka and Punjab. The report cited both natural and manmade factors for such incidents. "While natural factors like uneven rains, hailstorms, droughts and floods adversely affect crop yield, manmade factors such as pricing policies and inadequate marketing facilities result in post-yield losses"(GoI, 2014).

The five states viz. Maharashtra, Telangana, Madhya Pradesh, Chhattisgarh and Karnataka together accounted for 89.5 per cent of the total farmer suicides (5,056 out of 5,650) reported in the country in the year 2014 (National Crime Records Bureau, 2015). Further, according to the report, the

land holding status of the farmers who committed suicide revealed that 27.9 per cent and 44.5 per cent of victims were marginal and small farmers, respectively and that, together, they accounted for 72.4 per cent (4,095 out of 5,650) of total farmer suicides. The report further reveals that 53.1 per cent and 14.5 per cent of small farmers who committed suicides were from Maharashtra (1,135 out of 2,516) and Telangana (366 out of 2,516) respectively during 2014. Among marginal farmers, 39.7 per cent and 25.5 per cent respectively suicides were reported in Maharashtra (627 out of 1,579) and Madhya Pradesh (403 out of 1,579) (National Crime Records Bureau, 2015).

Constant financial stress related to ongoing drought and flood conditions and the sense of binding due to indebtedness added to the farmer's economic problems; as many of the issues such as disease, weather, government policy, etc. were not within the farmer's control. The debts, however, were personal and need to be repaid. While the prices of crops have been pushed down (often even below the cost of production), the prices of inputs such as seed, fertilizers and pesticides have gone up. With limited resources at their disposal, farmers depended heavily on borrowed money to purchase seeds and other inputs and to cultivate their land and a reduction in their income could promptly lead to farmers owing more than they own.

Years of economic reforms have given farmers access to expensive and promising technological options; but these reforms have not led to crop insurance, land irrigation, or enough bank loans. These reforms have rendered Indian farmers open to global competition and in order to compete, they were forced to turn to high-cost seeds, fertilizers and pesticides believing in higher returns. Modified seeds cost nearly twice as much as ordinary ones, necessitating larger loans. In addition, there has been minimal financial support from the government for marginal and small farmers. Many of these farmers don't qualify for bank credit, forcing them to turn to moneylenders who charge between 20 to 36 per cent interest on the loans. Consequently, farmers often sign away the title to their land as collateral, falling prey to vicious circle of indebtedness.

Concerned with the agrarian crisis and farmers' suicides in rather agriculturally developed states of India, the Prime Minister on July 1, 2006, announced a rehabilitation package with the goal of mitigating the distress driven condition of farmers. The rehabilitation package aimed at establishing a sustainable and viable farming and livelihood support system through debt relief measures to farmers such as complete institutional credit coverage, crop centric approach to agriculture, assured irrigation facilities, effective watershed management, better extension and farming support services and subsidiary income opportunities through horticulture, livestock, dairying, fisheries and other subsidiary activities. In order to alleviate the hardships faced by the debt driven families of farmers, ex-gratia assistance from Prime Minister's National Relief Fund (PMNRF) at Rs.50 lakh per district was also provided. Some other programs to increase the flow of agricultural credit included Kisan Credit Card

(KCC) scheme, revival package for short term cooperative credit structure, concessional interest schemes, interest subvention schemes, interest subvention against negotiable warehouse receipt and so on. All these attempts though have increased the flow of institutional credit to agriculture sector, but have not shown much impact on farmers suicides especially in marginal and small farm categories. Thus, farmers' suicides still remains a major challenge in India.

There have been many reasons for the farmers' distress in Punjab. Increasing cost of production, stagnating yields, increasing borrowing for agro-machinery and shrinking profit margins mainly due to almost constant prices of crops can be enlisted as same. Failure of cotton crop due to pest attack is the main reason for farming distress in suicide prone cotton belt of the state. Recently, the productivity of cotton in the state has drastically reduced and induced more indebtedness among the Punjab farmers. Secondly, the productivity of rice and wheat being the major crops of the state has shown saturation since 1990s while the cost of cultivation has been increasing overtime. Therefore, the profitability of these crops has declined overtime. Thirdly, the Punjab farmers are caught in the cob-web of the money lenders. Due to easy availability of finance through private money lenders, the farmers take loans and often misutilise the money for unproductive purposes like social ceremonies and to meet the day to day household consumption. The debt multiplies overtime and due to declining returns from agriculture the farmers find it hard to repay the amount.

1.2 Review of literature

Most studies on suicides fail to look at the phenomena from an interdisciplinary perspective. Emile Durkheim (1896) a sociologist highlighted that suicide rates are dependent upon the degree to which individuals were integrated into society and the degree to which society regulates individual behaviour. He mentioned that in the modern society there were two major types of suicides : (i) Increasing detachment from others resulting to egoistical suicide eg. the unmarried and childless are less integrated and hence susceptible to a higher suicide rate and (ii) Dissatisfaction in relation to expectations resulting in anomic suicide. For eg. In times of price crash of crops, there is more probability of suicide if the farmers' price expectations were not met. (Lester, 1994 cited in Deshpande and Arora, 2010). Taking into account Durkheim's types, Mohanty in his article views farmer suicides as having resulted from a combination of ecological, economic and social crisis. He stated that it points to the modern agricultural practice, which has become an independent, household or family enterprise, without requiring any link and interaction among the cultivators themselves (Mohanty, 2013).

Another way of analysing the causes of suicides requires understanding the culmination of four factors namely, events, stressors, actors and triggers. This categorization stems from the mental set up of victims (Deshpande, 2002). The events such as crop loss, bore-well failure, price crash, family problems, property disputes and daughter's marriage act as stress creators, when two or more events

cluster together. Usually illness of the individual or any family member, heavy borrowing, prolong disputes in the family or land related problems act as stressors'. These become lethal in combination with the events, but further ignition comes through the actors and triggers incidence. Given this complex nature of the phenomena, it is certainly difficult to pinpoint one particular reason for the suicide (Deshpande, 2002).

The paper by Gupta aptly observed that Indian agriculture has always lurched from crisis to crisis. If the monsoons were good then there were floods, if they were bad there are droughts, if the production of mangoes is excellent then there is a glut and prices fall, if the onion crops fail then that too brings tears. The artisanal nature of agriculture has always kept farmers on tenterhooks, not knowing quite how to manage their economy, except to play it by (y) ear, thus shedding a light on the plight of the Indian farmer (Gupta, 2005). The study on farmers' suicides is a problem of the type that is theoretical and interpretative in nature. Although there is an availability of empirical data, due to a lack of sufficient understanding of the trends and complex patterns, there exists a deficiency in establishing interrelationships.

Anneshi and Gowda (2015) concluded that both small and large farmers borrowed relatively higher proportion from the non-institutional sources compared to institutional sources and accessibility to institutional borrowing is relatively more for large farmers. Similarly, both small and large farmers owed more outstanding debt to exploitative non-institutional sources, as compared to institutional sources in SC/ST category.

Macharia (2015) investigated that majority of small and marginal peasants depended on non-institutional credit facilities (i.e. moneylenders, micro financiers and traders). He also reported that farmers' suicides take place among the scheduled castes and tribe families who cultivate commercial crops. Low yields, extremely low profits and mounting debts make their life extremely difficult and compelling for the extreme step.

Chikkara and Kodan (2014) opined that the informal mechanism of credit delivery played an important role for marginal and small farmers in meeting their credit requirements in Haryana. In addition, maximum indebtedness was found to be on the Rs 615-775 MPCE class farm households in the State and Scheduled Caste and Backward Class farm households.

Kanthi (2014) in his study on economics of agriculture and farmers' suicides in Warangal District in Andhra Pradesh reported that the contributory factors for farmers' suicides in Andhra Pradesh as farmers' indebtedness, crop loss and failure and risk factor, input (seed, fertilisers, pesticides, irrigation, credit) related problems, inadequate institutional finance, failure of agricultural extension system, lack of storage and marketing facilities, lack of remunerative prices and absence of agricultural insurance.

Mohanty (2014) in a study conducted in Amravati and Yavatmal districts argued that crop loss and egoistic factors led to suicidal tendency among small farmers. On the contrary, the suicides of large and medium farmers who belonged to higher castes were attributed mainly to the anomic forces generated by failure in business, trade and politics. The socio-cultural factors such as old age, illness, family tension, etc, further added their urge to take their own lives. The concluded that the suicides of farmers were neither properly anomic nor egoistic, rather they were ego-anomic in nature.

Singh et al., (2014) based on the research in Punjab stated that the level of education, non-farm income, farm size and non-institutional credit were the main factors which affect the level of farmers' indebtedness. It was also found that the farmers face a large number of problems in availing institutional credit which drives them to fall into the debt trap of the crafty and exploitative non-institutional sources of credit.

Kumar et al. (2010) examined the performance of agricultural credit flow and identified the determinants of increased use of institutional credit at the farm household level in India. The result indicated that the quantum of institutional credit availed by the farming households was affected by a number of socio-demographic factors like education, farm size, family size, caste, gender, occupation of household, etc.

Another study by Behere and Behere (2008) reported that various factors like chronic indebtedness and the accumulation of interest payment, economic drain, rising costs of agricultural inputs and falling prices of agricultural produce lead to complications and family disputes, depression and alcoholism etc, and eventually were responsible for suicides among the farmers. It was also seen that compensation following suicide helped the family to repay the debt. It was opined that the causes were multifactorial, cumulative, repetitive and progressive, leading an individual to a state of helplessness, worthlessness and hopelessness, obviously influenced by his social strengths and weaknesses along with his mental health status.

According to Meeta and Rajivlochan (2006) some of the problems common among the victims of suicide were (a) hopelessness in being unable to resolve the dilemmas of personal life and an inability to find funds for various activities or repay loans; (b) the absence of any person, group, or institution to whom to turn to in order to seek reliable advice - whether for agricultural operations or for seeking funds or for handling private and personal issues; (c) little knowledge about institutional mechanisms like the Minimum Support Price (MSP) that would affect marketing, technical knowledge and no reliable source from where such knowledge and advice could be accessed; and (d) chronic alcoholism and drug abuse among the rural population.

Mohanty and Shroff (2004) in their research revealed that though crop losses, indebtedness and market imperfections cause economic hardship to farmers; social factors were also at work which leads in some cases to suicides.

Grover et al. (2003) observed that indebtedness was a prime reason for suicide amongst the farming community in Punjab state. Other prominent reasons for suicides amongst the farming community in the state were the sudden expenses to the farmers for marriage of daughter/sister, medical treatment and to perform various social ceremonies, loss of status due to selling of the land, family responsibilities, failure of crops/dairy/bore wells, frequent conflicts in the family and the decline in social support due to disintegration of joint family system as well as deteriorating standards of the village institutions particularly the cooperative culture in the state. The study emphasized the need to advance the credit for the social obligations to the farmers at the rate of interest at par with the agricultural loan by formal institutions. There is also need to check illegal expenses and some other avoidable formalities for taking loans from these institutions. The agriculture department should have the strict vigilance on the poor quality of seeds and pesticides being supplied by the dealers in the state. The sale of good quality seeds and pesticide through cooperative societies should also be encouraged. The small and marginal farmers should desist themselves from purchasing large machines as the cost of maintenance along with fixed cost becomes higher than that of the rent to be paid for hiring of the same machinery. In rural areas, panchayats should start a reform movement at their own level by banning certain outdated customs, traditions and rituals to control the unnecessary expenditure.

The paper by Sarah Hebous and Stefan Klöner empirically analyzed the various sources of extreme economic distress in rural India by using district-level data on farmers' suicides to estimate the effects of transitory economic shocks and structural change in agriculture on the incidence of suicides in farm households. Rainfall conditions were used as an instrumental variable and it was found that transitory spikes in poverty caused by a lack of rainfall increased suicides among male and decrease suicides among female members of farm households. However, the paper concluded that the combined causal effect of a poverty shock on suicides in farm households was positive. Also, a shift from subsistence crops to cash crops, especially cotton, was found to be associated with a decrease in male suicides (Hebous and Klöner, 2014).

All current reports ascertain that widespread and soaring indebtedness among farmers is considered by most of the families to be the key reason for the suffering experienced by the victims leading to their suicide, the social basis of such indebtedness and its implications are yet to be recognised.

1.3 Main objectives and scope of the study

With this background, the study addresses following specific objectives:

1. To analyse the incidence and spread of farmer suicides in selected states and to map the hot-spots of suicide;
2. To study the socio-economic profile, cropping pattern and profitability of victim farm households.
3. To study the causes leading to farmers' suicides.
4. To recommend suitable policies to alleviate the incidence of farmers' suicides.

The results of the study will provide useful insights to understand the socio-economic profile of victim households. It will also bring out the causes of farmers' suicides in general and specifically due to indebtedness from institutional and non-institutional sources, suggestions to prevent farmers' suicides and coping strategies after suicide incident will help the policy makers in framing policies and programmes to deal with the menace.

1.4 Data and methodology

The study is based on primary as well as secondary data. The primary data confined exclusively to those farmers who are cultivating - either their own land or on lease basis - at the time of survey. The coordinating centre, ADRTC, Institute for Social and Economic Change, Bangalore had sought the sample for the suicide victim families in Punjab state to be 10. The AERC, Ludhiana felt that the sample was too small for the study at the individual centre/Punjab level and finally the coordinating centre consented to take a sample of 30 victim families so that the report may become more relevant/important from the state point of view. The details of sample selection have been provided in table 1.

Detailed information was elicited from victim households with the aid of a structured and pre-tested questionnaire covering two sections. The first section was designed to collect information about the family size, education level of the victim household, social group, cropping pattern, size of the land holdings, sources of irrigation, cost and returns from crop cultivation and so on. In the second section, information regarding causes of farmers' suicides with special focus on the institutional and non-institutional credit, extent of indebtedness, coping strategies after the suicide incident and suggestions for preventing farmers' suicides was collected. In order to fulfil the objectives of the study, descriptive statistics, suitable quantitative and qualitative response models, ranking techniques (opinion survey), were applied.

Table 1: Sample size of primary data, Punjab, 2015-16

Sl.No.	Names of selected district	Name of selected Taluka/Block	Name of Village	No. of Victims' families interviewed
1	Ludhiana	Delhon	Gosal	1
		Jagraon	Mand Tihara	1
		Sidwan bet	Bhundri	1
2	Moga	Moga-I	Jandewala	1
		Moga-II	Kelie wala	1
		Kote-ise-khan	Indergarh	1
3	Barnala	Sehna	Tajoke, Sehna, Sandhu Kalan	3
		Mehal kalan	Shejra	1
		Barnala	Rajgarh	1
4	Bathinda	Phool	Ghanda bana, Dhinger, Selbrah, Chottian	4
		Bathinda	Karamgarh Satra, Baluana	2
		Rampura	Chauke	1
		Maur	Chanarthal	1
5	Sangrur	Malerkotla-I	Hathoa	1
		Sherpur	Kalyan, Badi, Ghanaur khurd	3
6	Mansa	Budhlada	Datewas, Sirsiwala, Guradi	3
		Bhikhi	Joga,	1
		Mansa	Burj Rathi, Dulowal	2
		Sardulgarh	Heerke	1
Total	6	20	30	30

1.5 Structure of the report

The report contains five chapters in all. Chapter I is devoted to the introduction of the problem. The chapter contains the methodological aspects involved in the selection of suicide victim families. Chapter II is based on the secondary data related to the number of farmers' suicides in Punjab. Chapter III is designed to depict the agro-economic conditions of the victim families so that the specific reasons that led to the farmers' suicides may be traced out. The information related to cost and returns from agriculture, credit structure and the prices fetched by the farmers for their produce etc. was highlighted in the chapter. Chapter IV encompasses the qualitative analysis of the suicide cases. This includes the various reasons of suicides, sudden incidents in life of the victims, health related problems, social system prevailing in the state and all other aspects that could lead to unfateful decision of suicides by the farming community. The chapter also contains the suggestions based on the results of the study, which may help the policy planners to take steps for escaping the farming community from the distressful conditions prevailing in the state which ultimately led to increase in suicides of farmers in the state. The last chapter (chapter V) contains the important conclusions drawn from the study and summarise the various policy implications.

Chapter II

Farmers' suicide scenario in Punjab

The present chapter has been designed to study the farmers' suicide scenario in Punjab state. The data regarding the intensity of farmers' suicides in the state for 2015-16, as desired by the coordinating centre, was not available for the state, despite visit to the various state government departments. Annual publication by National Crime Records Bureau (NCRB) was the only authentic data source for compiling state-wise number of farmers' suicides in the country. The latest available publication is for the year 2014 under the title "Accidental deaths and suicides in India - 2014". In this publication, the number of suicides of agricultural labourers and farmers was given separately. In all previous publications, NCRB had recorded both these categories as combined under self-employed category. As such, the data could not be segregated as farmers and agricultural labourers for the previous years. Hence, for the present analysis, the combined data of self-employed category has been taken for the years 2000 to 2014 and presented in table 2.

The relative position of number of farmers' suicides per lakh population as well as per lakh hectares of net sown area was compared for state of Punjab and India. The intensity of suicides, as measured from these parameters was comparatively higher at all India level as compared to Punjab state over the period under study. For Punjab, the number of farmers' suicides per lakh population was almost one thirtieth as compared to India, while on the basis of per lakh hectares of net sown area it was three fourth. The number of farmers' suicides in Punjab, which was merely 26 in the year 2003 showed more than three fold increase and reached to an alarming level of 98 suicides per annum in 2014. The increase in the number of suicides in the state may be attributed to the changing agrarian structure, failure of crops particularly cotton in recent years, increasing incidence of debt among the farming community, increasing unemployment, depleting water resources or increasing cost for deepening of the tube wells and increased spending on social ceremonies by the people in the state.

A study by Institute for Development and Communication (1998) showed that the suicides among the farming community were more concentrated in the cotton belt of the state, which comprises the districts of Sangrur, Bathinda, Mansa, Muktsar and Faridkot. Repeated failure of cotton crop in this belt increased the indebtedness among the farmers and they became more prone to distress conditions ultimately leading to the suicide. Further, the suicide rate was steadily increasing in different states of India, but in Punjab the rate was lower as compared to the other states of the country. The percentage share of cultivator farmers' suicides to the total suicides between 1991-97 was to the extent of 23 per cent for overall state and was the highest for Sangrur district (50%).

Table 2: No. of Farmers' Suicides in Punjab and India, 2000-2014.

Year	Punjab			India		
	No. of Farmers' Suicides	No. of farmers' suicides per lakh population	No. of suicides per lakh hectares of net sown area	No. of Farmers' Suicides	No. of farmers' suicides per lakh population	No. of suicides per lakh hectares of net sown area
2000	73	0.36	1.72	16603	16.14	11.74
2001	45	0.18	1.06	16415	15.96	11.66
2002	40	0.16	0.95	17971	17.47	13.57
2003	26	0.11	0.61	17164	16.68	12.10
2004	74	0.30	1.76	18241	17.73	12.92
2005	47	0.19	1.12	17131	16.65	12.11
2006	85	0.35	2.03	17060	16.58	12.19
2007	88	0.36	2.10	16632	16.17	11.80
2008	66	0.27	1.58	16196	15.74	11.41
2009	97	0.40	2.33	17368	16.88	12.40
2010	80	0.33	1.92	15964	15.52	11.28
2011	98	0.35	2.37	12071	9.97	8.56
2012	75	0.27	1.81	13754	11.36	9.83
2013	83	0.30	2.00	11772	9.72	8.26
2014	98	0.35	2.36	12360	10.21	8.92

Source: National Crime Records Bureau (NCRB), various reports.

Summary

The intensity of suicides, as measured from number of farmers' suicides per lakh population as well as per lakh hectares of net sown area was comparatively higher at all India level as compared to Punjab state for different years under study. The number of farmers' suicides in Punjab, which was merely 26 in the year 2003 showed more than 3 fold increase and reached to an alarming level of 98 suicides per annum in 2014.

Chapter-III

Crop Economy, Credit and Related Issues

3.1 Introduction

The production of agricultural crops in Punjab state has been satisfactory. But, the media reports hints at the increase in prices in the input markets, and overriding burden of debt on the Punjab farmers. These changing agrarian situations seem to be the important causes of distress among Punjab farmers. In order to understand this situation; one needs to look into the causes of distress as reported in the media and check them on the ground. Therefore, the present chapter has been designed to investigate the agrarian situation in the state with particular reference to the costs and returns from agriculture and debt burden of the farmers.

3.2 Socio-economic profile of the victim

A Socio-economic profile of victim households has been given in table 3.1. A sample of 30 victim households was selected with all the male respondents. Amongst the 30 respondents contacted from the victim households, 40 per cent were wives/sons/daughters and 60 per cent were brothers/sisters/others. All the suicide victims belonged to Sikh religion in which 97 per cent were from general category and 3 per cent from scheduled caste category. The age wise analysis regarding the suicide victims revealed that the victims largely fall in the age group of 31-60 years (about 73 per cent). This age group is the most vulnerable with respect to suicides, as this is the age where the person has to make maximum decisions and has to share the family responsibilities. There were 17 per cent of suicide cases up to 30 years. About 10 per cent suicide cases were from age group of above 60 years. The farmers in this age group have to share maximum load of responsibility regarding the employment and marriage of the children and had to bear the conflicting situations within the family and they get disappointed at the slightest provocation.

The education level of suicide victim has been shown in table 3.1. It shows that majority of the victims (70%) were literate while 30 per cent were illiterate. Amongst the literate victims, 13 per cent studied upto 8th standard outs (middle class), 47 per cent had studied upto matriculation, 7 per cent were high school pass and 3 per cent were graduates. Therefore, education level of the victim cannot be related to the decision regarding suicide. But in general, it has an impact on the farmer's decision regarding the production, marketing and financing of the agricultural produce. Regarding their marital status, out of 30 suicides victims, 80 per cent were married through arranged marriage in which 75 per cent were married within relatives, while 25 per cent were married outside and remaining 20 per cent suicide victims were unmarried.

Table 3.1: Socio-economic profile of victim, sample households, Punjab, 2015-16

Particulars		
Total number of victim households surveyed: (Numbers)		30
Type of respondents (% to total sample)	1.Wives / Sons / Daughters	40.0
	2.Brothers / Sisters / others	60.0
Gender (% to total sample)	1.Male	100.0
	2.Female	-
Social status (% to total sample)	1.SC	3.0
	2.ST	-
	3.OBC	-
	4.General	97.0
Religion (% to total sample)	1.Hindu	-
	2.Muslim	-
	3.Christian	-
	4. Sikh	100.0
Age group (% to total sample)	1.Upto 30 years	17.0
	2.Between 31 to 60 years	73.0
	3.Above 60 years	10.0
Years of schooling (% to total sample)	1.Illiterate	30.0
	2.Primary (4 years)	-
	3.Middle (7 years)	13.0
	4.Matriculation/secondary (10 years)	47.0
	5.Higher secondary (12 years)	7.0
	6.Degree/Diploma (15 years)	3.0
	7.Above Degree/ Post Graduates (Above 15 years)	-
Marital status (% to total sample)	1.Married	80.0
	2.Un Married	20.0
Type of marriage (% to total sample)	1.Arranged	100.0
	2.Love	-
Married to whom (% to total sample)	1.Within relatives	75.0
	2.Outside relatives	25.0
Heirs of the victim (Average No. to total sample)	1.Sons	21.0
	2.Daughters	-
	3. Other relatives (includes brothers, wives)	9.0
Victims who had parents and had brothers and sisters (% to total sample)	1.Father, mother and brothers	13.0
	2. Father, mother and sisters	3.0
	3. Father and mother	10.0
	4. Mother and brothers	7.0
	5. Father	7.0
	6. Brothers	10.0
Method of suicide (% to total Sample)	1.Poison consumption	73.0
	2.Hanging	10.0
	3.Jumping into river / well	7.0
	4. Electric shock	-
	5. Self immolation	-
	6. Railway Track/ Jumping before the train	10.0
	7. Others	-
Place of suicide (% to total sample)	1.House	43.0
	2.Farm	40.0
	3. Lodge / Hotel	-
	4. Others	17.0

Further, 21 of victims had their sons as heirs. Amongst the families of 30 suicide victims, 13 per cent had left with father, mother and brothers, 10 per cent only father and mother and 10 per cent had left with brothers. Regarding the method/mode of taking extreme step, majority of the victims (73%) had committed suicide by consuming poison, 10 per cent by hanging, 7 per cent by jumping into river/well and 10 per cent positioned themselves on railway track for committing suicide. About 43 per cent victims had committed suicide at their house, 40 per cent at their farm and 17 per cent had committed suicide at some other place.

3.3 Socio-economic profile of victims' family

Table 3.2 reveals the socio-economic profile of victims' family. On an average, the existing family size of victims' family was 4.53. All the existing members of the family were dependent on farming for earning livelihood. About half of the victims' families were nuclear and half of them were joint families. Majority of the families were living within the village (about 93%), while remaining were living at their own farm. In the victim families, there were 36 per cent adult males, 41 per cent adult females and 23 per cent children.

Table 3.2: Socio-economic profile of victims' family, sample households, Punjab, 2015-16

Particulars			
Existing household size: (Average numbers)		4.53	
Households depending on farming as a main occupation (% to total sample)		100.0	
Family type (% to total sample)	1.Joint	50.0	
	2.Nuclear	50.0	
Location of the households (% to total sample)	1.Within the village	93.0	
	2.In their own farm	7.0	
Age group of family members (% to total sample)	1.Adult Males (>15 yrs)	36.0	
	2.Adult Females (>15 yrs)	41.0	
	3.Children (<15 yrs)	23.0	
Years of schooling of family members (% to total sample)	1.Illiterate	30.0	
	2.Primary (4 years)	13.0	
	3.Middle (7 years)	17.0	
	4.Matriculation/secondary (10 years)	24.0	
	5.Higher secondary (12 years)	10.0	
	6.Degree/Diploma (15 years)	6.0	
	7.Above Degree (Above 15 years)	-	
Farm Size	% of area to holdings of sample	1.Marginal (< 2.5 acres)	7.15
		2.Small (2.5- 5.0 acres)	13.43
		3.Medium (5.0-10.0 acres)	19.95
		4.Large (>10.0 acres)	59.47
	% of holdings to total sample	1.Marginal (< 2.5 acres)	33.0
		2.Small (2.5- 5.0 acres)	27.0
		3.Medium (5.0-10.0 acres)	17.0
		4.Large (>10.0 acres)	23.0
	Average operational holding size (acres/household)		6.64

According to education status of victims' families, 70 per cent were literates while 30 per cent were illiterates. Amongst literates, 13 per cent were basic literates, 17 per cent middle pass, 24 per cent matriculates and 6 per cent were graduates. Victims were from different land holding categories (marginal, small, medium and large). The marginal holdings constituted 7.15 per cent, small holdings 13.43 per cent, medium 19.95 per cent and large constituted 59.47 per cent of total area of sampled households. Land holdings of the victims' families showed that 33 per cent had marginal farm size, 27 per cent small farm size, 17 per cent medium farm size and 23 per cent had large farm size (more than 4 hectares). Overall, on an average, operational holding of the victims' families was 6.64 acres.

3.4 Characteristics of operational holdings

Table 3.3 showed that on an average the net operated area was 6.64 acres. Out of which, 3.70 acres land was of their own, 3.11 acres leased in land and 0.17 acres land was leased out. Gross cropped area was 13.28 acres per household and the cropping intensity was 200 per cent. In Punjab state there has been progressive increase in intensity of cropping over the years and now intensive cropping i.e. getting two crops from the same field is a common feature. All the cultivated area had the irrigation facilities.

Table 3.3: Characteristics of operational holdings, sample households, Punjab, 2015-16

(Acres/household)

Sl. No.	Land details	Irrigated	Un-irrigated	Total
1	Total owned land	3.70	-	3.70
2	Un-cultivated land	-	-	-
3	Cultivated (Own)	3.70	-	3.70
4	Leased-in land	3.11	-	3.11
5	Leased-out land	0.17	-	0.17
6	Net Operated Area(1-2+4-5)	6.64	-	6.64
7	Gross Cropped Area	13.28	-	13.28
8	Gross Irrigated Area	13.28	-	13.28
9	Net Irrigated Area	6.64	-	6.64
10	Cropping Intensity (%)	200.0	-	200.0
11	Irrigation Intensity (%)	200.0	-	200.0

3.5 Sources of irrigation

In Punjab about 99 percent of the net sown area is irrigated. The state has excellent surface and groundwater irrigation infrastructure. It has been revealed from table 3.4 that all the operational area (6.64 acres) was irrigated. Amongst the various sources of irrigation, about 33 per cent of area was solely irrigated through tubewells, about 9 per cent only through canals and the rest about 58 per cent area was irrigated through tubewells and as well as canals.

Table 3.4:Source-wise distribution of irrigated area, sample households, Punjab, 2015-16

Sl.No.	Land details:	Total area in acres (Per household)	Percent to total sample area
A.	Irrigated area		
	Irrigated	6.64	100.0
	Unirrigated	-	-
	Total Area	6.64	100.00
B	Sources of irrigation		
	Open well	-	-
	Tube well only	2.17	32.62
	Tank	-	-
	Canal only	0.60	9.16
	Canal+tubewell	3.87	58.22
	Total Irrigated Area	6.64	100.00

3.6 Leasing of land

Table 3.5 revealed that, on an average, 3.11 acres land was taken on rent at the rate of Rs. 40131 per acre and 0.17 acres land was leased out at the rate of Rs. 35000 per acre.

Table 3.5: Rental value of leased-in and leased-out land, sample households, Punjab, 2015-16

Sl.No.	Particulars		Irrigated	Unirrigated
A	Leased - in	Area (Acres/household)	3.11	-
		Rental value (Rs./acre)	40131	-
B	Leased-out	Area (Acres/household)	0.17	-
		Rental value (Rs./acre)	35000	-

3.7 Source of income and items of expenditure

The income and expenditure pattern of the victims' families has been discussed in table 3.6. The average annual income of the victims' families was about Rs. 1.94 lakhs, out of which about Rs. 1.65 lakhs income was generated from agriculture, Rs. 600 from farm wage income, Rs. 18100 from dairy and animal husbandry, Rs. 6033 from services, Rs. 1666 income has been generated from labour construction & mechanic work. Larger proportion of income was contributed by the agriculture sector (about 85%). The victim households were also found to rear cows and buffaloes for daily milk requirement of the family and also fetch some income through sale of milk. Overall, the annual income earned from dairy sector was Rs 18100 for suicide household farms. The low level of income fetched by the farm household from the other sectors of the economy signals towards the creation of non-farm employment avenues in the rural Punjab so that large dependence on agriculture sector maybe avoided.

Table 3.6: Average annual net income and expenditure of sampled households, Punjab, 2015-16

Sl. No.	Source	Amount (Rs./HH)	% to total	% HH to reported reduced income /increased expenditure over the last 5 years
A	INCOME			
a	Farm Sector			
1	Agriculture/crop cultivation	164916	84.94	93.0
2	Agriculture wage income	600	0.31	100.0
3	Dairy and animal husbandry	18100	9.32	100.0
4	Poultry	-	-	-
5	Fishery	-	-	-
b	Non-farm sector			
1	Service (salary and pension)	6033	3.11	-
2	Self business	2833	1.46	100.0
3	Others-1(labour construction)	833	0.43	-
4	Others-2(Mechanic)	833	0.43	-
	Total income (A)	194148	100.00	-
B	CONSUMPTION EXPENDITURE			
b	Non Farm Sector			
1	Food	70867	56.29	100.0
2	Non-food	55033	43.71	100.0
	Total expenditure (B)	125900	100.00	-
C	Surplus / Deficit (+ / -) A- B	68248		
D	Percent of expenditure to income	64.85		

The average annual expenditure of victims' families was to the tune of Rs. 1.25 lakhs, out of which 56.29 per cent was annually spent on food items and 43.71 per cent was spent on non food items. Total percent of expenditure to income was 64.85 per cent.

3.8 Cropping pattern and returns from cultivation

In table 3.7, a season wise cropping pattern of victims' households has been revealed. Paddy was the major kharif crop grown by the victim families in the study area as it is constituted than 28 per cent of the total cropped area during kharif season. Kharif season had two major crops i.e. paddy and cotton. Out of total households, 23 had cultivated paddy in 6.26 acres with yield of 26.51 qtl per acres. The per acre gross returns from paddy were Rs. 38443 with the total variable cost at Rs. 12211. About 13 households had cultivated cotton in 5.30 acres with yield of 0.90 qtl per acres. The per acre gross returns from cotton were Rs. 3376 with the total variable cost of Rs. 7190, which was on the lower side due to decreased productivity of cotton in the region due to the attack of white fly. There is problem of white fly in cotton crop and this has reduced the yield in the recent years. The farmers resorted for more spray of plant protection chemicals, which increased their input cost and reduced the returns. Due to decreasing returns, the farmers could not repay their debts and consequently had to resort for the ultimate act of committing suicides. Guara and fodder were also other important crops in kharif season.

Guara was cultivated by 2 households in 1.63 acres while fodder cultivated by 24 households in 0.56 acres. Total per acre yield of guara and fodder was 2.46 qtl and 190 qtl, respectively. The per acre gross return of guara was Rs. 1077 with total variable cost of Rs. 5538 while gross return of fodder was Rs. 15580 with total variable cost of Rs. 2985.

Further, wheat was the major rabi crop in the study area grown on about 47 per cent of the total cropped area during the season. Wheat is considered to be the most stable crop in the state in terms of production and prices of the produce. All the households had cultivated wheat in 6.22 acres with yield of 16.70 qtl per acre. The per acre gross return of wheat was Rs. 28601 with total variable cost of Rs. 9761. Majority of the victims households had cultivated berseem fodder in 0.53 acres with yield of 312 qtl per acre. The per acre gross returns from fodder were Rs. 21512 with total variable cost of Rs. 7553.

Table 3.7: Season-wise cropping pattern, sample households, Punjab, 2015-16

Sl. No	Name of the crop	HH cultivated (No.)	Cultivated area (Acres /HH)	% of cultivated Area to Total cropped area	Total production (Qtls/H H)	Yield (Qtls/acre)	Average price received (Rs./qtl)	Gross returns (Rs./acre)	Total variable cost (Rs.)	Total variable cost (Rs./acre)	Returns over variable cost (Rs./acre)	Returns over variable cost (Rs./ HH)
KHARIF												
A	Crop Group-1/Major crops											
1	Paddy	23	6.26	28.61	131.40	26.51	1450	38443	1392000	12211	26232	130021
2	Cotton	13	5.30	17.19	4.72	0.90	3773	3376	49250	7190	-3814	-20093
B	Crop Group-2/ Minor crops											
1	Guara	2	1.63	0.81	4.0	2.46	4500	11077	18000	5538	5539	9000
2	Fodder	24	0.56	3.39	106.88	190	82	15580	40300	2985	12595	7085
RABI												
A	Crop Group-1/ Major crops											
1	Wheat	30	6.22	46.80	103.80	16.70	1525	28601	1820500	9761	18840	19481
B	Crop Group-2/ Minor crops											
1	Fodder	24	0.53	3.20	165.63	312.0	69.0	21512	96300	7553	13959	7416

3.9 Credit availed

The information regarding indebtedness status of the households has been presented in table 3.8. Almost every victim household was found indebted whether they borrowed small or large sums. The farmers borrow the money to meet their obligations both from the institutional and non-institutional sources of credit. Institutional sources of credit are dominated by the cooperative societies, Regional Rural Banks and commercial banks. Amongst the non-institutional sources, relatives and moneylenders are the most common ones. In case of institutional loans, it was observed that 37 per cent households had taken loan of Rs. 95455 from Primary Agricultural Co-operative Societies for the purpose of farming. About 57 per cent households had availed loan from commercial banks in which 94 per cent households had taken loan for farming purpose, which was to the tune of Rs. 4.33 lakh/household and 11 per cent households had borrowed Rs.8.47 lakh/household for non farming purposes. Amongst non institutional sources of loan, it was observed that about 7 per cent households had taken loan from moneylenders in which all the households had taken loan of Rs. 1.62 lakhs/household for farming purpose and also half of them had borrowed Rs. 8.47 lakhs/household for non farming purposes. Further, about 67 per cent respondents had taken loan from traders and commission agents for farming and non farming purposes. About 37 per cent of the households had also obtained credit from relatives and friends. Only 3 per cent of the total households had borrowed against gold which was for the farming purpose. Some of the farmers were also found to borrow the money from one source for returning the loan taken from the other source and in this cycle they were finding themselves in the trap of indebtedness. The moneylenders used to charge exorbitant rate of interest but they were the immediate source to help the farmers while procuring the seeds, fertilizers, and pesticides and whenever they were in need of money for the sudden expenses. Due to widespread illiteracy and ignorance of the farmers, they were found hesitant to procure loans from the institutional sources.

Table 3.8: Details on credit, availed by sampled households, Punjab, 2015-16

Sl.no.	Source of credit	Borrowing HHs		Purpose of borrowing				Outstanding Amount (Rs/HH of borrowing HHs) (7)	Average annual interest rate (%) (8)	% borrowing HHs who paid the installments as per schedule
		Number (1)	% to total sample (2)	Farming purposes		Non-farming purposes				
				No. of HHs (% to borrowing HHs) (3)	Amount borrowed/HH of borrowing HHs (4)	No. of HHs (% to borrowing HHs) (5)	Amount borrowed/HH of borrowing HHs (6)			
1	Institutional									
A	Co-op. Society/bank	12	37.0	100.0	95455	-	-	109364	7.0	7.0
B	Commercial bank incl. RRBs	17	57.0	94.0	433235	11.0	847500	373167	8.40	5.0
C	Others (specify)	-	-	-	-	-	-	-	-	-
2	Non-institutional									
A	Landlord	-	-	-	-	-	-	-	-	-
B	Moneylender	2	7.0	100.0	162500	50.0	125000	287500	18.0	-
C	Traders and commission agents	20	67.0	45.0	270000	55.0	513636	706800	16.20	25.0
D	Relatives and friends	12	37.0	18.0	250000	82.0	310000	305818	9.82	-
E	Others (Loan against gold)	1	3.0	100.0	200000	-	-	200000	8.5	100.0
	Grand Total	29	97.0	90.0	456538	59.0	603529	903276	11.19	14.0

In Col. 3 the figures are Per cent to Col. 1.

In Col. 4 the figures are obtained by dividing the total amount borrowed for farming purpose by the number of victim HHs who had borrowed for farming purpose from the concerned agency.

Summary

In all, 30 respondents were contacted from the victim households. All the suicide victims belonged to Sikh religion in which 97 per cent were from general category and 3 per cent were schedule castes. The age wise analysis regarding the suicide victims revealed that the victims were largely concentrated in the age group of 31-60 years (about 73%). Majority of the victims (70%) were literate. Further, 21 of victims had their sons as heirs. Majority of the victims (73%) committed suicide by consuming poison. On an average, the existing family size of victims' family was 4.53. All the existing members of the family were dependent on farming for earning livelihood. Land holdings of the victims' families showed that 33 per cent had marginal farm size, 27 per cent small farm size, 17 per cent medium farm size and 23 per cent had large farm size (more than 4 hectares). Overall, average, operational holding size of the victims' families was 6.64 acres. Out of which, 3.70 acres land was their own, 3.11 acres was leased in land and 0.17 acres was leased out. Gross cropped area was 13.28 acres per household and the cropping intensity was 200 per cent. All the cultivated area had the irrigation facilities. Amongst the various sources of irrigation, about 33 per cent of area was irrigated through tubewell, about 9 per cent through canals and about 58 per cent area was irrigated through both tubewells and canals. The average annual income of the victims' families was about Rs. 1.94 lakhs, out of which about Rs. 1.65 lakhs income was generated from crop cultivation/agriculture, Rs. 600 from agriculture wage income, Rs. 18100 from dairy and animal husbandry, Rs. 6033 from services, Rs. 1666 income has been generated from labour construction & mechanic work.

The average annual expenditure of victims' families was to the tune of Rs. 125900, out of which 56.29 per cent was annually spent on food items and 43.71 per cent was spent on non food items. Total per cent of expenditure to income was 64.85 per cent. Kharif season had two major crops i.e. paddy and cotton. Out of total households, 23 had cultivated paddy in 6.26 acres with yield of 26.51 qtl per acres. The per acre gross return from paddy was Rs. 38443 with the total variable cost of Rs. 12211 per acre. About 13 households had cultivated cotton in 5.30 acres with yield of 0.90 qtl per acre. The per acre gross returns from cotton was Rs. 3376 with the total variable cost of Rs. 7190, which was due to decreased productivity of cotton in the region due to the attack of white fly. Further, wheat emerged as the major rabi season crop in the study area grown on about 47 per cent of the total cropped area during the season. All the households had cultivated wheat in 6.22 acres with yield of 16.70 qtl per acre. The per acre gross returns of wheat were Rs. 28601 with total variable cost of Rs. 9761. Amongst institutional sources of loans, it was observed that 37 per cent households had taken loan of Rs. 95455 per household from Co-operative society for the purpose of farming. About 57 per cent households had taken loan from commercial banks in which 94 per cent households had taken loan for farming purpose, which was of Rs. 4.33 lakhs/household and 11 per cent households had taken loan of Rs.

8.47lakhs/household for non farming purposes. Amongst non institutional sources of loan, about 67 per cent respondents had availed loan from traders and commission agents for farming and non farming purposes.

Chapter-IV

Causes and after Effects of Suicide

4.1 Introduction

Suicide is generally believed to be an impulsive act. But actually, it is not so. It is a well thought decision based on complex interancies in one's life. Therefore, not a single reason can be pinpointed behind the unfateful decision and it is a combination of different impacting incidents leading to the suicidal act. Psychology of the person plays an important role while taking such a big decision in the life of a person. Health is the pivotal parameter determining the psychology of an individual. As the present study revolves around the suicide among the farming community, therefore their consumptions pattern can reveal the interesting results. Sociologists are arguing that the introvert persons are more prone to the suicides. The study of involvement of the victims in various socio-political activities can help in identification of the behaviour of the victims. All these factors can play a major role in decision making of the person committing suicide and the study of these will help in identifying the reasons behind these suicidal acts.

4.2. Symptoms observed and causes of suicide

Table 4.1 highlighted the symptoms observed by the family members before the suicide was attempted in the family. It was noticed that even though the victim was generally mingling with the family, community and the neighbourhood, but the sleep pattern of the victim was misaligned. The victims were found to have inadequate sleep as observed by the family, perhaps they had something going on in their minds which led to the insomnia. It is mainly due to the tension, which the victims had to undergo before committing the act. A change was noticed also in the food consumption of the victims, as they were found consuming less food than usual.

Table-4.1: Symptoms observed by family members before suicide in victims sample households, Punjab, 2015-16

(N=30)

S.No.	Symptoms enquired	Per cent HHs
1	Mingling with his/her own family member	80.0
2	Mingling with his/her own community	77.0
3	Mingling with his/her neighbouring households/friends	77.0
4	Consuming food regularly	73.0
5	Sleeping adequately during nights	60.0

The possible social causes of the suicide have been shown in table 4.2. Poverty and fall in social reputation were perceived to be the biggest factors contributing to the suicide. Around 70 per cent

of the households attributed the social cause of suicide to poverty and around 67 per cent attributed the cause to fall in social reputation.

Family problems and social obligations such as marriage of the daughter/son, other of social ceremonies, frequent quarrels amongst the family members and other factors such as stress induced while trying to improve the economic status of the family also contributed significantly to the suicidal thoughts in the victim. The Punjab farmers used to spend leisurely on the marriage and performing other ceremonies. For this, they have to borrow the money and due to the unremunerative returns from agriculture, which is their main source of livelihood; they fail to timely repay the loans. Repeated failures lead to the ever-mounting burden ultimately forcing the farmers to take this unfateful decision of committing suicide. Martial discords were not a major cause with only 3 per cent of the respondents attributing the suicide to it. The family atmosphere plays a crucial role in psychological developments of an individual. Frequent conflicts in the family create stress in the mind of an individual and when it reaches the extreme it leads to the commitment of suicide. It was also an important cause of suicide as about 10 per cent of the victim families have assigned family conflict as the major cause of suicide.

However, property dispute was not a reason for any suicide taken place in the sample, but other issues such as illness and drug/alcohol addiction were perceived as causes contributing to the abetment to suicide. The Punjab youth has been aggressively caught in the menace of alcohol and drug abuse. In an earlier study conducted by Institute for Development and Communication (1998), alcohol and drug abuse was reported as important cause of suicide among Punjab farmers by 18 per cent of the respondents.

The percentage of responses of social causes varied only minutely as far as the responses from the respondents and the neighbours/friends/relative were concerned, implying that the percentage of responses to the social causes by the both the group of respondents were more or less in unison. The land is treated as a status symbol in the rural society of the state. More the land one possesses, higher the status of the individual in the society. Sometimes, landless or 1-2 acre farmers find it problematic while marrying themselves. The loss of status, due to selling of the land, to meet the sudden expenses or to repay the loans was cited as the reason of suicide by 67 per cent of the victims.

Table 4.2: Social causes of suicide, sample households, Punjab, 2015-16

(N=30)

S.No.	Causes	Per cent HHs	
		As per respondent	As per neighbors / relatives / friends
1	Poverty	73.0	73.0
a	APL	63.0	63.0
b	BPL	10.0	10.0
c	AAAY	-	-
2	Property dispute	-	-
a	Partition of land	-	-
b	Partition of house	-	-
c	Partition of income	-	-
d	Partition of jewelleryes	-	-
3	Marriage related issues	3.0	3.0
a	Dowry related issues	-	-
b	Extra marital affairs	-	-
c	Divorce	3.0	3.0
d	Love failure	-	-
4	Family problems/Commitments	47.0	40.0
a	Social ceremonies	7.0	3.0
b	Daughter's marriage	10.0	10.0
c	Son's marriage	-	-
d	Frequent quarrel among the family members	10.0	10.0
e	Others (To improve economic condition of family)	27.0	23.0
5	Illness	23.0	-
6	Drug abuse/Alcoholic addiction	33.0	33.0
7	Gambling/betting /chit fund	-	-
8	Fall in social reputation due to debt	67.0	67.0

The causes of suicide related to the farming have been presented in table 4.3. It was observed that the fall in expectations of the farmers with respect to higher output of crop produce, higher prices of the product and credit availed (Institutional and Non-institutional) contributed to the suicidal tendencies in the victims. Generally speaking, a farmer facing lower output of the crop produce or receiving lower price for his produce exhibited greater tendency to commit a suicide.

The loss of the crop owing to pests/diseases was also comprehended as a major factor leading to suicide with around 43 per cent respondents answering in affirmative. The cotton growers faced the problem of decreased output owing to the attack of white fly during the last 2 years. It was also evident from table 4.3 that the farmers withered the natural calamities bravely as these calamities were not seen as an important factor contributing to the suicide.

It was only when the expectations in the farming fell short of the desired targets or the crop failed, the farmer became more prone to committing suicide. Agriculture has become un-remunerative

for the small and marginal farmers of the study area. Due to high degree of dependence on agriculture, they usually go for lease in the land and in turn have to pay hefty amount of rent for this. Due to declining productivity of different crops and high cost of cultivation due to very high rent for leased in land has made the agriculture an un-remunerative one for these farmers. Highly instable production and fluctuating prices of cotton in the state has increased the farmers' problems.

Table 4.3: Farming related causes of suicides, sample households, Punjab, 2014-15 and 2015-16 (N=30)

S.No.	Causes	Per cent HHs	
		2014-15	2015-16
1	Failure of crop/s	43.0	43.0
a.	Due to pests & diseases	43.0	43.0
b.	lack of access to irrigation water	-	-
c.	others specify	-	-
2	Due to natural calamities	-	-
a.	Cyclone effect	-	-
b.	Failure of rainfall/drought	-	-
c.	Accidental fire	-	-
d.	others specify	-	-
3	Inability to sell output	-	-
4	Well failures	-	-
5	Quarrel between the victim & others	3.0	3.0
6	Expectations of:	97.0	97.0
a.	Higher output	43.0	43.0
b.	Higher prices	33.0	33.0
c.	Loan waiving	10.0	10.0
d.	Relaxation of institutional credit	53.0	53.0
e.	Relaxation of non-institutional credit	63.0	63.0
7	Lack of information due to poor extension services	67.0	70.0
8	Delayed payment/ payment in instalments for the sold output	-	-
9	Lack of insurance for the cultivated crops	17.0	17.0

Indebtedness related causes of suicide were presented in table 4.4. A perusal of the Table showed that majority of the respondents viewed indebtedness as a major factor underlying the causes for suicides. The pressure from the tenure of loans sources (mainly money lenders) forced the farmers to the point of suicide. The moneylenders were observed to force the farmers to sell their land to repay their loans and even if after selling the land the whole amount is not repaid; he would start humiliating the farmers. The humiliated farmers resort to the ultimate act of committing suicide. The moneylenders are also facing the financial difficulties due to non-recovery of their debts. The per cent of respondents attributing the cause of suicide to institutional sources increased from 43 per cent to 47 per cent from

2014-15 to 2015-16 and during the same time the per cent of the respondents attributing the causes to non-institutional sources increased from 57 per cent to 63 per cent.

The main reason for the indebtedness from the institutional and non-institutional sources was due to exploitative non-institutional sources of finance (80%) followed by crop loans (47 %), non-agricultural loans (37%) and farm equipment loans (20%).

Table 4.4: Indebtedness related causes of suicides, sample households, Punjab, 2014-15 and 2015-2016

(N=30)

S.No.	Causes	Per cent HHs	
		2014-15	2015-16
1	Indebtedness ó Institutional & Non-Institutional		
a.	Due to crop loan	47.0	47.0
b.	Due to farm equipmentøø loan	20.0	20.0
c.	Due to non-agricultural loan	37.0	37.0
d.	Due to non-institutional loan	77.0	80.0
2	Due to pressure from institutional sources	43.0	47.0
3	Due to pressure from non-institutional sources (mainly money lenders)	57.0	63.0

The social, farming related and indebtedness related causes were ranked as per the responses of the sampled families as given in table 4.5. As far as the social causes were concerned suicides were largely attributed to the family problems and commitments (37%) followed by poverty (30%). Illness and fall in social reputation were seen as a marginal factor as causes of suicides. In the farming related causes of the suicide, a majority of respondents attributed it to failure of crop (43 %) followed by fall in expectations of higher output/price (40%). The other factors such as natural calamities, inability to sell output, quarrels or lack of extension services (67%) in the village were not perceived to be the major factors contributing to the suicide.

However, majority of the respondents attributed the cause of the suicide to indebtedness with around 87 per cent of the respondents blaming the pressure from institutional and non-institutional sources of indebtedness. Perhaps, it was indebtedness, which couldøve been caused by various other factors, leading to the victims finding no other way than committing suicides.

Table 4.5: Ranking of the social, farming and indebtedness related causes of suicides, sample households, Punjab, 2015-16

(N=30)

Causes	S.No.	Causes	Per cent HHs	Ranking as per answer
Social	1	Family problems/Commitments	37.0	1
	2	Poverty	30.0	2
	3	Illness	10.0	3
	4	Fall in social reputation	10.0	3
	5	Drug abuse/Alcoholic addiction	7.0	5
	6	Property dispute	3.0	6
	7	Marriage related issues	3.0	6
Farming related	1	Failure of crop/s	43.0	1
	2	Fall in expectations	40.0	2
	3	Lack of extension services	7.0	3
	4	Due to natural calamities	7.0	3
	5	Quarrel between the victim & others	3.0	5
	6	Inability to sell output	-	
	7	Well failures	-	
	8	Delayed payment/ payment in instalments for the sold output		
	9	Insurance for the cultivated crop		
Indebtedness related	1	Indebtedness ó Institutional & Non-Institutional	87.0	1
	2	Due to pressure from institutional sources	7.0	2
	3	Due to pressure from non-institutional sources (mainly money lenders)	3.0	3

4.3 Impact of suicide on family members

The impact of suicide on a household has been given in table 4.6. A suicide in the family not only caused insecurity in the family but also in many cases led to the stopping to agricultural activities. Also, in many cases a suicide robbed a family of an earning member which in turn had its consequences on the economic well-being of the family. A piece of land including other assets were definitely was sold after a suicide happened in the family, but the serious consequences of the suicide was its effect on other family members who had a tendency to slip into depression or fell seriously ill after witnessing a distressing incident in the family.

Table 4.6: Impact on victim household after committing suicide, sample households, Punjab, 2015-16

(N=30)

S.No.	After effect	Per cent HHs	Ranking as per answer
1	Family member/s under depression	37.0	1
2	Insecurity in the family	37.0	1
3	Agricultural activities stopped	30.0	3
4	No earning member	27.0	4
5	Family member/s fell seriously ill	23.0	5
6	Other assets sold	20.0	6
7	Schooling of the children stopped	7.0	7
8	Postponement of son/daughter's marriage	3.0	8

4.4 Suggestions from families to avert suicides in future

Table 4.7 outlines various suggestions to prevent suicides in the future. The increase in non-farm employment was the most important suggestion, opined by 63 per cent of the respondent households. Possibly engaging the labour in productive work rather than as disguised unemployed in agriculture would lessen the incidents of suicides in the farming sector.

Table 4.7: Suggestions to prevent the suicides in future, sample households, Punjab, 2015-16

(N=30)

S.No.	Suggestion	Percent HHs	Ranking
1	Increase in non-farm employment opportunities	63.0	1
2	Regularization of non-institutional credit by Govt.	27.0	2
3	Increase MSP for all crops	20.0	3
4	Hike in input subsidies	13.0	4
5	Crop insurance	10.0	5
6	Compensation for crop damage/losses should at least meet input costs	7.0	6
7	Provision of free education for children	7.0	7
8	Crop diversification	3.0	8
9	Supply of better quality inputs	3.0	9
10	Health insurance	3.0	10
11	Increased role of social institution	5.0	11

It was also believed that the regularization of non-institutional credit by the Government would help in lessening the incidents of the suicides, as generally money lenders were found to be charging exorbitant rate of interest, which pushed a famers in to vicious circle of debtness. Other suggestions put forward to prevent the suicides were increase in MSP for all the crops thereby ensuring higher income to the farmers in a good crop season and hike in input subsidies. The agriculture department should

have the strict vigilance on the poor quality of seeds and pesticides being supplied by the dealers in the state. The sale of good quality seeds and pesticide through cooperative societies should also be encouraged.

Several other suggestions were also given by the respondent households such as crop insurance to overcome any unforeseen calamities, compensation for crop damage during a bad crop year or pest/disease attack, provision of education for the children of the farmers, crop diversification etc.

4.5 Summary

In the affected families, it was noticed that even though the victim was sufficiently mingling with the family, community and the neighbourhood but the sleep pattern of the victim was misaligned. A change noticed in the food consumption of the victims, as they were consuming less food than usual. As far as the social causes were concerned, there were largely attributed to the family problems and commitments (37%) followed by poverty (30%). In the farming related causes of the suicide, a majority of respondents attributed the cause to failure of crop (43%) followed by fall in expectations of higher output/price (40%). However, majority of the respondents attributed the cause of the suicide to indebtedness with 87 per cent of the respondents blaming the institutional and non-institutional sources of indebtedness. A suicide in a family not only caused insecurity in the family but also in many cases led to the halting to agricultural activities. Also, in many cases a suicide robbed a family of an earning member which in turn had its consequences on the economic well-being of the family. A part of land as well as assets were definitely sold after a suicide happened in the family but the serious consequences of the suicide was its effect on other members who had a tendency to slip into depression or fell seriously ill after witnessing a distressing incident in the family. The increase in non-farm employment was the most important suggestion, opined by 63 per cent of the respondent households to check such unfortunate incidents. Possibly engaging the labour in productive work rather than as disguised unemployed in agriculture would lessen the incidents of suicides in the farming sector. It was also believed that the regularization of non-institutional credit by the Government would help in lessening the burden and thus incidents of the suicides. Other suggestions put forward to prevent the suicides were increase in MSP for all the crops, crop insurance to overcome any unforeseen calamities, compensation for crop damage during a bad crop year or pest/disease attack, provision of education for the children of the farmers, crop diversification etc.

Chapter V

Conclusions and Policy suggestions

Farmer suicide has turned out to be a major socio-economic concern in India that has resulted in profound implications on the quality of life of farmers. According to the United Nations Commission on Sustainable Development (UNCSD), one farmer committed suicide every 32 minutes between 1997 and 2005 in India. Media reports suggest that the suicide among the farming community was more pronounced in the cotton belt of state, which comprised the districts of Sangrur, Bathinda, Mansa and Faridkot. Review of literature revealed that the spurt in suicides in the state may be attributed to the changing agrarian structure, failure of crops particularly cotton in the recent years, increasing debt among the farming community, increasing unemployment, depleting water resources and increasing spending on social ceremonies by the people in the state. The study was undertaken to give a fresh look to the socio-economic causes of distress faced by the farming community and to document the market conditions and infrastructure availability in product as well as factor markets with the following specific objective.

- To analyse the incidence and spread of farmer suicides in selected states and to map the hot-spots of suicide;
- To study the socio-economic profile, cropping pattern and profitability of victim farm households.
- To study the causes leading to farmers' suicides.
- To recommend suitable policies to alleviate the incidence of farmers' suicides.

Methodology

The study is based on primary and secondary data. The primary data confined exclusively to those farmers who are cultivating - either their own land or on lease basis - at the time of survey. A sample of 30 victim families was taken to collect information about the family size, education level of the victim household, social group, cropping pattern, size of the land holdings, sources of irrigation, cost and returns from crop cultivation and so on. Besides, information regarding causes of farmers' suicides with special focus on the institutional and non-institutional credit, extent of indebtedness, coping strategies after the suicide incident and suggestions for preventing farmers' suicides was collected.

Farmers' suicide scenario in Punjab

- The intensity of suicides, as measured from number of farmers' suicides per lakh population as well as per lakh hectares of net sown area was comparatively higher at all India level as compared to Punjab state for different years under study. The number of farmers' suicides in

Punjab, which was merely 26 in the year 2003 showed more than 3 fold increase and reached to an alarming level of 98 suicides per annum in 2014.

Crop economy, credit and related issues

- For the present study, 30 respondents were contacted from the victim households. All the suicide victims belonged to Sikh religion in which 97 per cent were from general category and 3 per cent from schedule caste category. The age wise analysis regarding the suicide victims revealed that the victims were largely concentrated in the age group of 31-60 years (about 73%). Majority of the victims (70%) were literate. Further, 21 victims had their sons as heirs. Majority of the victims (73%) committed suicide by consuming poison. On an average, the existing family size of victims' family was 4.53. All the existing members of the family were dependent on farming for earning livelihood.
- Land holdings of the victims' families showed that 33 per cent had marginal farms, 27 per cent small farms, 17 per cent medium farms and 23 per cent had large farm size (more than 4 hectares). Overall, on an average, operational holding of the victims' families was 6.64 acres. Out of which, 3.70 acres land was of their own, 3.11 acres was leased in land and 0.17 acres land was leased out. Gross cropped area was 13.28 acres per household and the cropping intensity was 200 per cent. All the cultivated area had the irrigation facilities. Amongst the various sources of irrigation, about 33 per cent of area was irrigated through tubewell, about 9 per cent through canals and about 58 per cent area was irrigated through both tubewells and canals. The average annual income of the victims' families was about Rs. 1.94 lakhs, out of which about Rs. 1.65 lakhs income was generated from crop cultivation/agriculture, Rs. 600 from farm wage income, Rs. 18100 from dairy and animal husbandry, Rs. 6033 from services, Rs. 1666 income has been generated from other non farm activities. The average annual expenditure of victims' families was to the tune of Rs. 125900, out of which 56.29 per cent was annually spent on food items and 43.71 per cent was spent on non-food items. Total percent of expenditure to income was 64.85 per cent. There were two major crops in kharif season i.e. paddy and cotton. Out of total households, 23 had cultivated paddy in 6.26 acres with yield of 26.51 qtl per acres. The per acre gross return from paddy was Rs. 38443 with the total variable cost of Rs. 12211. About 13 households had cultivated cotton in 5.30 acres with yield of 0.90 qtl per acres. The per acre gross return from cotton was Rs. 3376 with the total variable cost of Rs. 7190, which was due to decreased productivity of cotton in the region due to the attack of white fly. Further, wheat was the major rabi season crop in the study area grown on about 47 per cent of the total cropped area during the season. All the households had cultivated wheat in 6.22 acres with yield of 16.70 qtl per acres. The per acre gross return of wheat was Rs. 28601

with total variable cost of Rs. 9761. In case of institutional loans, it was observed that 37 per cent households had availed loan of Rs. 95455 from Co-operative society for the purpose of farming. About 57 per cent households had taken loan from commercial banks in which 94 per cent households had taken loan for farming purpose, which was of Rs. 4.33 lakhs/household and 11 per cent households had taken loan of Rs. 8.47lakhs/household for non farming purpose. Amongst non institutional sources of loan, about 67 per cent respondents had taken loan from traders and commission agents for farming and non farming purposes.

Causes and after effect of suicide

- The victim's family observed that even he was sufficiently mingling with the family, community and the neighbourhood but the sleep pattern of the victim was misaligned. There was also a change noticed in the food consumption of the victims, as they were found consuming less food than usual. As far as the social causes were concerned, the causes of suicides was largely attributed to the family problems and commitments (37%) followed by poverty (30%). In the farming related causes of the suicide, a majority of respondents attributed the cause to failure of crop (43%) followed by fall in expectations of higher output/price (40%). However, a large majority of the respondents attributed the cause of the suicide to indebtedness with around 87 per cent of the respondents blaming the institutional and non-institutional sources of indebtedness. A suicide in a family not only caused insecurity in the family but also in many cases led to the stopping to agricultural activities. Also, in many cases a suicide robbed a family of an earning member which in turn had its consequences on the economic well-being of the family. Some land including other assets definitely was sold after a suicide happened in the family but the serious consequences of the suicide was its effect on other family members who has a tendency to slip into depression or fell seriously ill after witnessing a distressing incident in the family.

Policy suggestions

- The increase in non-farm employment was the most important suggestion, opined by 63 per cent of the respondent households. Possibly engaging the labour in productive work rather than as disguised unemployed in agriculture would lessen the incidents of suicides in the farming sector. It was also believed that the regularization of non-institutional credit by the Government would help in lessening the incidents of the suicides. The victim families who have take loan from the institutional sources, the recovery of such loans should be delayed by one crop season and this should be treated as interest free period. The victim families who have take loan from the non- institutional sources, these can be diverted to the institutional loan under the Debt

Swap scheme of NABARD. Crop failure and indebtedness may be taken as the most prominent criteria for the eligibility of the compensation of the suicide victim family.

- Other suggestions put forward to prevent the suicides were increase in MSP for all the crops, crop insurance to overcome any unforeseen calamities, compensation for crop damage during a bad crop year or pest/disease attack, provision of education for the children of the farmers, crop diversification etc. Besides the monetary compensation, the Govt. should also adopt the suicide victim family to provide the benefits of various other schemes in the state on priority basis. The family may be considered eligible for the benefits of BPL families, Atta dal scheme, MNREGA, family medical insurance, widow pension, grant for marriage of the wards of victims, scholarship/grant for the education of children and various subsidy schemes of the state agriculture department. Such families may be associated with Self Help Groups formed by ATMA/KVK or some other Govt. Agency so that the family members may be provided with the trainings to pursue subsidiary activities on the farms. A low rate Crop Insurance program can be initiated for these families at the plot level whose premium may be subsidized by 50%. The co-operative societies should provide the subsidy up to 50% on all the inputs sold through them.

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Appendix I: Comments on the draft report

1. **Title of the draft report examined:** Farmer Suicides in Punjab:Causes and Suggestions
2. **Date of receipt of the Draft report:** 6, January 2017
3. **Date of dispatch of the comments:** 17,January,2017
4. **Chapter-wise comments:**
 - Chapter 1:**
 - We appreciate your effort and interest in collecting information from 30 victim households instead of 10 as proposed in the proposal.
 - Chapter 2:**
 - Kindly adhere to the table (2.1, 2.2 & 2.3) formats sent by us as it helps in consolidation of state reports and accordingly modify the write-up.
 - Chapter 3:**
 - Strengthen the discussion of results
 - Include summary after table 3.8
 - Chapter 4:**
 - Check the estimation pertaining to Family problems/ Commitments in In Table 4.2 as it is not individual causes as not totaling to 47 per cent. Reasons may be mentioned in case same value is retained.
 - Check the estimation pertaining to Expectations in In Table 4.3 as it is not individual causes as not totaling to 97 per cent. Reasons may be mentioned in case same value is retained.
 - Chapter 5:**
 - Objectives and methodology can be removed as it is already given the first chapter.
5. **General comments.**
 - Although the report is as per outline provided, some more discussions required in important tables in chapter 4.
6. **Overall view on acceptability of report**
 - The draft report can be accepted for consolidation and further submission to the ministry after revising in accordance with the comments/suggestions. The soft copy of the revised report can be sent to us at the earliest as it helps in consolidating the state reports.

A.V Manjunatha
(ADRTC, Bangalore)

**Appendix II: Action taken report on the comments of draft report entitled
*Farmer Suicides in Punjab: Causes and Suggestions***

All the comments were taken into consideration while finalizing the report. These comments have been incorporated, wherever necessary, in the relevant chapters. The point-wise detail of the answers to various queries is as follow:

Chapter-I:

The Co-ordinator's appreciating words recognizing the author's rigorous efforts are duly acknowledged.

Chapter-II:

Despite our serious efforts, district-wise (table 2.1) and month-wise (table 2.2) number of suicides committed in the state along with compensation paid (table 2.3) could not be accessed. However, the related comprehensive available information compiled from National Crime Records Bureau (NCRB) has been duly presented in table 2.

Chapter-III:

Needful done.

Chapter-IV:

The estimated figures presented in tables 4.2 and 4.3 do not match with the number of respondents owing to the multiple responses pertaining to various causes of suicide, received from the victim families.

Chapter-V:

Objectives and methodology have been retained as per the latest guidelines issued by the Ministry of Agriculture and Farmers Welfare, Government of India, New Delhi.

As desired, discussion has been strengthened wherever required.

D.K. Grover
(Director, AERC, Ludhiana)