CHAPTER VI

SUMMARY, CONCLUSIONS AND SUGGESTIONS
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Rice is the world’s leading food crop. Among the rice growing countries, India has the largest acreage in the world. But, in production, India comes next to China. To meet the demand of increasing population, it is necessary to increase the production of rice in the same ratio. Increase in the productivity per unit area can only do this, as there is not much scope for increasing area under rice. In order to increase the overall productivity of the region, the special efforts are needed to intensify the work on rice production technology and transfer of improved technology to the farmers.

Rice is the most important food crop of India and especially in eastern India comprising of seven states viz., Assam, West Bengal, Orissa, Bihar, Madhya Pradesh, Chhattisgarh and Eastern Uttar Pradesh. The area under rice in these seven states account for about two thirds of the total rice area in India but contribute only about half of the total production. Bastar plateau in Chhattisgarh state is rice dominated and covers an area of 2.5 lakh hectares with the productivity of 1450 kg ha\(^{-1}\). It indicates that the productivity of paddy crop in Bastar district is very low in comparison to state (1800 kg ha\(^{-1}\)) and national (2000 kg ha\(^{-1}\)) average. A wide gap exist in the productivity of rice which has to be monitored properly to enhance the production of not only rice but also other minor millets which are important in the diet system of
tribal people. The cultivation is governed by mainly socio-economic, socio-psychological, personnel and technological factors. Now a days, we have packages of new technologies for obtaining higher yield in various environments and locations. Efforts are being made to disseminate these improved technologies to the tribal farmers. It is, therefore, essential to study that how far the tribal community has been changed in the light of present agricultural technologies.

Looking to the importance of rice in the diet of tribal people and majority of area in the kharif season under rice, it is pertinent to focus on this crop to boost its productivity in the Bastar region. In view of these facts, the present study entitled "A study on socio-economic upliftment of tribal farmers through adoption of recommended rice technology in Bastar district of Chhattisgarh" was carried out during 2004 and 2005 with the following specific objectives:

1. To study the socio-personal and socio-economic characteristics of the contact and non-contact tribal farmers,

2. To study the psychological and communicational characteristics of the contact and non-contact tribal farmers,

3. To find out the level of knowledge of the contact and non-contact tribal farmers about recommended paddy production technology,

4. To study the extent of adoption of recommended paddy production technology by the contact and non-contact tribal farmers.
5. To study the technological gap in adoption of recommended technology of paddy crop among the contact and non-contact tribal farmers, and

6. To study the constraints and ascertain suggestions of contact and non-contact tribal farmers to overcome the constraints associated with technological gap.

The study was conducted in Bastar district of Chhattisgarh state. The Bastar district consists of 14 blocks. All the blocks are denoted as tribal blocks by the Government. Five blocks were selected for the present study on the basis of their geographical distribution in different directions viz. North, South, East, West and central part. All the selected blocks possess more than 67 per cent of the tribal population growing paddy as main crop. From these selected five blocks, 40 RAEO circles were selected using proportional allocation with simple random sampling method. From each selected RAEO circle, six contact tribal farmers and six non-contact tribal farmers were selected. Thus, a sum of 480 respondents (240 contact and 240 non-contact tribal farmers) constitute the sample for the present study. The data were collected by personal interview method with the selected respondents using pre-structured interview schedule.

The independent variables included in the study were age, education, type of family, size of family, type of house possess, material possession, migration habit, land holding, social participation, occupation, subsidiary occupation, income level, availability of irrigation, source of irrigation.
availability of resources, credit facilities, socio-economic status, knowledge about recommended rice production technology, attitude towards recommended modern agricultural technology, risk preference, cosmopolitanism, source of information, contact with extension agents and exchange of information. The dependent variables considered in this study were extent of adoption of recommended rice production technology and level of productivity of rice crop.

In order to find out the level of knowledge and extent of adoption in relation to recommended rice production technology, 11 practices viz. improved sowing method of rice improved variety, seed treatment, nursery method, seed rate, time of sowing, fertilizer doses, irrigation, weed control, insect & their control and disease & their control and major disease & their control were considered. A three point rating scale containing “No knowledge/adoption”, “Partial knowledge/adoption” and “Complete knowledge/adoption” with scores of 0, 1 and 2, respectively was employed to know the knowledge/adoption gap among the respondents regarding selected practices of recommended rice production technology. Statistical techniques used were frequency, percentage, t-test, Z-test and correlation measures.
The major findings of the study are summarized as under:

6.1 Socio-personal and socio-economic characteristics of the respondents

Maximum percentage of the respondents were belonged to middle age group (50% contact tribal farmers, 45.83% non-contact tribal farmers), illiterate category of education (52.08% contact tribal farmers, 55.42% non-contact tribal farmers), nuclear family type (70.0% contact tribal farmers, 75.0% non-contact tribal farmers), medium size of family (69.17% contact tribal farmers, 62.92% non-contact tribal farmers). The most of the respondents had kachha house (56.67% contact tribal farmers, 62.92% non-contact tribal farmers) and low level of material possession (70.0% contact tribal farmers, 77.08% non-contact tribal farmers). Most of the respondents were of no migration habit (67.92% contact tribal farmers, 61.6% non-contact tribal farmers). The male migratory were in majority (17.08% contact tribal farmers, 17.08% non-contact tribal farmers). The majority of the tribal farmers (14.16% contact tribal farmers, 13.33% non-contact tribal farmers) migrated out of state for one season particularly in *rabi* season.

The larger percentage of the respondents (48.75% contact tribal farmers, 42.50% non-contact tribal farmers) had small land holding (1-2 ha), low to medium level of social participation (40.00% contact tribal farmers, 41.25% non-contact tribal farmers). 2 - 4 occupation category (81.67% contact tribal farmers, 71.67% non-contact tribal farmers), low (Rs. 12000 - 24000) to
very low (< Rs. 12000) income level (39.16% contact tribal farmers, 48.33% non-contact tribal farmers), nil to partial availability of irrigation (66.67% contact tribal farmers, 71.25% non-contact tribal farmers), low level of irrigation (70.42% contact tribal farmers, 76.25% non-contact tribal farmers), partial availability of resources (48.33% contact tribal farmers, 56.25% non-contact tribal farmers) and medium to low socio-economic status (61.67% contact tribal farmers, 67.50% non-contact tribal farmers). The respondents in majority (55.42% contact tribal farmers, 51.67% non-contact tribal farmers) utilized institutional sources for credit facility. Most of the respondents (75.00% contact tribal farmers, 80.41% non-contact tribal farmers) were engaged in collecting and selling of the forest products as the subsidiary occupation.

6.2 Socio-psychological and communicational characteristics of the respondents

The majority of the respondents (53.75% contact tribal farmers, 51.25% non-contact tribal farmers) had moderate attitude towards recommended modern agricultural technology and majority of the respondents (51.67% contact tribal farmers and 49.58% non-contact tribal farmers) had medium risk level and low cosmopoliteness (42.50% contact tribal farmers and 50.42% non-contact tribal farmers).

The majority of the respondents utilized friends (67.50% contact tribal farmers, 73.75% non-contact tribal farmers), RAEOs (81.67% contact
tribal farmers), Kisan mela (56.25% non-contact tribal farmers) and radio (70.83% contact tribal farmers, 63.33% non-contact tribal farmers) to receive the information of recommended rice production technology. The majority of the respondents had low level of extension contact with extension agent (69.58% contact tribal farmers, 76.25% non-contact tribal farmers) and had medium level of exchange of information (59.58% contact tribal farmers, 54.58% non-contact tribal farmers) regarding recommended rice production technology.

6.3 Level of knowledge and knowledge gap among the respondents in relation to recommended rice production technology

Approximately half of the respondents (51.67% contact tribal farmers, 49.58% non-contact tribal farmers) had medium knowledge level of rice production technology. Knowledge level of contact tribal farmers was higher than non-contact tribal farmers.

The majority of contact tribal farmers (52.92%) were having the knowledge of time of sowing under complete knowledge category. Under partial knowledge category, the majority of contact tribal farmers (59.17%) were having the knowledge of irrigation application followed by improved variety (58.33%), seed treatment (56.67%), seed rate (55.83%), improved nursery (55.42%), fertilizer application (55.42%), improved sowing method of rice (55.00%) and major insects and their control (47.08%). Under no knowledge category, the majority of contact tribal farmers (49.67%) had no
knowledge of use of weedicides followed by major diseases & their control (47.08%).

On the contrary, maximum percentage of non-contact tribal farmers (31.67%) under complete knowledge category was having the knowledge of time of sowing. In partial knowledge category, the majority of the non-contact tribal farmers (56.25%) had the knowledge of application of irrigation followed by improved nursery (55.83), improved variety (55.42), fertilizer application (54.17%), seed rate (53.75%), time of sowing (52.50%) and improved sowing method of rice (51.67%). In no knowledge category, the majority of the non-contact tribal farmers reported that they have no knowledge of use of weedicide (55.42%) followed by major diseases and their control (52.92%), seed treatment (49.58%) and major insects and their control (47.50%). The percentage of contact tribal farmers under complete knowledge and partial knowledge categories was higher in comparison to non-contact tribal farmers. That is why, knowledge gap of contact tribal farmers (47.99%) in relation to the selected practices of recommended rice production technology was low in comparison to non-contact tribal farmers (57.67%). The t-test proves that there was significant difference between the knowledge gaps of the contact tribal farmers and non-contact tribal farmers.
6.4 Extent of adoption and adoption gap among the respondents is relation to recommended rice production technology

Most of the contact tribal farmers (51.67%) are adopting time of sowing under complete adoption category. Under partial adoption category, the majority of contact tribal farmers (58.75%) are adopting major diseases & their control followed by major insects and their control (57.92%), irrigation application (55.83%), improved nursery (55.00%), fertilizer application (53.33%), improved sowing method of rice (52.92%), seed rate (49.58%), improved variety (49.17%) and seed treatment (44.17%). Under no adoption category, the majority of contact tribal farmers reported that they are not adopting use of weedicides. On the contrary, maximum percentage of non-contact tribal farmers (25.00%) under complete adoption category was adopting time of sowing. In partial adoption category, the majority of non-contact tribal farmers (56.67%) are adopting application of irrigation followed by time of sowing (55.83%), improved nursery (55.42%), fertilizer application (55.42%), seed rate (52.92%), improved sowing method of rice (47.92%), Seed treatment (47.50%), improved variety (45.00%) and major insects and their control (45.00%). In no adoption category, majority of non-contact tribal farmers (80.83%) are not adopting use of weedicides followed by major diseases and their control (54.17%) and major insects and their control (48.33%).

The percentage of contact tribal farmers under complete and partial adoption categories was higher than non-contact tribal farmers. That is why,
adoption gap of contact tribal farmers (52.54%) in relation to recommended rice production technology was low in comparison to non-contact tribal farmers (61.93). Application of t-test shows highly significant difference between the adoption gaps of the contact and the non-contact tribal farmers.

6.5 Level of productivity of rice crop

Most of the contact (54.17%) and non-contact (50.42%) tribal farmers in the study area were taking medium level of productivity of rice crop (10-20 q ha\(^{-1}\)). This was followed by low level of rice productivity. Whereas, high level of productivity of rice was reported by least number of contact and non-contact tribal farmers. However, the productivity level of rice crop was slightly higher in contact tribal farmers in comparison to non-contact tribal farmers.

6.6 Relationship between socio-personal, socio-economic socio-psychological and communicational characteristics with extent of adoption

The various socio-personal, socio-economic and social-psychological characteristics like, education, contact with extension agents, availability of resources, credit facilities, level of knowledge, availability of irrigation, socio-economic status and land holding of both contact and non-contact tribal respondents were found positive and highly significant at 0.01 per cent of probability level with their extent of adoption. However, migration habit and age were found negatively significant with the extent of adoption by both contact and non-contact tribal farmers.
6.7 **Constraints and suggestions of the respondents to reduce the technological gap**

The major constraints together faced by both contact and non-contact tribal farmers in reducing the technological gaps were grazing problem, lack of irrigation facilities and erratic rainfall. In personal constraints, small size of landholding and lack of education was the major constraint faced by contact and non-contact tribal farmers, respectively. Under economical constraints, majority of contact tribal farmers reported for requirement of more investment, whereas, majority of non-contact tribal farmers reported for lack of credit facilities as the most important constraints in reducing the technological gaps.

As far as suggestions for reducing the technological gaps are concerned, majority of the contact tribal farmers highlighted for adequate irrigation facilities, which was followed by seed and fertilizer should be available at subsidized rate and proper marketing facility should be available. On the contrary, majority of non-contact tribal farmers suggested for need of adequate irrigation facilities as the most important system which was followed by farmers training should be organized at village level and also stressed for proper marketing facility.
CONCLUSIONS

The present study conducted in Bastar district of Chhattisgarh state on socio-economic upliftment of tribal farmers through adoption of recommended rice technology can be concluded as under:

- The majority of the contact and non-contact respondents in the study area i.e. Bastar region belonged to middle age group, illiterate, having nuclear type and medium size of family with kachcha type of house. They were having medium risk preference, low cosmopolitaness, carrying out 2–4 occupations and belonged to very low to low income groups (Rs. 12000–24000). Majority had no availability with low sources of irrigation and nil to partial availability of other resources for farming/agricultural activities. Majority of the respondents are not migrating from their place but the population, which are migrating to other state are found to migrate only in the post-rainy season (rabi) because of lack of irrigation facilities and rain dependent monocropping system in the kharif season only.

- Most of the respondents had medium knowledge level of recommended rice production technology, moderate attitude towards Recommended Modern Agricultural Technology (RMAT), low to medium level of social participation, medium to low socio-economic
status, utilized institutional sources for credit facilities, low level of extension contact with extension agents and medium level of exchange of information regarding recommended rice production technology.

- The most of respondents in the study area of Bastar district were of no migration habit. The male migratory were in majority. The maximum of the tribal farmers migrated out of state for one season particularly in rabi season.

- The respondents in majority utilized institutional sources of credit facility, utilized friends and progressive farmers, RAEOs, kisan mela and radio to receive the information of recommended rice technology. Most of the respondents were engaged in collecting and selling of the forest products as the subsidiary occupation.

- The major contributing practices for knowledge and adoption gaps were major diseases and their control, use of weedicides, major insects and their control, seed treatment and improved nursery. Significant difference was investigated between the technological gaps of contact and non-contact tribal farmers.

- Most of the contact and non-contact tribal farmers had attained medium level of productivity of rice crop (10-20 q ha⁻¹). The
productivity level of contact tribal farmers was slightly higher than the non-contact tribal farmers.

The various characteristics like education, contact with extension agents, availability of resources, credit facilities, level of knowledge, availability of irrigation, socio-economic status and land holding of the respondents were found positive and highly significant with their extent of adoption. The risk preference, material possession, sources of information, exchange of information and annual income of the respondents had positive and significant relationship with their extent of adoption. In addition, attitude towards RMAT of the contact tribal farmers was positive and significantly correlated with their extent of adoption.

The most serious constraints faced by the contact and non-contact tribal respondents in reducing technological gap were lack of irrigation facilities, grazing problem and erratic rainfall. The other major constraints were small size landholding and requirement of more investment for contact tribal farmers, whereas lack of education and lack of credit facilities were the other major constraints reported by non-contact tribal farmers.

The most important suggestions as perceived by the contact and non-contact tribal respondents were availability of adequate
irrigation facility, availability of seed and fertilizer at subsidized rate, proper marketing facility, farmers training should be organized at village level and credit facility at proper time.

In Bastar region, the tribal farmers in both the categories i.e. contact and non-contact groups are still following traditional culture and shows less inclination towards the adoption of modern improvement in civilization and agricultural development. They are fond of using home made liquor, made of rice and minor millets, mahua, salfi, tadi etc. and like to meet out their daily needs by forest produce like salseed, mahua, tendu, imali, dhoop, mushroom, bamboo tillers and different types of tubers and seasonal fruits. Tribals are more religious and follow different type of local festivals with full zeal and interest. During the study, it was observed that the contact tribal farmers are adopting the new technologies slowly and gradually in better way than non-contact tribal farmers. The social upliftment of tribal farmers in the study area are quite slow in comparison to other parts of the country owing to their minimum requirements for life. However, due to impact of extension agencies, there is improvement in the living standards and adoption of new agricultural practices by the contact tribal farmers in comparison to non-contact tribal farmers.
SUGGESTIONS

Considering the findings of the study, further works should be initiated to understand the socio-economic upliftment of tribal farmers through adoption of recommended rice technology in Chhattisgarh. Further refinement is needed to generate more informations related to upliftment of tribal farmers.

The suggestions for further works are as follows:

- The study was confined to Bastar district of Chhattisgarh. There are other districts viz. Dantewada, Kanker, Surguja etc. which are tribal dominating areas in Chhattisgarh state. Similar study may be conducted in these districts to confirm the results of the present study.

- The study may be conducted with socio-personal, socio-economic and socio psychological characteristics to observe the effects of extent of adoption among the respondents regarding recommended production technology of cereals, millets, pulses, oilseeds etc.

- The study needs to be carried out to study the technological gap among the tribal farmers with regards to other practices of the recommended rice production technology.

- More application of Z-test may be employed to study the significance of the difference between contact and non-contact tribal farmers.

- Similar study may be repeated to study the difference between technological gaps of marginal and small tribal farmers or tribal and non-tribal farmers.