IMPACT OF MAIZE CULTIVATION IN NABARANGPUR DISTRICT

A Study in Select Pockets

Research:

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A note from the editor

Nabarangpur district has now become one of the leading production areas of hybrid maize in the country. However, this credit was achieved neither due to any indigenous practice nor due to any indigenous population. Both hybrid maize and its promoter community were introduced to the district just few decades ago. Soon they took over the local agricultural pattern, practice, and economy to such as extent that even the tribal communities preferred to spare their essential millets for maize. Cash benefit dominated over all other concerns, and the district got slowly converted into a food-insecure region.

This concerned RCDC which has been working in the district since 1990s. We also knew the environmental impacts of the intensive maize cultivation: the pollution of chemical farming. Our objective was not simply to understand the dynamics of this cultivation, for we wanted to intervene for the socio-ecological security of the indigenous communities there. As a pilot initiative our focus was on the Ekamba GP of Jharigaon block where we are implementing the Save Eastern Ghats-Odisha Ecosystem project since 2012. It was in this backdrop that we decided to go for a small study on the issue, and Pitabas Behera, the then Programme Officer in charge of the Ekamba GP project activities was given the responsibility of conducting the study based on survey formats designed by the undersigned. He was assisted by some field workers for conducting the survey. The actual study started almost in December 2012 and Pitabas submitted his draft report in February 2013 while leaving RCDC. He was succeeded by Sai Prasad Pattnaik who seriously started RCDC's intervention for revival of ragi cultivation in the maize areas of Ekamba GP. Sai Prasad also analysed the cost-benefit of maize versus ragi. The present report is the outcome of the efforts of both these officers.

The study could be possible courtesy Misereor-KZE, Germany. And the follow up at field level to mobilize the local communities undo the extremes of maize cultivation was possible courtesy Ecosystem Alliance, the Netherlands. We sincerely acknowledge the kind support of both these agencies.

The limitations of this study report are obvious as the scope of a comprehensive study was also limited. Still we hope that it will be useful for the policy makers and development workers.

Bikash Rath
Sr. Programme Manager

Every feasible space is used for drying the harvest, be it a road or an outcrop

Contents

1. Introduction :

Since 1993, RCDC (Regional Centre for Development Cooperation) has been pursuing work focused on natural resource management and livelihoods for sustainable socio-economic development in some of the disadvantaged areas of Odisha. The organisation has conducted some outstanding research related to the socio-ecological and socio-economic issues of public interest. Such research allows the organisation to gain a greater understanding of a broad range of development issues. The findings are being used to refine the activities, reinforce campaigns, enrich publications and help to strategise for the future.

RCDC started its work in the Nabarangpur district in the year 1994 with the initial focus on community forestry and livelihood. At present it is working intensively in Jharigan, Dabugam and Kosagumuda blocks, covering 325 villages.

Since the last 10-15 years, hybrid maize cultivation has taken over the traditional crops of the Nabarangpur district to a large extent. The main area of maize cultivation comes under the Umerkote and Jharigan Blocks. RCDC has been concerned to see that this cultivation expands at the cost of both the ecology of the area, and also the social and socioeconomic strength of the area. Large areas of good forest have been cleared for this cultivation, and use of pesticides has increased environmental pollution in the area threatening the very health of the farmers. Moreover, the innocent farmers do not understand that despite an encouraging cash flow the cultivation doesn't actually offer a good return in terms of net gain. Since RCDC doesn't see such kind of a practice to be a sustainable development option, hence it was decided to conduct a small study on the real dynamics of maize cultivation in the region, and for this purpose Umerkote and Jharigan blocks were selected for the survey.

2. Brief profile of the area, and maize cultivation

Nabarangpur was constituted as a district on 2nd October 1992, after Koraput was vivisected into four parts, each forming a new district. History of Nabarangpur is very much close and interlinked with the Koraput district, with which it shares its language, lifestyle, heritage, flora, fauna and climate though the topography is a bit different with greater stretch of plain lands available in the former.

The district consists of 10 CD blocks with a population of 1,218,762[1].

The district is predominantly agricultural. About 90% population here depends on farming to earn their living. Crops like paddy, maize, sugarcane, groundnut, biri, mung, arhar, ragi, and sesame are grown in the district. Due to lack of irrigation facilities most of the agriculture is rainfed.

Maize is one of the predominant crops of the world. It is the third most traded cereal, after wheat and rice. Maize is used for three main purposes: animal feed, food, and in industry. In India majority of the product are used as cattle feed.

The cultivation of the maize was started 15-20 years back by the Bengali refugees who came to this area during the Indo-Pak war of 1971. Under their entrepreneurship it got promoted to such an extent that now it is supposed to cover more than 50 thousand hectare[2] in this district. Initially, only the Bengalis were cultivating to a limited extent; but they gradually encouraged the locals to adopt maize cultivation as for the Bengali promoters it was not simply a cultivation, but a business in which they also acted as middlemen or bulk-suppliers, linking the local production with the other states. For the locals maize meant a better income, which lured them to this.

3. The study design:

(a) Objectives

The study aimed at understanding the following:

- Impact of the maize cultivation on the socio economic conditions of the farmers, especially the tribals.
- Impact on the biodiversity and other crops.
- Impact on the ownership of the resources like land, water and forest.
- Who benefits and what is the likely impact on other farmers?
- Possibilities of improving the situation of small and marginal farmers and ensuring the food and livelihood security.

[1] http://en.wikipedia.org/wiki/Nabarangpur_district

[2] Information received courtesy the District Agricultural Office, Nabarangpur suggest that the coverage on patta land is about 35248 hectare(Block-wise statistics are: Umerkote-9350 ha, Raighar-16018 ha, Jharigaon-7880 ha, and Chandahandi-2000 ha, Raighar being a Bengali centre) whereas that on encroached land is unknown.

(b) Methodologies

Selection of samples

The farmers were chosen from Jharigan and Umerkote Blocks for the study, as these were the important and major maize growing Blocks of the district. To evaluate objectives of the study, 200 farmers (10 farmers each from a village of one GP) covering big farmer, small and marginal farmer and share croppers were chosen. The required data were collected through personal interviews using the designed schedules.

Table-1: Sample sites

Block	GP	Village	Households	
			Type	Nos
Jharigan	10 Gram Panchayats	10 villages	Marginal farmer	20 nos
			Small farmer	20 nos
			Share cropper	20 nos
			Encroachers	20 nos
			Big farmer	20 nos
			Total	**100 HHs**
Umerkote	10 Gram Panchayats	10 villages	Marginal Farmer	20 nos
			Small Farmer	20 nos
			Share Cropper	20 nos
			Encroachers	20 nos
			Big Farmer	20 nos
			Total	**100 HHs**
Grand Total				**200 HHs**

Data collection

As per the developed questionnaire, 3 field investigators collected the primary data in the month of December 2012 from the selected 200 sample HHs. Besides, secondary data from GP and Block offices and agriculture office were collected to add value to the study and make an impartial analysis. The details of field data collected are given below:

Table-2: Population of the study area

Population	GP	Village	HH	Male	Female	Total
Jharigan	10	10	100	241	260	501
Umerkote	10	10	100	257	295	552
Total	**20**	**20**	**200**	**498**	**555**	**1053**

As shown in the table, the total population of the sample households is 1053 having a higher sex ratio.

Table-3: Caste-wise HH surveyed

	ST	SC	OBC	General	Total
Jharigan	85	9	3	3	100
Umerkote	82	8	9	1	100
Total	**167**	**17**	**12**	**4**	**200**

Thus the dominant population is ST.

Table-4: Land holding-wise farmer in maize cultivation

Block	Small farmer	Medium farmer	Share cropper	Big farmer	Total
Jharigan	54	19	2	25	100
Umerkote	57	22	0	21	100
Total	**111**	**41**	**2**	**46**	**200**

Hence, more than 50% of the farmers(sample survey) are small farmers.

Table-5: Chief occupation

Block	Agriculture	Labour	Total
Jharigan	98	2	100
Umerkote	100	0	100
Total	**198**	**2**	**200**

The chief occupation of the villagers is agriculture. Land encroachment in this area is very high. This is because of the promotion maize cultivation in the last two decades as told by the villagers during the focused group discussion

Table-6: Average land holding

Block	Patta land	Encroached land
Jharigan	4.07	2.02
Umerkote	3.6	3.4

Organising FGD

20 Focused Group Discussion were conducted in the selected 20 villages of Jharigaon and Umerkote Blocks to discuss the beginning, spread and impact of maize cultivation economically, socially and environmentally in the area.

Data analysis:-

The data collected were tested randomly and tabulated as well as analysed to get the findings of the survey. This has been done by the experts of RCDC.

4. Major findings of the study

4.1 The beginning of maize cultivation: -

The cultivation of the maize was started 15-20 years back by the Bengali refugees of Bangladesh war(1971). They are smarter than the local tribals, and being economically vulnerable as refugees they had to resort to some entrepreneurship that could help reduce this vulnerability. They chose maize cultivation for this purpose, and gradually expanded the same. Land being scarcely available to them they tried either to take the lands of local people on lease, or encouraged the latter to use their lands for maize cultivation. With reducing scope in traditional agriculture and increased scope of cash flow in the maize farming the locals too adopted the latter. Now 90 % of the households (both land holders and landless) are cultivating the maize.

Both in Jharigan and Umerkote Blocks, the farmers said that before the maize cultivation, their land was being used for cultivation of millets and/or oil seed. Now maize has replaced these crops. Table-7 shows that the cultivation area of millets and oil seeds has been decreased.

However, some other areas which were not suitable and barren during the early period are presently being used for maize cultivation. Those lands are mainly coming under forest land.

4.2 Land ownership and land use:-

The holding pattern of the sample area is that only a very few HH are having more than 10 acres of patta land. Majority of the farmers are marginal & small farmers, and many are cultivating over the encroached forest land they have applied for under FRA. Maize is cultivated in upland i.e. dangar. In the last one decade, the cropping area of maize has gradually been increasing whereas crops like millets, rice, and vegetables are in diminishing trend. As told by the respondents, they are getting huge amount of money from maize which is the main reason for adopting of maize.

The soil fertility has decreased by the chemical fertilizers though there is increase in yield per acre.

A view of the land use on the way to Karlasoda village

A large part of the original forest tract has been converted into agricultural fields. Even substantial part of the so-called waste lands has been used for maize cultivation. There is a great loss of natural biodiversity in the region, and small, isolated patches of good forest have been maintained in some villages because of community forestry.

4.3 Land mortgage:

Land mortgage is very common for maize cultivation. Many small and marginal farmers who are unable to cultivate their lands, or otherwise in a miserable situation requiring urgent financial assistance mortgaged their land to big farmers or share croppers for a relatively small amount of money. In every village, 20-30 % of cultivators are cultivating in the mortgaged land. However, no written agreement of mortgage was found during the field survey.

4.4 Impact on local biodiversity:-

The maize cultivation has caused a significant adverse impact on the local biodiversity. Many plant and animal species are either extinct or endangered.

The loss of biodiversity is partly due to deforestation and partly because of the chemical farming. Usually the traditional agriculture in these areas was devoid of chemical fertilizers and pesticides, but with maize intense chemical farming became a necessity.

The community forests are mostly sal forests some of which are almost purely sal. These isolated patches, despite being good forests, hardly attract any wild animal except for snakes and other such wildlife.

4.5 Land alienation:-

As happening elsewhere, the rich and influential have tried to grab the lands of the poor in many ways. What appears to be a virtual/temporary land alienation for some time may be assume a concrete status practically although not legally.

4.6 Cropping pattern before and after introduction of maize:-

In the early days, all the HHs were cultivating millets and oilseeds beside paddy as the main crop. However, maize has now replaced the traditional crops in most areas. If paddy still survives that is chiefly because rice is still seen as the main food, and also low land suitable for paddy are not suitable for maize. So, upland crops have been mostly replaced by maize.

Seed companies locally advertise this way for promotion of their seeds

The millet diversity has also been affected. Leguminous crops such as biri are cultivated to a small extent.

Table-7: Changes in cropping pattern

Block	Major crops of pre-maize period			Major crops of maize period		
	Paddy	Millets	Oil seeds[3]	Paddy & maize	Maize	Oil seeds & Millets
Jharigan	1.9	1.04	1.1	2.1	4.6	0.04
Umerkote	1.92	1.4	1.7	2.4	5.2	0.07

4.7 Investment and source:-

The cost of maize cultivation is very high as the cultivators are using high cost inputs such as hybrid varieties of seed and chemical fertilisers. Companies like Mansanto and Mahico are promoting heavily such seeds. To meet the expenses, more than 95 % farmers are completely dependent on Sahukars(moneylenders) for investment in maize cultivation.

[3] Usually castor

Our survey revealed that in the Jharigan Block only 8% of cultivators started maize cultivation out of their own investment and rest with borrowed money. On the other hand in the Umerkote Block 28% households made it either on their their own or by taking loan from from financial institutions whereas the rest took loan from local money lenders.

As far as the yield of maize is concerned, the yield per acre of maize has increased. This is because of heavy use of chemical fertiliser like DAP, Urea, Potash, Sulphate, and Zink etc., alongwith improved seed varieties.

4.8 Value chain:-

Local processing limits itself maximum to sun-drying of maize followed by deseeding and cleaning of the stock. The Bengalis use semi-mechanized tools for winnowing, etc. whereas the indigenous farmers normally resort to selling the dried maize. The local farmers do not have any clear idea about the end use of this maize.

Almost all the harvest is purchased by the local traders. There is no facility of Mandi(market yard) or any government structure. As a result of this, the farmers are being exploited by the traders and money lenders.

Truckloads of corn are transported to Raipur, Kolkata, Cuttack and other major town of the country via Jharigaon and Umerkote.

Not a single respondent was found aware about different uses of maize like baby corn. However, by guess, they told that it may be used as a cattle feed.

4.9 Involvement of women and children:-

Women and children are involved in various stages of maize cultivation including post-harvest management. Children are used mostly during the sowing and harvesting. As a result, their studies are hampered to some extent.

4.10 Impact on health:-

The respondents could not relate the health hazards with maize cultivation. However, some farmers told that, during the farming, they experienced the bad

smell of fertilisers and/or pesticides. Many types of skin disease, and eye problem are reportedly experienced by the villagers at present.

4.11 Impact on water use:-

Only the rain water is sufficient for the maize as this is not a water-intensive crop. But in the last 10 years, the annual average rainfall has decreased. The water level has also subsided. While the reduced groundwater potential may be due to low rainfall (caused by deforestation and climate change), contamination of water due to chemical farming is likely.

4.12 Cash flow:

The respondents of our survey told us that the cash inflow to their house has increased by 8-10 times. However, they seemed ignorant about the net gain which doesn't seem much promising.

4.13 Encroachment:-

The land encroachment has increased as a result of which many forests have already been degraded. Even government waste lands do not seem to be spared in many areas. Moreover, some perennial water bodies were transformed into cultivable land.

4.14 Money lending and exploitation:-

The money lending process and exploitation by the rich and Mahajans has increased.

4.15 Food security:

In the early period, all the farmers prioritized their food security and cultivated millets and other crops for this purpose. Now, the focus is on financial security and maize is seen as the key to this. Hence, traditional harvests such as millets are available to a small extent now a days and the farmers do not mind being heavily dependent on the market for meeting the household needs of the same.

4.16 Impact on village forest:-

In all the study villages, the area coverage of village forest has been decreased. Those areas were encroached by the local inhabitants and used for maize cultivation. So there is an adverse impact of maize on the forest coverage.

4.17 Threats:

Draught has been a risk factor both for the pre-maize and post-maize period. In addition, there is also risk of distress sale, crop failure due to disease, etc..

4.18 Socio-economic impact:-

Poverty has slightly decreased, but social conflict has been increased.

4.19 Cultural impact:-

No major impact of maize cultivation on the culture and tradition has been reported.

4.20 Future planning of maize cultivation:-

Regarding the future plan, more than 90% respondents are interested to continue the maize cultivation and increase the cultivation area. They want government support in the form of MSP, procurement by government, and institutional credit support. Very few have shown disinterest in maize, and want to cultivate indigenous crops like millets and oil seeds.

5. Conclusion:

The maize-mania of Nabarangpur district can be compared in one way or the other with similar trends in cotton, lemon grass, and other such cash crops elsewhere in the state/country. If cotton became a popular choice partly because of the want of irrigation, then maize also thrived partly due to the same reason. The local farmers, who mostly have uplands, found maize as the best available option for economic security than the traditional indigenous crops. And it was natural for them to make the best possible use of this choice, so they did not hesitate for chemical farming. Unfortunately the government (the Agriculture Department in particular) did not see this as an issue, or a failure to promote sustainable agriculture and food security. Rather it took the maize-craziness as an agricultural success. Needless to say the Department ignored sustainability and food & nutritional safety as well as security for profitable land use. This is what makes the matter critical, for it indicates a dangerous loophole at the policy level. It is high time that when productive land resources are fast diminishing under the expansion of mining, industrialization, urbanization, or other factors optimum and sustainable use of our productive lands is effectively ensured through both policy changes and promotion of best practices.

Annexure-1

RCDC's endeavour to revive indigenous crops in the maize country

Nabarangpur, which by its literal meaning suggests a diversity(navaranga or nine-colours), is actually fast losing its biodiversity under the expanding kingdom of hybrid maize, a crop introduced in the region few decades ago and now chiefly controlled by the outsiders. The maize-mania has captured the tribal mind to such as extent that they prefer to cultivate maize at the cost of their indigenous food security, despite some other dangerous impacts. This is how even ragi, the most popular and nutritious tribal food, has been replaced with maize in most cases.

RCDC, a non-profit organization working in the Ekamba GP of Jharigaon block has been trying to facilitate restoration of the lost ecosystem in the GP where maize has taken over forests and traditional crop lands to a large extent. Through its Save Eastern Ghats-Odisha Ecosystem programme supported by Ecosystem Alliance RCDC started persuading the villagers to grow ragi atleast for the food & nutritional security of their own family. It also explained that in the climate change context ragi is a better crop for for cultivation as well as for health. The effort now seems to pay back. RCDC staffs estimate that the area under ragi cultivation has increased from about 36 acres last year to about 60 acres this time. A field visit has revealed that the acceptance of the local community to RCDC's call to restore ragi has been quite diverse. Some people have cultivated it just like a fencing crop along the edges of their maize fields whereas some others have done it on a considerable patch.

Meeting at Ekamba

It was however not an easy task. In a meeting on 24th May 2013 at Ekamba, where the lady Sarpanch was also present, a senior staff of RCDC explained to the local people how the story of King Midas was applicable in their case. Midas was after gold, and when his daughter and food turned into gold because of a boon, he realized what should be the limit of his requirement. Similarly, people here are after

maize, and before it is too late they must realize that too much maize may destroy their food and nutritional security.

In this meeting a woman confessed that although being a tribal family they can't manage without their traditional ragi, her husband preferred to cultivate maize at the cost of ragi with a confidence that after all ragi can be purchased from the market. Hence maize was more of a male choice indicating little control of women in agriculture.

Then a survey was conducted as to know how many people are committed to grow ragi this year as a follow up to this meeting. A commitment for about 100 acres was recorded. This was supplemented with a post-sowing survey to know the actual status versus this commitment. As the table below would reflect, the actual coverage was about 70 acres.

Field review showed three different levels of acceptance of RCDC's call to revive maize. The lowest level turned out to be like a courtesy compliance in which the farmers cultivated ragi almost for namesake by sowing the seeds along the boundaries of their maize fields. That is to say, they did not want to spare maize for ragi; only they made better use of the boundaries with ragi. The medium level allowed a considerable area for ragi, whereas the high level acceptance did spare maize for ragi. Needless to say, most of the respondents showed the courtesy but not the zeal. However, a still greater understanding came to us when we asked the villagers of Shialdungri as to why they not preferred even a courtesy response. To our astonishment the villagers said that they did not find it preferable as they never applied pesticide and fertilizer to ragi whereas if grown with maize it can't be spared from the effects of chemical farming. This in fact proved that they do have a sensitivity to maintain the sanctity of ragi.

RCDC is however encouraged with the present response and hopes for a better achievement in the coming years.

Status of ragi cultivation(area in acre) in the Ekamba GP of Jharigaon Block (2013)								
In the year 2012								
SL No	Name of the farmer	Village	Area of rice cultivation	Area of maize cultivation	Area of pulses cultivation	Area of ragi cultivation	Commitment given to cultivate ragi in the year 2013	Actual area used to grow ragi in 2013
1	Paika Bindhani	Gatiguda	2.5	2	4	0.2	0.5	0.25
2	Gurunath Bindhani	do	2	4	1	0.4	0.75	0.5
3	Sitana Santa	do	0.6	1.2	0	0.2	0.5	0.1
4	Biswanath Santa	do	2	2	0.7	0.2	0.2	0
5	Jima Santa	do	2	2.5	0.5	0.2	0.3	0
6	Utna Santa	do	0.5	1	0	0.15	0.3	0.15
7	Laxmi Santa	do	0.6	0.25	0	0	0.1	0
8	Talsa Santa	do	0.5	0.3	0	0	0.2	0.15
9	Dasa Santa	do	1	2.2	0	0.2	0.3	0.15
10	Sana Santa	do	1	4	0.2	0.2	0.5	0.2
11	Purna	do	1.2	4	0	0	0.75	0.5
12	Tulabati Bindhani	do	0.7	1.2	1	0.1	0.3	0.1

1	Raghu Santa	Radioguda	1	2	0	0.1	0.2	0.1
2	Bana Santa	do	3	7	0.5	0.15	0.5	0.4
3	Rupa Santa	do	2	4	0	0.2	0.3	0.3
4	Laga Santa	do	0.75	4	0	0.2	0.3	0
5	Pandu Santa	do	2	2	0	0.3	0.5	0.3
6	Kuma Santa	do	1	2	0	0.1	0.3	0.15
7	Sontoshi Santa	do	0.5	1	0	0	0.2	0
8	Sayma Santa	do	1	4	0	0.1	0.25	0
9	Durjya Santa	do	1	2	0	0	0.2	0.1
10	Hajari Santa	do	2	2	0	0.2	0.3	0.25
11	Salu Santa	do	3	2	0	0.2	0.3	0.2
12	Rajna Santa	do	1	4	0	0	0.25	0
13	Sabara Santa	do	1	2	0	0.15	0.25	0.2
1	Makund Santa	Jamjhola	0.7	2	0	0.2	0.3	0

2	Samnath Santa	do	1	2.5	0	0.2	0.25	0
3	Laiban Santa	do	1	3	0	0.1	0.3	0.3
4	Bhagaban Santa	do	1	3	0	0.2	0.4	0.25
5	Raghaba Santa	do	1	3	0	0.2	0.2	0
6	Gunu Santa	do	0.3	2	0	0.2	0.3	0.2
7	Chacheri Santa	do	0.75	2	0	0	0.2	0.25
8	Barja	do	0.75	4	0	0.2	0.4	0.25
9	Bhagaban Santa	do	1.2	2	0	0	0.25	0.15
10	Dhanpati Santa	do	1	5	0	0	0.25	0
11	Kushna Santa	do	0.2	2	0	0.2	0.25	0.2
12	Iswar Santa	do	0.2	2	0	0	0.1	0.15
13	Bali Santa	do	0.75	2	0	0	0.2	0.1
14	Kuma Santa	do	1.2	3	0	0.25	0.5	0.5
15	Laiban Santa	do	2	4	0	0.2	0.25	0.5
16	Krusta Santa	do	1	1.2	0	0	0.2	0

17	Jagara Santa	do	1.2	2.7	0	0.2	0.3	0.2
18	Adi Santa	do	0.3	2.5	0	0.1	0.25	0.2
19	Sada Santa	do	1.2	4	0	0.2	0.5	0.4
20	Anja Santa	do	0.3	2	0	0.1	0.3	0.1
21	Doba Santa	do	1	2.2	0	0.2	0.3	0.5
22	Raghu Santa	do	0.6	1	0	0.1	0.3	0.15
23	Trinath Santa	do	0.6	2	0	0.15	0.25	0.2
24	Gobardhan Santa	do	1	2.8	0	0	0.25	0
25	Nara Santa	do	0.8	2.5	0	0.15	0.25	0.2
26	Sadhaba Santa	do	0.8	0.8	0	0	0.15	0
1	Raghu Santa	Karlasada	0.75	2	0	0.15	0	0
2	Bali Santa	do	0.3	0.5	0	0	0.15	0.1
3	Sapura Santa	do	1.2	6	0	0	0.2	0.1
4	Sadhu Santa	do	1.2	4	0	0	0.2	1

5	Ghenu Santa	do	0	0.7	0	0	0	0
6	Durjya Santa	do	0.7	2	0	0.1	0.2	0
7	Bansing Santa	do	1.2	2	0	0.1	0.2	0.1
8	Manda Santa	do	2	3	0	0.1	0.2	0.15
9	Nunai Santa	do	0.3	2	0	0.1	0.2	0
10	Gopi Santa	do	1.5	2	0	0	0.2	0.1
11	Basu Santa	do	1	2	0	0.1	0.2	0.3
12	Rama Santa	do	1	2	0	0	0.1	0.1
13	Maheswar Santa	do	0.8	7	0	0	0.2	0.1
14	Lachindan Santa	do	2	5	0	0.1	0.3	0.25
15	Kamulu Santa	do	0.6	3	0	0	0.2	0.2
16	Sombaru Santa	do	0.2	3	0	0.1	0.2	0.3
17	Chitra Santa	do	2	7	0	0.2	0.3	0.2
18	Tanka Santa	do	1	2	0	0.1	0.2	0.15

19	Bhima Santa	do	2	2	0	0.1	0.3	0.3
20	Dhulaba Santa	do	1	2	0	0	0.2	0.1
21	Dombu Santa	do	2	4	0	0	0.2	0
22	Kamulu Santa	do	1	4	0	0.2	0.5	0.2
23	Acho Santa	do	1	3	0	0	0.2	0.2
24	Sindhu Santa	do	0.3	2.5	0	0	0.2	0.15
25	Bhakta Santa	do	0.7	4	0	0	0.2	0.15
26	Pralad Santa	do	0.7	6	0	0	0.5	0.2
27	Laxmi Santa	do	0.4	1	0	0	0.1	0.2
28	Raydhar Santa	do	0.7	4	0	0	0.2	0.15
29	Basara Santa	do	1	4	0	0.2	0.3	0.2
30	Lacha Santa	do	0.3	4	0	0	0.2	0
1	Pitambar Santa	Pardiguda	1	7	1	0.1	0.3	0.5
2	Lacho Santa	do	1	4	0	0.1	0.2	0.2

3	Luka Santa	do	1	7	0.5	0.1	0.25	0.3
4	Jagdish Santa	do	2	3	0.5	0.1	0.25	0.3
5	Hari Santa	do	2.5	9	0.5	0.2	0.5	0.8
6	Udaya Santa	do	1.2	4	0	0.1	0.3	0.25
7	Akhila Santa	do	0.3	3	0	0.1	0.2	0
8	Chakra Santa	do	0.3	3	0	0	0.2	0.2
9	Subarna Santa	do	0.5	5	1	0	0.2	0.3
10	Makund Santa	do	1.2	4	0.5	0.1	0.3	0.2
11	Nanda Santa	do	1	5	0	0.1	0.3	0.2
12	Balaba Santa	do	0.6	5	0	0	0.3	0.25
13	Ananta Santa	do	1.5	7	0	0.2	0.3	0
14	Domana Santa	do	0.5	4	0	0.1	0.5	0.4
1	Ananada Santa	Rangamatigu da	1	2.5	0.15	0.1	0.2	0.15
2	Abhi Santa	do	1	2.5	0	0	0.2	0.15

3	Dhanapati Santa	do	0.8	6	0	0	0.2	0
4	Okila Santa	do	1	5	0	0	0.2	0.2
5	Sindhu Santa	do	1.5	1	0	0.2	0.25	0.5
6	Trinath Santa	do	0.7	1.5	0	0.2	0.3	0.15
7	Sendia Santa	do	0.5	3	0	0	0.2	0.1
8	Dhansing Santa	do	0.5	3	0	0	0.2	0.3
9	Shiba Santa	do	2	3.5	0.3	0	0.2	0.2
10	Medri Santa	do	3	3.25	0.4	0.2	0.25	0.2
11	Jadev Santa	do	2	2	0	0.3	0.5	0.1
12	Ramachandra Santa	do	1	3	0	0	0.2	0.15
13	Krushna Santa	do	0.9	1.8	0	0.2	0.2	0.2
14	Ratha Santa	do	1	4	0	0	0.3	0.3
15	Dasa Santa	do	1.7	2.4	0.6	0.3	0.4	0.2
16	Basu Santa	do	1	2	0.5	0.3	0.3	0.2

17	Gabi Santa	do	1	3.4	0.4	0.2	0.3	0.15
18	Tanka Santa	do	1.8	4.2	0.5	0.2	0.25	0.3
19	Natha Santa	do	1.7	0.5	0	0	0.2	0.15
20	Auridev Santa	do	1	2.8	0	0	0.2	0.2
21	Madhu Santa	do	1.18	3.6	0.2	0.2	0.3	0.2
22	Khagapati Santa	do	1.5	3.2	0	0	0.2	0.3
23	Tilcand Santa	do	0.8	3	0.5	0.2	0.4	0.2
24	Rupa Santa	do	1.9	6	0.5	0.2	0.3	0.3
25	Gobinda Santa	do	0	6	0.4	0.2	0.3	0.3
26	Ghasiram Santa	do	0.5	2	0.1	0.2	0.2	0.2
27	Raghunath Santa	do	0.5	0.2	0.15	0.1	0.2	0
28	Charansing Harijan	do	0	2	0.4	0.15	0.3	0.2
29	Dayaram Harijan	do	0	2	0.5	0.2	0.2	0.1
30	Baisakhi Harijan	do	0	2.5	0.6	0.2	0.3	0.5

31	Dasmant Santa	do	1	4	0	0.1	0.2	0.2
32	Jujesti Santa	do	0.2	0.3	0	0.15	0.3	0.2
33	Bistu Santa	do	1.5	2	0	0.1	0.2	0.25
34	Dhaba Santa	do	2.5	3	0	0.1	0.15	0.15
35	Panpila Santa	do	1	6	0	0.1	0.2	0.15
36	Betru Santa		0	1	0	0.1	0.1	0.15
37	Kumuti Santa	do	1	2	0	0.1	0.15	0.3
38	Sambaru Santa	do	0.2	4	0	0	0.1	0.3
39	Kambu Santa	do	0.2	5	0	0	0.15	0.2
40	Buduram Harijan	do	0	4	0	0	0.1	0.3
41	Basia Harijan	do	1	2	0	0	0.15	0.1
42	Maniram Harijan	do	0	0.5	0	0	0.5	0.1
1	Balaram Santa	Sialdongri	1	2	0.5	0.2	0.3	0.45
2	Krista Santa	do	1	3	0	0.15	0.25	0.45

3	Bistu Santa	do	1	2	0	0.1	0.2	0.45
4	Raju Santa	do	0.5	2	0	0	0.2	0.2
5	Pita Santa	do	0.5	1	0	0	0.2	0.2
6	Sada Santa	do	0.8	1	0	0.1	0.2	0.2
7	Padu Santa	do	1	2	0	0.15	0.25	0.15
8	Jagabadhu Santa	do	0	0.4	0	0	0.1	0.3
9	Luki Santa	do	1	2	0	0	0.15	0.3
10	Siba Santa	do	0.5	0	0	0	0	0.2
11	Jala santa	do	0.5	0.5	0	0.2	0.1	0.1
12	Donguru Santa	do	1	1	0	0	0.2	0.15
13	Kaliamani Santa	do	1	2	0	0.1	0.25	0.1
14	Pita Santa	do	1	2	0	0.2	0.25	0.5
15	Bista Santa	do	0.8	0.7	0	0	0.15	0.3
16	Anuradha Santa	do	1	1	0	0	0.2	0.15

17	Balabhadra Santa	do	0.5	1	0	0	0.15	0.5
18	Banamali Santa	do	1	1	0	0	0.1	0.3
19	Gada Santa	do	0.2	0.2	0.15	0	0.25	0.15
20	Jirme Santa	do	0	1	0	0	0.15	0.3
1	Subri Santa	Jharbandh Guda	1.5	2	0	0.2	0.3	0.2
2	Gobi Santa	do	2	1.5	0	0.1	0.3	0.6
3	Basna Santa	do	1.2	1.5	0	0	0.15	0.3
4	Madhaba Santa	do	1	1	0	0.1	0	0.15
5	Lakhan Santa	do	0.8	1	0	0	0.1	0
6	Padla Santa	do	1.8	3	0	0.1	0.4	0
7	Mali Santa	do	1	1	0	0.1	0.2	0.3
8	Lada Santa	do	2	1	0	0	0.15	0.15
9	Mandia Santa	do	1	3	0	0.1	0.2	0.15
10	Jitendra Santa	do	0.9	1	0	0.15	0.2	0.15

11	Nakula Santa	do	1	1	0	0.15	0.2	0.15
12	Kumara Santa	do	1	1.2	0	0.15	0.3	0
13	Salu Santa	do	1.3	1	0	0.15	0.3	0.3
14	Bali Santa	do	1.2	2	0	0	0.3	0
15	Bhagaban Santa	do	1	0.5	0	0	0.1	0
16	Kumara Santa	do	1	1	0	0	0.2	0.2
17	Sapura Santa	do	0.7	0.7	0	0.1	0.3	0.3
18	Sudhan Santa	do	0.1	0.1	0	0.1	0.2	0.15
19	Krusha Santa	do	1.2	4	0	0	0.2	0.1
20	Trinath Santa	do	1	1	0	0	0.15	0.1
21	Bana Santa	do	2	4	0	0	0.2	0.1
22	Dhanpati Santa	do	2	3	0	0	0.1	0.15
23	Chabi Santa	do	2	1	0	0	0.2	0.1
24	Gobardhan Santa	do	2	1	0	0	0.3	0.1

25	Jaganath Santa	do	1	1	0	0.25	0.3	0.15
26	Madhu Santa	do	0.8	0.8	0	0	0.2	0
27	Chacheri Santa	do	1	1.7	0	0	0.2	0.1
28	Durbanad Santa	do	1.2	4	0	0.2	0.3	0.1
29	Padna Santa	do	2	2	0	0	0.2	0.3
30	Ramchandra Santa	do	1	2	0	0	0.2	0.1
31	Bingu Santa	do	2	3	0	0	0.2	0.25
32	Sindhu Santa	do	2.5	3	0	0.1	0.2	0.2
33	Avi Santa	do	0.5	2.5	0	0	0.2	0.15
34	Rama Santa	do	2	3	0	0.2	0.3	0
35	Kamulu Santa	do	1	1	0	0	0.1	0
36	Sadhaba Santa	do	0.5	0.2	0	0	0.1	0
37	Bali Santa	do	1.3	0.2	0	0	0.15	0.15
38	Braja Santa	do	1	0.5	0	0	0	0.15

39	Sanu Santa	do	3	5	0	0.2	0.3	0.15
40	Kanduru Santa	do	1.5	3	0	0	0.2	3
41	Sripati Santa	do	2.5	5	0	0.2	0.2	0.15
42	Basana Santa	do	2	4	0	0	0.2	0.1
43	Gangaram		3	3	0	0	0.2	0.1
44	Sana Santa	do	0.3	0.8	0	0	0	0
45	Jayaram Santa	do	0.2	n	0	0.15	0	0
46	Loknath Santa	do	2	2.5	0	0	0.2	0.15
47	Radhaba Santa	do	0.3	2	0	0	0.15	0.1
48	Durjya Santa	do	2	0.5	0	0	0.1	0.1
49	Bali Santa	do	2	1	0	0	0.2	0.1
50	Mishara Santa	do	2	1	0	0	0.2	0.1
51	Mulia Santa	do	1	3	0.4	0.2	0.3	0.2
52	Mangulu Santa	do	1.5	2.5	0	0.2	0.3	0.45

53	Sambaru Santa	do	2	2	0	0.2	0.2	0.15
54	Linga Santa	do	1	3	0	0.1	0.2	0.1
55	Besu Santa	do	2	3	0.5	0.1	0.2	0.1
56	Bhagirathi Santa	do	0	1	0	0	0.1	0.1
57	Sania Santa	do	0.2	0.4	0.5	0.2	0.4	0.3
58	Goria Santa	do	0.3	0.7	0.5	0.1	0.2	0.3
59	Basu Santa	do	2	2	0	0.1	0.2	0.3
60	Taria Santa	do	0	2	0	0	0.1	0.1
61	Khasari Santa	do	1	2	0	0	0.1	0.1
62	Kamulu Santa	do	0.5	0.9	0	0	0.1	0.2
63	Oa Santa		0.5	3	0	0	0.1	0
64	Dambu Santa	do	2	0.5	0	0	0.1	0
65	Chaitanya Santa	do	0.5	1.3	0	0	0.25	0
66	Relly Santa	do	3	2	0.5	0.2	0.2	0
67	Bhagaban Santa	do	1	0.5	0	0	0.1	0.15

68	Laxmi Santa	do	0.5	0.6	0	0	0.1	0.15
69	Biswanth Santa	do	2	0.9	0	0	0.1	0.1
70	Puri Santa	do	1	1.5	0	0	0.1	0.15
71	Raji Santa	do	2	1	0	0	0.1	0.5
1	Kalaki Gond	Dhanpur	1.5	1	0	0	0	0
2	Madana Gond	do	1	0.6	0	0	0	0
3	Nirgat Gond	do	1	0.7	0	0	0	0
4	Durjya Gond	do	3	1.5	0	0	0	0
5	Chandrar Gond	do	1.5	1.2	0	0	0.1	0
6	Rabi Gond	do	1.5	1	0	0	0.2	0
7	Bisak Gond	do	2	2	0	0.1	0.15	0.25
9	Nanda Kalar	do	5	2.5	0	0.15	0	0
10	Lakmu Padhani	do	1	0.5	0	0.15	0	0
11	Jaduram Pradhani	do	7	1	0	0	0	0

12	Lakhichand Pradani	do	1.3	1	0	0	0	0
13	Ghinu Gond	do	3	1	0	0	0	0
14	Sripati Ganada	do	1.5	0.5	0	0.1	0.1	0.15
15	Bharirathi Gond	do	1.5	0.6	0	0	0	0
16	Jagat Gond	do	1.5	0.5	0	0.1	0	0
17	Bansing Gond	do	4	1.5	0	0.1	0.2	0.2
18	Mandru Gond	do	3	1	0	0	0.1	0
19	Purna Gond	do	1	0.7	0	0	0.15	0
20	Lakhman Kallar	do	2.5	1	0	0.15	0	0
21	Damu Kallar	do	2	1	0	0	0.1	0.15
22	Siba Gond	do	1.5	1.2	0	0.15	0	0
23	Parsu Gond	do	1	0.7	0	0.1	0	0
24	Alekha Gond	do	1	0.5	0	0.15	0	0
25	Sibaratu Gond	do	1	0.5	0	0.1	0	0

26	Laikhan Gond	do	1	2.1	0	0.15	0	0
27	Dhansai Gond	do	1.5	1.5	0	0.1	0.2	0.1
28	Malati Gond	do	2.5	1	0	..2	0	0
29	Damu Gond	do	2.5	1	0	0	0	0
30	Gabandu Gouda	do	3	1.5	0	0	0.15	0.25
31	Baladeba Gond	do	2	2	0	0.15	0	0
32	Trilochan Pande	do	0.5	0.5	0	0.1	0.2	0.3
33	Narsing Kallar	do	6	2	0	0.15	0.25	0.3
34	Nitya Kallar	do	1	0.5	0	0.15	0	0
35	Ram Kalar	do	0.7	0.8	0	0.2	0	0
36	Agadhu Kallar	do	0.8	0.1	0	0.1	0	0
37	Lakhmidhar Gond	do	8	2	0	0.15	0	0
38	Ramai Gond	do	6	2	0	0.2	0	0
39	Baga Kamar	do	1	2	0	0	0	0

40	Kamulu Kamar	do	2	1.5	0	0.2	0.2	0.15
41	Dharmdas Panka	do	6	2	0	0	0	0
42	Sambhu Das Panka	do	4	1.5	0	0.2	0	0
43	Shyamlal Panka	do	6	2	0	0.2	0	0
44	Ganchu Gouda	do	1	1	0	0.1	0	0
45	Kahal Gond	do	2.5	2.5	0	0.2	0.25	0.25
46	Laiban Gond	do	1	1	0	0.2	0.2	0.15
47	Sukar Gond	do	3	2	0	0.2	0.2	0.2
48	para Gond	do	1	1	0	0.15	0	0
49	Balaram Gond	do	1	1	0	0	0.15	0.15
50	Kapur Gond	do	3	2	0	0.2	0.2	0.3
51	Laikhan Gond	do	2	2	0	0	0.2	0.3
52	Purna Gond	do	8	4	0	0.1	0.2	0.2
53	Kumara Gond	do	8	4	0	0	0.2	0.15

54	Metai Gond	do	9	5	0	0.2	0.5	0.6
55	Krushna Gond	do	1	0.8	0	0.2	0.2	0.15
56	Dhanur Gond	do	1	0.7	0	0	0.1	0.3
57	Dursai Gond	do	0.1	0.1	0	0.2	0.1	0
58	Laikhan Gond	do	2	2	0	0	0.2	0.15
59	Tilsai Gond	do	5	2	0	0.15	0.25	0.2
60	Jaduram Gond	do	2	2	0	0.15	0	0
61	Dhanurjay Gond	do	3	2	0	0.2	0.3	0.1
62	Billu Pujei	do	1.5	1	0	0.2	0.3	0.2
63	Devsing Pujari	do	1	1	0	0.2	0	0.2
64	Prahalad Gond	do	3	2	0	0.15	0	0
65	Dhanur Gond	do	4	2	0	0.3	0	0
66	Jagdish Pujari	do	1.5	1	0	0.1	0	0
67	Lakhi Pujari	do	1	1.5	0	0	0.3	0.2

68	Sadhaba Pujari	do	1.5	1.5	0	0.2	0.3	0.2
69	Ganda Pujari	do	1	1	0	0.15	0	0
70	Hiran Gond	do	3	2	0	0.2	0	0
71	Somnath Gond	do	2	2	0	0.15	0	0
72	Balaram Gond	do	1	1.5	0	0	0.3	0.2
73	Deva Harijan	do	1	2	0	0.15	0.15	0
74	Ramdhar Harijan	do	0.5	2	0	0.15	0	0
75	Sanpath Harijan	do	0.5	2	0	0.2	0	0
76	Mangulu Harijan	do	0.5	2	0	0.2	0.4	0.25
77	Budra Harijan	do	0.5	0.2	0	0.2	0.15	0
78	Kamulu Harijan	do	0.5	0.2	0	0.2	0.3	0.3
79	Raidhar Harijan	do	0	0.5	0	0	0.2	0
80	Shyama Harijan	do	1.5	3	0	0.2	0.2	0.15
81	Kamulu Gond	do	2	2	0	0.1	0.2	0.1

82	Sanpath Gond	do	2	2	0	0	0.2	0.2
83	Samdu Gond	do	2	2	0	0.15	0.3	0.15
84	Laldhar Gond	do	1	1	0	0.1	0.15	0
85	Sudar Gond	do	3	1	0	0	0.15	0
86	Dayanidhi Gond	do	3	1	0	0.2	0.2	0
87	Mohandas Gond	do	5	2	0	0.25	0.2	0.15
88	Sardhu Gond	do	2.5	2	0	0.1	0.2	0.1
89	Trinath Pujari	do	1.5	1	0	0	0.1	0.15
90	Sambaru Gond	do	3	2	0	0.15	0.2	0.2
91	Biswanath Gouda	do	1	1.5	0	0.2	0.2	0.15
92	Raya Gouda	do	0	1	0	0.2	0	0
93	Dinabandhu Gouda	do	2	1	0	0.15	0	0
94	Dumar Harijan	do	1	2	0	0.1	0.2	0.2
95	Damana Pujari	do	1.5	2	0	0	0.2	0.3

96	Ghina Gond	do	1	1	0	0	0.15	0.15
97	Ramdas Gond	do	1.5	0.5	0	0.2	0.2	0.2
	Purna Gond		1	0.5	0	0.2	0	0
98	Rati Gond	do	1	1	0	0.2	0	0
99	Luduru Gond	do	1.5	1	0	0.1	0.2	0.2
100	Bansu Gond	do	1.5	2	0	0.1	0	0
101	Basudev Gond	do	1.5	6	0	0	0.4	0.2
102	Basia Gond	do	2	3	0	0.2	0.2	0.2
103	Deva Gond	do	3	3	0	0.2	0.25	0.2
104	Siba Gond	do	2	1.5	0	0	0.2	0
105	Ghasia Gond	do	4	1	0	0	0.1	0.2
106	Arjun Das	do	4	2	0	0	0.2	0.15
107	Jayaram Gond	do	4	1	0	0.2	0.3	0.2
108	Krushna Harijan	do	7	3	0	0.1	0	0

109	Ludra Gond	do	4	2	0	0	0.2	0.15
110	Mahadev Gond	do	3	1	0	0.15	0	0
111	Panku Gond	do	6	2	0	0.2	0.1	0.15
112	Sukdev Gond	do	3	1	0	0	0.15	0.15
113	Raghu Gond	do	2	1	0	0.2	0.3	0.15
114	Nailu Gond	do	2	1	0	0	0.25	0.3
115	Aguru Gond	do	3	3	0	0.2	0.3	0.15
116	Gobinda Gond	do	3	2	0	0	0.2	0.15
117	Dharam Gond	do	3	1.5	0	0.15	0	0
118	Sukru Gond	do	4	2	0	0	0.2	0.15
119	Mohan Gond	do	6	2	0	0.2	0	0
120	Narsing Bhatra	do	7	3	0	0	0.2	0.2
121	Udran Gond	do	3	1	0	0.15	0.2	0.15
122	Sana Gond	do	2	1	0	0.1	0.3	0.2

123	Siva Gond	do	0.5	2	0	0.1	0.2	0.15
124	Raya Gond	do	2	2	0	0.1	0.2	0.2
125	Sudar Gond	do	2	1	0	0.1	0.2	0.15
126	Dhanur Gond	do	3	2	0	0.2	0.2	0.15
127	Narsing Harijan	do	1.5	2	0	0	0	0
128	Hari Gond	do	3	1.5	0	0.1	0.2	0.25
129	Ratan Gond	do	3	2	0	0.1	0.2	0.15
130	Durjya Gond	do	2	2	0	0.2	0.3	0.15
131	Parsu Gond	do	2.5	1	0	0.1	0	0
132	Maya Harijan	do	1.5	2	0	0.1	0.2	0.15
133	Masu Bhatra	do	1.5	2	0	0.1	0.2	0.3
1	Damodar Majhi	Goramba	1.5	1	0	0	0	0
2	Raising Bhatra	do	2.5	1	0	0	0	0
3	Lalit Majhi	do	2.2	1	0	0	0	0

4	Laxman Pujari	do	5.15	1	0	0	0	0
5	Khaga Majhi	do	1.2	0.6	0	0	0	0
6	Gangadhar Kallar	do	4.2	0.7	0	0	0	0
7	Sohan Kollar	do	6.85	0.3	0	0	0	0
8	Raghunath Bhatra	do	1.2	0.15	0	0	0	0
9	Dusmant Kollar	do	3.15	1.5	0	0	0	0
10	Rabi Kollar	do	1.95	0.9	0	0.1	0	0
11	Mangtu Kollar	do	1.56	0.5	0	0	0	0
12	Dhansing Kamar	do	2.25	1	0	0	0	0
13	Mahon Panka	do	3.3	1.3	0	0	0	0
14	Jagbandhu Panka	do	3.5	0.5	0	0		
15	Dhaneswar Panka	do	2.4	0.2	0	0.15		
16	Ghasia Panka	do	3	0.3	0	0	0	0
17	Sindhu Panka	do	2.5	0.72	0	0	0	0

18	Padam Majhi	do	3	0.5	0	0	0	0
19	Lachman Majhi	do	5.25	1	0	0	0.25	0.2
20	Biswanth Majhi	do	5.5	1	0	0	0	0
21	Lakhmu Majhi	do	3.4	0.3	0	0	0	0
22	Mahon Majhi	do	4.5	0.7	0	0	0	0
23	Kelu Majhi	do	5	0.7	0	0	0	0
24	Sadan Majhi	do	4	0.5	0	0	0	0
25	Tula Bhatra	do	3	0.5	0	0	0	0
26	Sansai Bhaitra	do	4	0.5	0	0	0	0
27	Mahonsing Pujari	do	7.5	0.35	0	0	0.2	0.15
28	Tanka Bhatra	do	4	0.5	0	0	0	0
29	Sukman Kollar	do	3.4	1	0	0	0	0
30	Jayaram Bhatra	do	1.8	0.5	0	0	0	0
31	Gopi Bhatra	do	2.3	0.6	0	0	0	0

32	Padam Sing Majhi	do	4.5	0.5	0	0	0	0
33	Ragunath Majhi	do	2.15	0.5	0	0	0	0
34	Dhansing Bhatra	do	3.66	0.5	0	0	0	0
35	Sadhu Bhatra	do	3	1	0	0	0	0
36	Bhagat Bhatra	do	3.2	0.5	0	0	0	0
37	Ghasia Kollar	do	3	0.5	0	0	0	0
38	Adu Kollar	do	2.5	0.5	0	0	0	0
39	Kotu Kollar	do	2	0.3	0	0	0	0
40	Laison Kollar	do	3	0.3	0	0	0	0
41	Bijuli Kollar	do	4	0.5	0	0	0	0
42	Chainu Bhatra	do	3.5	0.5	0	0	0	0
43	Pilsai Bhatra	do	4.5	0.5	0	0	0	0
44	Chehen Bhatra	do	4.5	0.5	0	0	0	0
45	Ramsai Bhatra	do	3	0.5	0	0	0	0

46	Sita Bhatra	do	2	0.45	0	0	0	0
47	Manglu Bhatra	do	2.8	0.5	0	0	0	0
48	Arjun Kollar	do	11	0.7	0	0	0	0
49	Rupdhar Kollar	do	5	0.45	0	0	0	0
50	Hari Kollar	do	9	0.7	0	0	0	0
51	Uldhar Kollar	do	1.5	0.2	0	0	0	0
52	Dasru Kollar	do	3	0.3	0	0	0	0
53	Jagdish Kollar	do	7	0.45	0	0	0	0
54	Lakhi Kollar	do	7	0.15	0	0.15	0	0
55	Pitambar Kollar	do	4	0.15	0	0	0	0
56	Laikahn Kollar	do	3	0.15	0	0	0	0
57	Bilambar Kollar	do	2.5	0.7	0	0.15	0	0
58	Raghuchand Kollar	do	2.5	0.9	0	0	0	0
59	Mangadas Kollar	do	3	0.5	0	0.2	0	0

60	Kamalochan Kollar	do	2.5	0.2	0	0.2	0	0
61	Parsu Kollar	do	1.5	0.3	0	0	0	0
62	Pakulu Kollar	do	2.5	0.3	0	0	0	0
63	Pitu Kollar	do	3	0.2	0	0	0	0
64	Lachman Kollar	do	4	0.2	0	0	0	0
65	Balchand Kollar	do	2.5	0.3	0	0	0	0
66	Sonu Majhi	do	1.5	0.4	0	0.2	0	0
67	Pradhani Majhi	do	4.5	0.4	0	0	0	0
68	Jaganath Majhi	do	2.2	0.4	0	0	0	0
69	Jagudu Bhatra	do	3	0.4	0	0	0	0
70	Pafulla Bhatra	do	2	0.4	0	0.15	0	0
71	Nathu Bhatra	do	3	0.4	0	0	0	0
72	Natela Bhatra	do	2	0.4	0	0	0	0
73	Kuma Bhatra	do	3.5	1	0	0	0	0

74	Braja Bhatra	do	2.8	0.5	0	0	0	0
75	Dhanur Bhatra	do	2.5	0.5	0	0.15	0	0
76	Padam Bhatra	do	2	0.5	0	0	0	0
77	Bala Bhatra	do	3	0.3	0	0	0	0
78	Ghina Bhatra	do	1.8	1.5	0	0	0	0
79	Cherengi Bhatra	do	1	0.5	0	0.2	0	0
80	Dala Kollar	do	2.5	1	0	0.2	0.7	0.6
81	Gourchand Kollar	do	3	0.5	0	0.2	0	0
					Total	36.05	71.2	59.4

Courtesy response

Medium response

Better response

Annexure-2

Maize versus ragi: cost benefit analysis

Particulars of expenses					
Seeds	**No of units**	**Cost per unit**	**Total cost**		
Maize seed	2(kg)	750	1500		
Tractor for ploughing	1	800	800		
Labour for sowing	15	70	1050		
Labour for preparation of sheds or drag lines	2	200	400		
Fertiliser (DAP)	50kg	28	1400		
Potash	25kg	20	500		
Labour for preparation of bed	1	1500	1500		
Fertiliser for grown up plants					
Urea	150 Kg	Rs.750 per Quintal	1100		
Sulphate	50 kg	10	500		
Potash	75 kg	20	1500		
Protection	1	1000	1000		
Pesticides	2	250	500		
Labour to separate maize from the plant and pealing its barks	1	2500	2500		
Milling to separate seeds	1	1000	1000		
		Total	15250		
Expected production after harvesting and processing is 27 Quintal					
	Rate per Quintal	Total			
Present rate per Quintal	1200	32400			
less Investment		15250			
	Net	17150			

Less interest @5% of total money if they borrowed Rs15000/-		4500			
	Net	12650			
	Sale value of the steams of maize used as fuel	1000			
	Total	13650			
Total(net) profit expected from an acre of maize cultivation is Rs 13650/- , i.e. 91% of the investment.					
Cost Benefit analysis of Ragi cultivation(in one acre of land)					
Seeds	Units	Rate per unit	Total cost		
Ragi seeds	2.5 kg	20	50		
Field preparation (Tractor)	1	800	800		
Weeding	1	1500	1500		
Crop harvesting	1	1000	1000		
Thrashing and extraction of ragi	1	1500	1500		
		Total	4850		
Expected production of Ragi from one acre of land			5 quintals	Rate per quintal is Rs. 1700	Total cost is Rs. 8500
Net Investment					4850
		Net profit (overall)			3650
		Net profit (if ploughing, weeding, and harvesting is self-done without any financial investment)			Rs. 8500 (sale value)-Rs.50(investment) =8450
Net profit of ragi from one acre of land is Rs 3650/-, i.e. 75.25% of the investment, but if ploughing to harvesting is self-done then it would be 16900%.					