# Major Achievements of the NARDF Funded Project

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**Background of the project**

**Project title: Participatory quality improvement, low cost technology development, seed Production and marketing of jute in ETR, Nepal**

Date of project commencement: May, 2007
Date of project completion: June, 2010

**Project Location:** Morang (Kadmaha & Nocha VDC) , Sunsari (Bhokraha & Shivganj VDC) and Siraha (Bishnupurkatti & Muksar VDC)

**Goal of the project:** Contribute to increase household's income & the employment of the farmers residing in eastern terai through improved jute production and processing technologies

**Purpose of the project:** Increased income of jute growers through improved quality seed, lowering production cost and enhancing fiber quality

**Activities**

1.1 Reference collection
1.2 Organize stakeholder's workshop
1.3 Survey of jute growing districts
1.4 Selection of participatory group
1.5. Participatory IPM technology verification & dissemination
2.1 Participatory cost effective retting trial
2.2 Evaluation of mechanical cum retting techniques
2.3 Renovation of existing retting pond
2.4 Training for techniques quality fiber production & grading
2.5 Training for traders & farmers in quality fiber production & grading
2.6 Formation of raw jute marketing committee & establish linkages
3.1 Formation of seed production group
3.2 Farmers' training on jute seed production
3.3 Stakeholders meeting (jute seed)
3.4 Support & subsidized to seed production groups
3.5 Seed certification
3.6 Seed packaging and marketing
4.1 Workshop on jute
4.2 Documentary preparation on jute agriculture
4.3 Publication of booklets/leaflets
4.4 Final project completion report publication

## Outputs

### Literature review

- Collected scientific materials such as books, journals, annual reports & proceedings of CRIJAF, Barrakpur, Kolkatta, India
- Established linkages through Internet and Email with national and international organizations and scientists
- Forwarded the present status report of jute and areas of support needed to develop its capabilities to the funding organizations
- The literature review supported to design and organize experiments and production program of jute.

### Survey

- Identified the biological constraints of jute production such as weeds (sedge, broad leaf & grass), diseases (stem rot), insects (hairy caterpillar) and herbarium of the collected weeds of jute developed.
- Identified the present status of jute production and reason of lowering the area coverage of jute

### Stakeholders meeting and workshop

**Table 1: Meeting and workshop with stakeholders carried out under NARDF project**

| Date | Participants | Venue | Contents | Involvement |
|---|---|---|---|---|
| Apr.7, 2007 | 39 | JRP | Workshop | DADOs, RARS, Tarahara, Agro-vets, NSC, RSTL |
| June17, 2007 | 11 | RAD, Birt | Meeting | RAD, Biranagar, DADOs, RSTL, Agrovets, NGO |
| June26, 2008 | 25 | JRP | Workshop | DADOs, NICDP, Traders, Farmers, CBOs, RSTL, Industrial labor association |
| Apr.18, 2010 | 27 | JRP | Interaction | Jute mills, DADOs, Farmers, Traders/Brokers, Media people |

**Formation of CBSP group and Pond renovation & Marketing committee**

**Table 2: Name and addresses of farmers' group**

| Group Name | Date | Participant | Objective | Place |
|---|---|---|---|---|
| Shivashankar Krishi Samuha | July 5, 2007 | 25 | Seed production | Mukshar |
| Dhaminimai jute seed production group | July 5, 2007 | 25 | Seed production | Mukshar |
| Shree Dhamini Mai Group | July6, 2007 | 21 | Seed production | Bishnupurkatti |
| Jute marketing committee | Nov.5, 2007 | 29 | Fiber marketing | Nocha |
| Jute Marketing committee | Oct.2, 2007 | 24 | Fiber marketing | Nurshing |
| Paribartan samuha | June 20,2007 | 29 | Pond renovation | Nurshing |
| Shrijanamukhi samuha | June 20,2007 | 16 | Pond renovation | Nursing |
| Saptakoshi samuha | July3, 2007 | 15 | Pond renovation | Shivaganj |
| Bajrang kishan samuha | July3, 2007 | 17 | Pond renovation | Shivaganj |
| Jute marketing committee | Oct.5,2007 | 26 | Fiber marketing | Shivaganj |

**Training**

**Table 3: Statement of training carried out under NARDF project**

| Date | Participants | Venue | Contents | Trainees | Trainer |
|---|---|---|---|---|---|
| June23,2007 | 34 | Mukshar | Seed production | Farmers | JRP, NGO, RSTL |
| July9,2007 | 19 | Nocha | Production | Farmers | JRP |
| Sept.11-13, 2008 | 24 | Arihant JM | Quality grading | JRP & DADO staffs | Mills expert |
| Sept.16,2008 | 21 | Arihant JM | Quality grading | Growers and traders | Mills expert |
| Sept.22,2008 | 14 | JRP | Quality grading to traders & farmers | Growers and traders | JRP staffs |
| June 2, 2008 | 28 | Bishnupur | Seed production | Farmers | JRP staffs |

**Fig.1: Status of gender inclusion in CBSP training, Siraha**

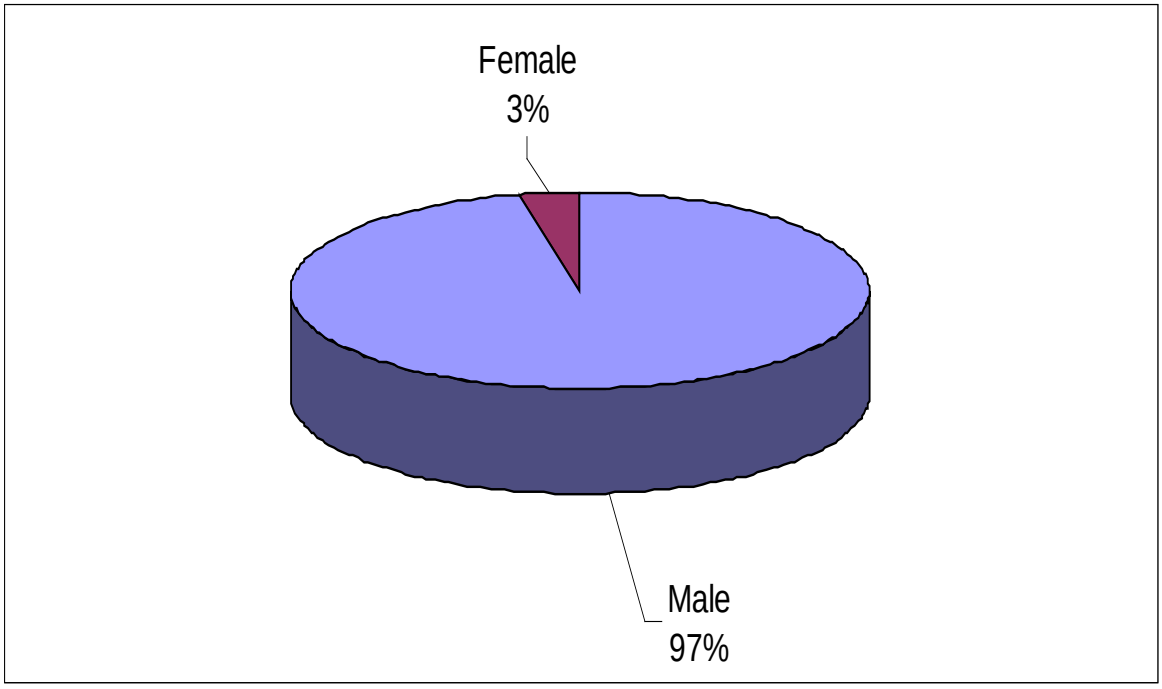
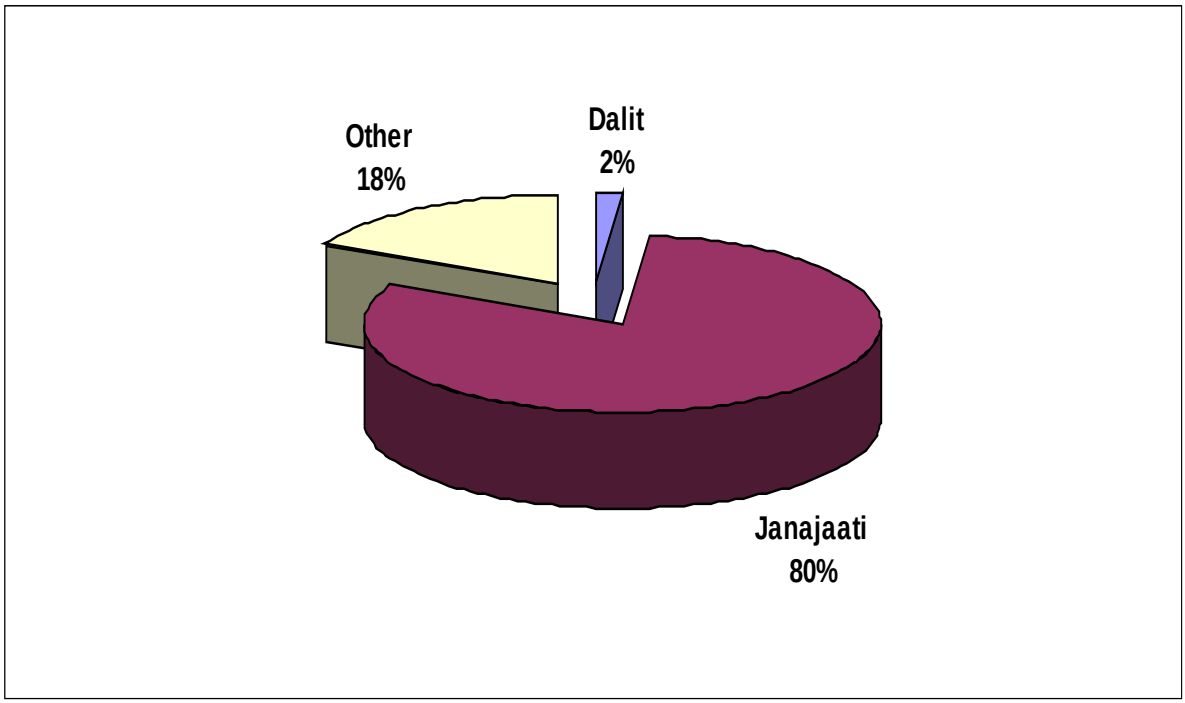
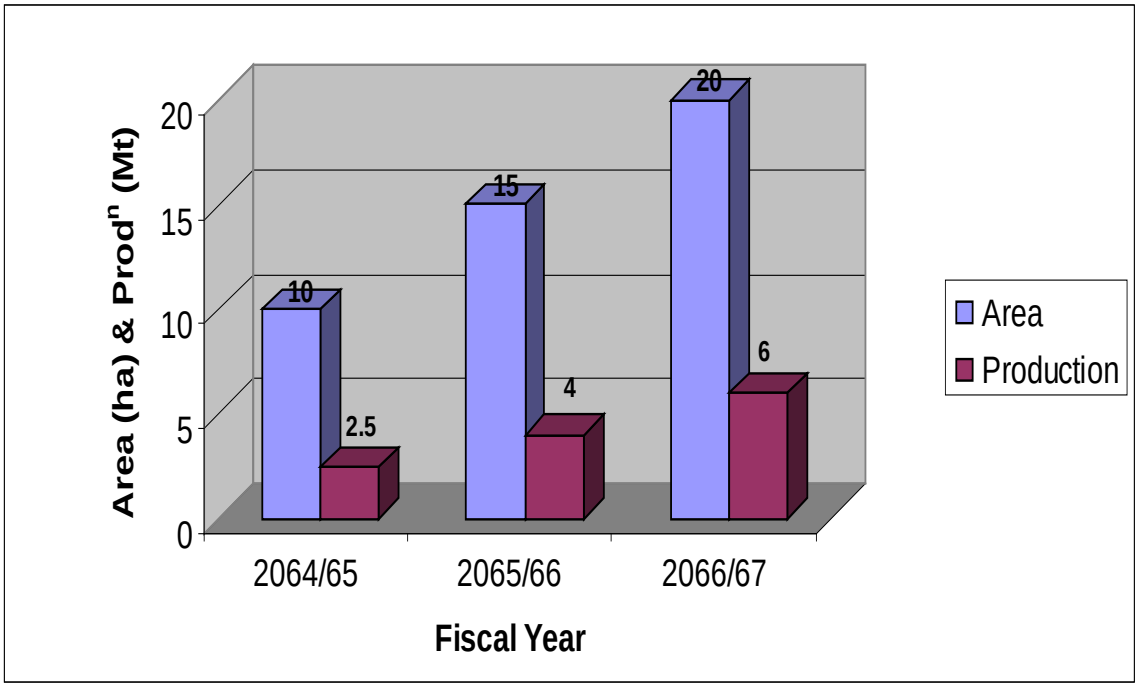



**Fig.2: Ratio of farmers inclusion based on ethnicity in CBSP, training**



**Seed Production by CBSP group with area**

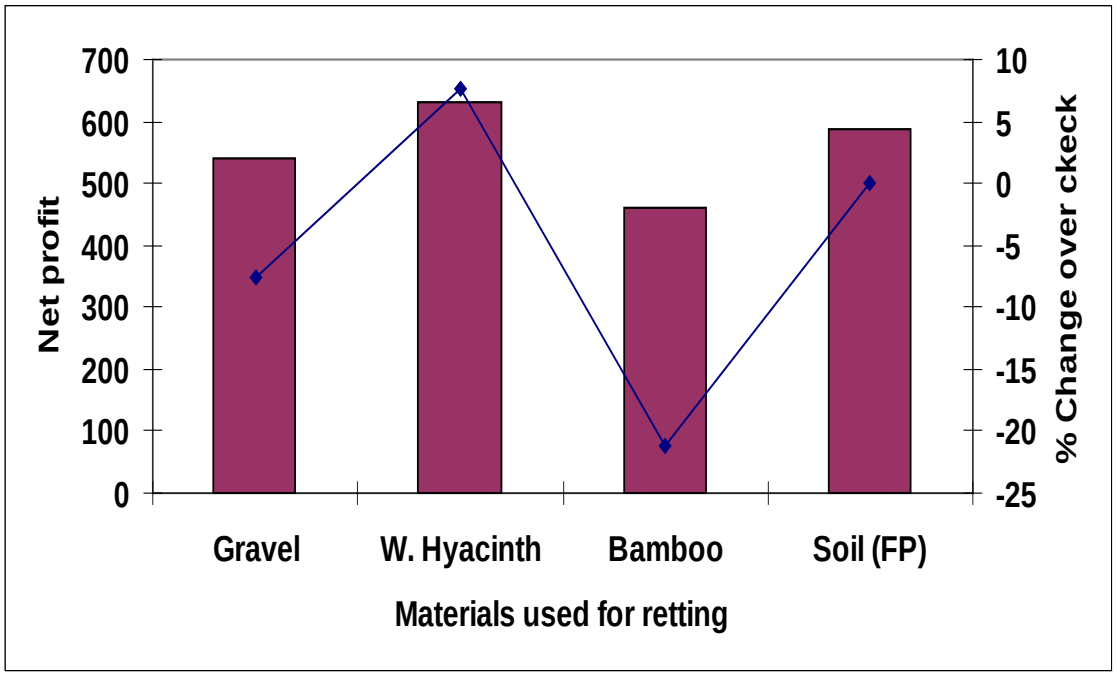
**Fig.3: Area and production of jute seed at project site, Siraha**




**Generated technologies**

- Application of Targa super @2ml/L within 15-20 DAS was found effective to control grassy weeds.
- Mix-cropping of red amaranths (10kg./ha) with Jute seed (6kg/ha) was found effective to suppress all types of weeds and it also fetches extra income as a leafy vegetable.
- Use of water hyacinth in retting was found effective in improving the quality of fiber

**Fig.4: Benefit and ratio of benefit increment/100 kg raw jute**




**Dissemination of technologies through electronic & printed media**

- Bijayapur FM broadcasted the improved and pipeline technologies of jute up to 25 days during FY 2007/08
- The same FM broadcasted the same contents up to 20 days during FY 2008/09
- NTV broadcasted regarding the findings of meeting of Jute Marketing Committee on April 21, 2010
- Documentary covering all aspects of jute production and processing technologies was developed
- Booklets of low cost production technologies was published and distributed to the concerned stakeholders accordingly

# Low Cost Production Technologies of Jute

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**Abstract**

Two experiments such as cost of retting methods and Integrated Pest Management of Jute were conducted at Outreach Research Site of JRP, Itahari for three consecutive seasons 2007, 2008 & 2009 in the summer season in order to find out the appropriate technologies of retting and weed control through integrated approach. Among 4 treatments in cost of retting methods trial Jute bundle pressed with water hyacinth found most beneficial while in IPM experiment. Spraying of Targa super @ 2 g/l water found effective to control grassy weeds and red amaranth (10 kg/ha) mixed with Jute (6 kg/ha) to suppress all types of weeds appeared in the Jute field with extra income as a leafy vegetable therefore, the above mentioned technologies might be recommended for the reduction of labour expenses and improvement in the quality of fibre.

**Key words:** productivity, retting, targa super, technology and weed

## Introduction

Jute (*Corchorus olitorius and Corchorus capsularis*) is an industrial crop of Nepal i.e. mainly confined in the terai district of Eastern Development Region (EDR). A long time ago it was cultivated in about 56714 hectare (JRP, 2009) of land but presently it reduced to 11678 ha (ABPSD, 2009). Declining in the area of Jute might be because of high competition with other crops & plastic products, labour intensive and low priced crop. It provides an employment opportunity for more than 0.1 million people. Nine jute industries are operation in the country which demands about 0.1 million metric ton raw jute fibre annually while domestic production only 0.018 mt (ABPSD, 2009). Export of jute goods (sack, Hessians twine and others) was 0.064 million mt. in the fiscal year 2008/09 (JRP, 2009). The crop improves the soil fertility status by adding organic matter 4.0 mt/ha, nitrogen 23 kg./ha and phosphorus 10 kg/ha. Natural fibre helps to mitigate environmental pollution.

About 54% fibre yield loss in jute was recorded due to weed infestation (Ghorai et al, F.Y. 2002-03). Ghorai et al (2003-04) reported that conventional manual weeding in jute consumer about 40% of total cost of cultivation which leads to its poor net return from unit area. In jute weed management and retting are the two areas consuming nearly two-third of the total cost of cultivation CRIJAF has taken significant steps to address this issue for cost-effective and eco-friendly technologies (Sen, 2003-04). Ghorai et al (2002-03) reported that spraying of Targa Super @ 2 ml/l water at 15 DAS effectively controlled grassy weeds in Jute field and yielded 24

qt/ha of raw jute without any manual weeding. It left no symptom of phytotoxicity on Jute plant and did not affect the crop yield. Ghorai et al (2003-04) reported that application of Targa Super @ 2.0 ml/l water with dhanuvit (as adjuvant) @ 1.0 ml/l water at 21 DAE (Days after emergence) confirmed to be very effective against grassy weeds which along with one hand weeding yielded 42 qt/ha raw jute fibre and left no phytotoxic effect on jute. A hand weeding following death of grassy weeds is a necessity to remove the broad leaved and sedge weeds from jute field. Red amaranth was successfully grown with jute in a mixed stand and produced 28.75 qt/ha with two hand weeding (Ghorai et al 2002-03). Jute goods (Hessian, sack, twine and others) of NRS 188.26 million were exported to India during the F.Y. 2003/04 (T. B. Ghimire).With the following objective the experiments were designed to conduct at Outreach Research Site of JRP during F.Y. 2007-09:

- To find out the appropriate technologies of retting methods and weed control to minimize the labour expenses, reduce the drudgery of farmers of both sexes and improve the quality of jute fibre.

**Materials and Methods**

The topic consist two experiments mentioned in Table- 1 which were conducted in the Outreach Research Site of Morang (Kadmaha and Nocha VDC) and Sunsari (Shivganj and Narsing VDC) districts for a period of three consecutive summer seasons during 2007-09.

**Table 1: Methodology of the experiment "cost of retting" and "integrated disease management" on jute conducted at Out-reach Research Site of Sunsari and Morang districts during the F. Y. 2007/08 - 2009/10**

| SN. | Experiment | Design | Rep | Trt. | Plot Size $M^2$ | Fertilizer Dose N: $P_20_5$:$K_20$ kg./ha | Spacing | Seed rate kg./ha | Jute variety used | Observation recorded | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01. | Cost of retting methods of Jute fibre. | RCBD | 4 | 4 | 12 | 40:20:40 | Row to row: 25 cm plant to plant: continuous | 6.0 | JRO-524 | Recovery, quality, cost, retting period | Fresh bundle 100 kg./ treatment. |
| 02. | Integrated Pest Management (IPM) | Split-plot | 4 | 8 | Main plot: 50 Sub plot - 25 | 40:20:40 | Row to row: 25 cm plant to plant: continuous | 6.0 | JRO-524 | Dry fibre yield, Basal diameter, plant height, number of weed appeared in the plot, dry matter. | |
| | | | | | | | | | | | |

**Note:**

RCBD: Randomized complete Block Design.
Rep. ; Replication

Trt : Treatment
DAS : Days after sowing
+ PP : With Plant Protection
- PP : Without Plant Protection
$M^2$ : Square meter.

Herbicide : Targa Super @ 2 ml/l water
Red Amaranth: Red Amaranth (10 kg/ha) mixed with Jute seed (6 kg/ha)
Mulching : Rice Straw 10 kg/ha (0-3 DAS)
Farmers practice: Manual weeding 2 times
Fungicide : Bavistin @ 2g/l water
Insecticide : Thiodan @ 1.5 ml/l water
Sticker : Dhanuvit @ 1 ml/l water
Statistical analysis was done in MSTATC

**Results and Discussion**

It is indicated from Table 2 and 3 that retting period was observed lowest 14.5 days with highly significant difference during fiscal year 2009/10 in Morang district while 13.3 days in both season in Sunsari district. In combined analysis over year the same treatment found lowest in retting period 14.6 and 13.3 days in Morang and Sunsari district respectively with highly significant difference among the test methods (Table-4).

**Table: 2 Performance of retting trial of jute at OR site Morang**

| SN | Treatment | FY 2008/09 | | | FY 2009/10 | | |
|---|---|---|---|---|---|---|---|
| | | Recovery (kg) | Cost (Rs) | Ret. Per (day) | Recovery (kg) | Cost (Rs) | Ret.Per. |
| 01 | Gravel | 15.8 | 272.50 | 16.00 | 13.78 | 265.00 | 16.80 |
| 02 | W. Hycianth | 14.25 | 220.00 | 14.80 | 12.53 | 240.00 | 14.50 |
| 03 | Bamboo | 14.46 | 238.75 | 14.30 | 12.72 | 248.75 | 16.50 |
| 04 | Soil (FP) | 14.99 | 75.00 | 17.30 | 12.81 | 80.00 | 17.30 |
| F test | | * | ** | ** | Ns | ** | ** |
| CV % | | 4.03 | 2.42 | 3.08 | 4.91 | 3.10 | 3.55 |
| LSD (0.05) | | 0.96 | 7.80 | 0.77 | 1.03 | 10.33 | 0.92 |

**Table- 3 Performance of retting trial of jute at project site, Sunsari**

| SN | Treatment | FY 2008/09 | | | FY 2009/10 | | |
|---|---|---|---|---|---|---|---|
| | | Recovery (kg) | Cost (Rs) | Ret. Per (day) | Recovery (kg) | Cost (Rs) | Ret.Per. |
| 01 | Gravel | 14.1 | 225.00 | 16.3 | 15.49 | 228.75 | 15.8 |
| 02 | W. Hycianth | 15.83 | 197.50 | 13.3 | 15.41 | 226.25 | 13.3 |
| 03 | Bamboo | 13.19 | 198.75 | 16.3 | 14.50 | 206.25 | 15.8 |
| 04 | Soil (FP) | 16.3 | 72.50 | 16.3 | 16.06 | 48.75 | 15.8 |
| F test | | ** | ** | ** | Ns | ** | ** |
| CV % | | 6.67 | 7.96 | 2.63 | 6.3 | 17.15 | 1.91 |
| LSD (0.05) | | 1.58 | 22.08 | 0.65 | 1.55 | 48.69 | 0.46 |

**Table- 4 Combined analysis over year in retting experiment during 2008/09 -2009/10**

| SN | Treatment | Morang | | | Sunsari | | |
|---|---|---|---|---|---|---|---|
| | | Recovery (kg) | Cost (Rs) | Ret. Per (day) | Recovery (kg) | Cost (Rs) | Ret.Per. |
| 01 | Gravel | 14.79 | 268.75 | 16.4 | 14.79 | 226.88 | 16.0 |
| 02 | W. Hyacinth | 13.39 | 230.00 | 14.6 | 15.62 | 211.88 | 13.3 |
| 03 | Bamboo | 13.59 | 243.75 | 15.4 | 13.84 | 202.50 | 16.0 |
| 04 | Soil (FP) | 13.90 | 77.50 | 17.3 | 16.18 | 60.63 | 16.0 |
| F test | | | | | | | |
| Treat (A) | | * | ** | ** | ** | ** | ** |
| Year (B) | | Ns | ** | ** | Ns | ** | ** |
| A x B | | - | ** | ** | - | Ns | - |
| CV % | | 4.48 | 2.88 | 3.73 | 9.21 | 13.51 | 8.26 |
| LSD (0.05) | | | | | | | |

Fig.1: reveals that quality of jute fibre produced in the treatment jute bundle pressed with water hyacinth was observed best quality i.e. Silky type and the treatment also found most profitable (Fig.2). Fibre produced by 100 kg green plant fetches about NRs.650.00 net income which is about 7% over farmers practice retting method.

**Fig. 1: Effect of fiber quality from the materials used for pressing jacks in retting experiment**

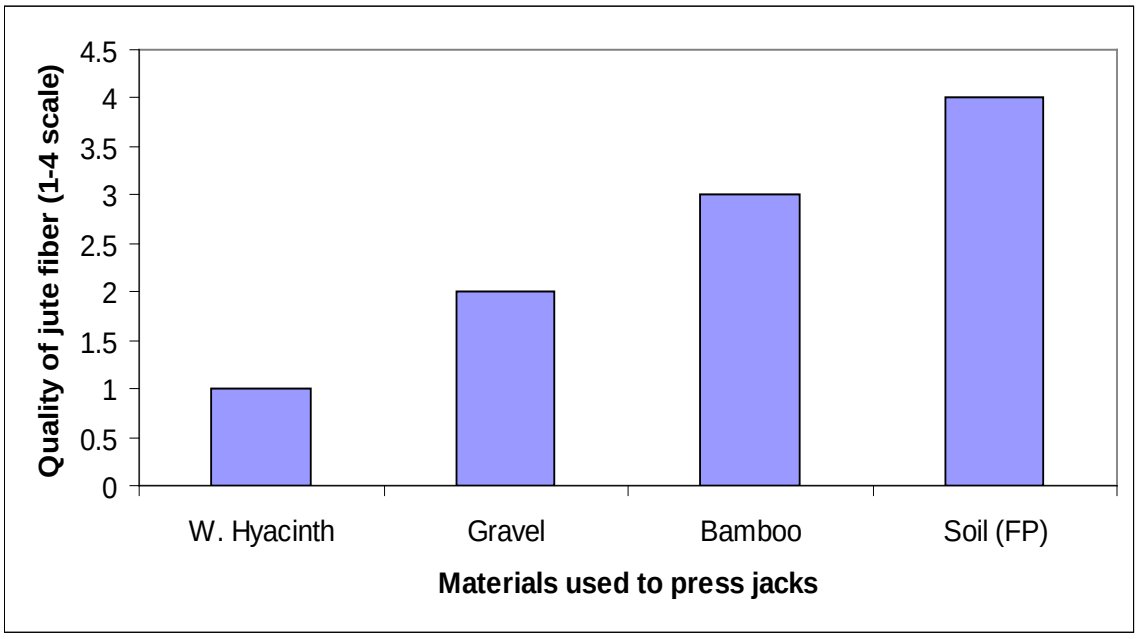
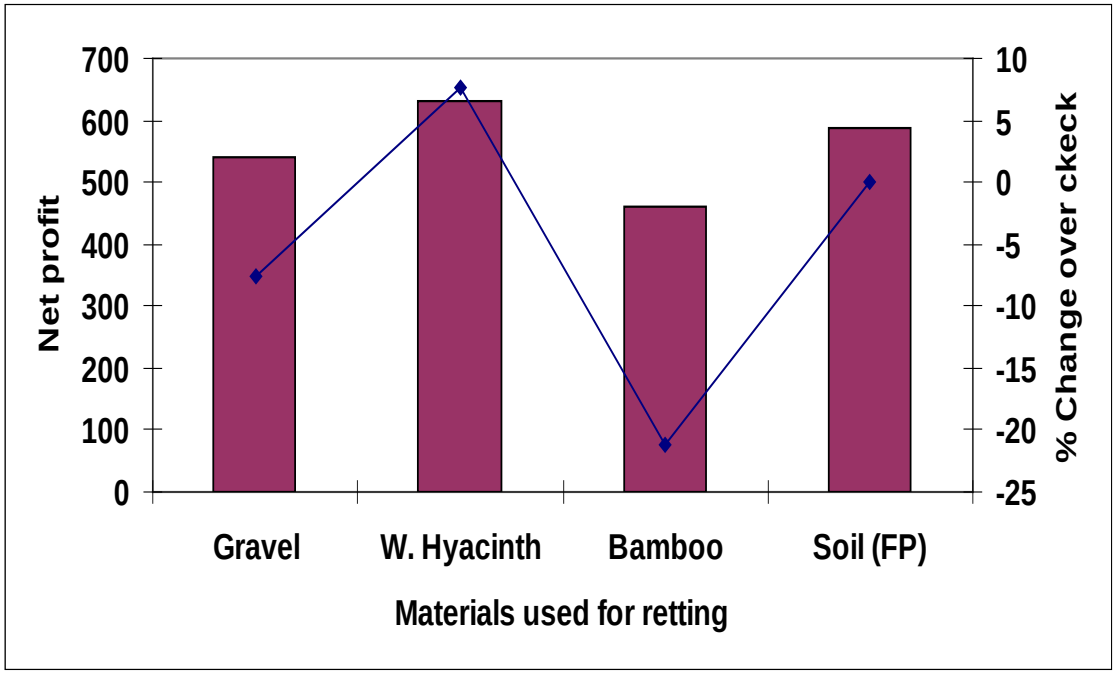


**Fig. 2: Benefit and ratio of benefit increment/100 kg raw jute in retting experiment**




It is revealed from Table- 5 that there was no significant difference in the dry fibre yield among the treatments however, farmers practice with plant protection produced 2391kg/ha followed by mulching with plant protection 2325 kg/ha at Kadmaha and result in the same line at Nocha in the F.Y. 2007/08 while mulching with plant protection (2933kg/ha) followed by red amaranth with plant protection (2733 kg/ha) at Kadmaha and farmers practice with plant protection (3038 kg/ha) came behind mulching with plant protection during the F.Y. 2008/09 (Table- 6). But in the combination over sites at Morang district mulching with plant protection produced the highest dry fibre yield 2355 kg/ha followed by Targa super with plant protection 2220 kg/ha with non-significant difference during the fiscal year 2007/08 whereas mulching with plant protection (2925 kg/ha) came after Red amaranth with plant protection (2700 kg/ha) with highly significant difference among the treatments in the F.Y. 2008/09 (Table-7)

**Table 5: IPM experiment carried out at Morang, 2007/08**

| SN | Treatment | Kadmaha | | | Nocha | | |
|---|---|---|---|---|---|---|---|
| | | BD (inch) | PH (cm) | DFY (Kg/ha) | BD (inch) | PH (cm) | DFY (Kg/ha) |
| 01 | FP &+PP | 1.08 | 233.8 | 2391 | 1.09 | 226.3 | 2390 |
| 02 | FP &-PP | 1.01 | 232.5 | 2083 | 0.98 | 215.0 | 2280 |
| 03 | RA &+PP | 0.95 | 229.3 | 1903 | 0.89 | 181.3 | 2340 |
| 04 | RA &-PP | 1.12 | 220.0 | 1822 | 0.99 | 188.8 | 2196 |
| 05 | Targa &+PP | 1.05 | 237.5 | 2165 | 0.96 | 220.0 | 2276 |
| 06 | Targa &-PP | 1.00 | 225.0 | 2055 | 0.95 | 200.0 | 2162 |
| 07 | Mulch &+PP | 0.91 | 193.8 | 2325 | 1.16 | 216.3 | 2387 |
| 08 | Mulch &-PP | 0.88 | 197.5 | 1825 | 1.08 | 218.8 | 2228 |
| F test | | * | Ns | Ns | * | Ns | Ns |
| CV% | | 10.21 | 10.92 | 16.07 | 10.04 | 14.58 | 8.14 |
| LSD at 0.05 | | 0.15 | 35.5 | 489.5 | 0.15 | 44.64 | 273.1 |

**Table: 6 IPM experiment carried out at Morang, 2008/09**

| SN | Treatment | Kadmaha | | | Nocha | | |
|---|---|---|---|---|---|---|---|
| | | BD (inch) | PH (cm) | DFY (kg/ha) | BD (inch) | PH (cm) | DFY (kg/ha) |
| 01 | FP &+PP | 0.94 | 196.3 | 2683 | 1.15 | 258.7 | 3083 |
| 02 | FP &-PP | 0.92 | 183.7 | 2308 | 1.06 | 230.0 | 2733 |
| 03 | RA &+PP | 0.84 | 188.7 | 2733 | 1.05 | 229.7 | 2667 |
| 04 | RA &-PP | 0.93 | 180.0 | 2167 | 1.03 | 212.3 | 2433 |
| 05 | Targa &+PP | 1.23 | 187.7 | 2500 | 1.09 | 248.0 | 2733 |
| 06 | Targa &-PP | 0.89 | 190.0 | 2167 | 1.02 | 227.7 | 2417 |
| 07 | Mulch &+PP | 1.07 | 225.7 | 2933 | 1.08 | 258.7 | 2917 |
| 08 | Mulch &-PP | 0.89 | 181.7 | 2550 | 1.07 | 251.0 | 2533 |
| F test | | Ns | * | ** | Ns | ** | Ns |
| CV% | | 19.00 | 8.7 | 12.53 | 11.71 | 7.92 | 10.62 |
| LSD at 0.05 | | 0.32 | 29.2 | 549.9 | 0.22 | 33.23 | 500.1 |

**Table 7: IPM result combined over sites carried out at Morang**

| SN | Treatment | 2007/08 | | | 2008/09 | | |
|---|---|---|---|---|---|---|---|
| | | BD (inch) | PH (cm) | DFY (kg/ha) | BD (inch) | PH (cm) | DFY (kg/ha) |
| 01 | FP &+PP | 1.08 | 230.00 | 2390 | 1.05 | 227.5 | 2883 |
| 02 | FP &-PP | 0.99 | 223.8 | 2181 | 0.99 | 206.8 | 2520 |
| 03 | RA &+PP | 0.92 | 205.3 | 2121 | 0.95 | 209.2 | 2700 |
| 04 | RA &-PP | 1.06 | 204.4 | 2009 | 0.98 | 196.2 | 2300 |
| 05 | Targa &+PP | 1.01 | 228.8 | 2220 | 1.16 | 217.8 | 2617 |
| 06 | Targa &-PP | 0.98 | 212.5 | 2108 | 0.96 | 208.8 | 2292 |
| 07 | Mulch &+PP | 1.04 | 205.0 | 2355 | 1.07 | 242.2 | 2925 |
| 08 | Mulch &-PP | 0.98 | 208.1 | 2026 | 0.98 | 216.3 | 2542 |
| F test | | Ns | Ns | Ns | Ns | * | ** |
| Treatment (A) | | Ns | Ns | Ns | * | ** | Ns |
| Year (B) | | ** | Ns | Ns | Ns | Ns | Ns |
| A x B | | | | | | | |
| CV% | | 10.60 | 15.42 | 21.99 | 14.99 | 10.07 | 12.89 |

Table- 8 indicates that farmers practice in weed control with plant protection produced the highest dry fibre yield (2213 kg/ha came behind mulching without plant protection (2188 kg/ha) at Narsing VDC with non-significant difference while Targa super with plant protection 2131 kg/ha followed by mulching with plant protection 2069 kg./ha at Shivganj in the F.Y. 2007/08. Application of Targa super followed by one hand weeding found effective to control all type of weeds in which the herbicide only control grassy weeds while broad leave and sedge were removed manually.

**Table 8: IPM experiment carried out at Sunsari, 2007/08**

| SN | Treatment | Nursing | | | Shivaganj | | |
|---|---|---|---|---|---|---|---|
| | | BD (inch) | PH (cm) | DFY (kg/ha) | BD (inch) | PH (cm) | DFY (kg/ha) |
| 01 | FP &+PP | 1.08 | 266.9 | 2213 | 1.13 | 229.8 | 2063 |
| 02 | FP &-PP | 0.99 | 226.6 | 1806 | 0.99 | 210.2 | 1731 |
| 03 | RA &+PP | 1.04 | 242.1 | 1925 | 0.81 | 207.3 | 1919 |
| 04 | RA &-PP | 1.06 | 240.6 | 1788 | 0.80 | 216.3 | 1438 |
| 05 | Targa &+PP | 1.02 | 237.2 | 1991 | 0.94 | 22.6 | 2131 |
| 06 | Targa &-PP | 0.98 | 227.1 | 1775 | 0.99 | 218.8 | 2019 |
| 07 | Mulch &+PP | 1.09 | 236.7 | 2060 | 0.96 | 203.2 | 2069 |
| 08 | Mulch &-PP | 1.23 | 257.8 | 2188 | 0.90 | 206.5 | 1888 |
| F test | | Ns | Ns | Ns | ** | * | Ns |
| CV% | | 12.78 | 8.04 | 28.75 | 15.70 | 14.0 | 18.59 |
| LSD at 0.05 | | 0.19 | 28.84 | 832.03 | 0.22 | 44.1 | 521.4 |

Table 9: reveals that farmers practice with plant protection produced the highest dry fibre yield 2138 kg/ha followed by mulching with farmers practice 2067 kg/ha in combined result over sites in Sunsari district. Among 4 treatments spraying of Targa super and mixed cropping of Red amaranth were selected to control weeds appeared in Jute field based on high yield, having the capacity to reduce expenses on labour and as an alternative of farmers practice. Mulching with plant protection practice in weed control could not be accepted by most of the farmers because of high cost, Jute planting must be in line and straw needed as a fodder for cattle. Therefore, application of Targa super and mixed cropping of Red Amaranth with Jute were used as methods of weed control in the Outreach Research Site of Morang and Sunsari districts during the fiscal year 2009/10. Both the treatments spraying of Targa super and mixed cropping of Red amaranth produced high dry fibre yield (3609 & 3619 kg/ha) in Morang with non-significant difference while (4147 & 5120 kg/ha) in Sunsari with significant difference respectively (Table- 10).

**Table 9: IPM result combined over sites carried out at Sunsari**

| SN | Treatment | Combined over two sites | | |
|---|---|---|---|---|
| | | BD (inch) | PH (cm) | DFY (kg/ha) |
| 01 | FP &+PP | 1.11 | 248.4 | 2138 |
| 02 | FP &-PP | 0.99 | 223.4 | 1769 |
| 03 | RA &+PP | 0.93 | 224.7 | 1922 |
| 04 | RA &-PP | 0.93 | 231.5 | 1613 |
| 05 | Targa &+PP | 0.98 | 229.9 | 2061 |
| 06 | Targa &-PP | 0.98 | 222.9 | 1897 |
| 07 | Mulch &+PP | 1.02 | 220.0 | 2067 |
| 08 | Mulch &-PP | 1.06 | 232.1 | 2038 |
| F test<br>Treatment (A)<br>Year (B)<br>A x B | | Ns<br>**<br>Ns | Ns<br>**<br>Ns | Ns<br>Ns<br>Ns |
| CV% | | 14.51 | 11.91 | 31.48 |

**Table 10: Performance of JRO-524 in IPM experiment, 2009/10**

| SN | Treatment | Morang | | | Sunsari | | |
|---|---|---|---|---|---|---|---|
| | | BD (inch) | PH (cm) | DFY (kg/ha) | BD (inch) | PH (cm) | DFY (kg/ha) |
| 01 | Targa super | 1.13 | 251.5 | 3609 | 1.18 | 243.7 | 4147 |
| 02 | Red amaranthus | 1.18 | 251.4 | 3619 | 1.08 | 233.0 | 5120 |
| F test | | Ns | Ns | Ns | Ns | Ns | * |
| CV% | | 6.10 | 6.64 | 12.22 | 23.39 | 7.79 | 15.43 |
| LSD at 0.05 | | 0.08 | 19.75 | 522.04 | 0.31 | 21.96 | 845.140 |

Table 11, 12, 13 & 14 shows the number of weeds appeared in the Jute experiments and their dry matter noted in 0.25 $m^2$ before first and second weeding conducted at Outreach Research Site. Broad leaved weeds were observed maximum in number 18.8, 68.5, 64.3 and 58.3 at Shivganj, Nocha, Kadmaha and in combined mean respectively. Maximum quantity of dry matter 27.8 g/0.25 $m^2$ plot was observed at Kadmaha VDC which becomes 1112 kg/ha. High dry matter indicates the more number of weeds and their spread in the field.

**Table 11: Appearance of weeds with dry matter in IPM experiment at Nocha, 2007/08**

| TN | Treatment Detail | Weed/0.25m$^2$before 1$^{st}$ weeding | | | Weed/0.25m$^2$ before 2$^{nd}$ weeding at 35 days | | | DM (g) 0.25m$^2$ before 1$^{st}$ weeding | DM(g) 0.25m$^2$ at 35 days | Total DM (g) of 0.25m$^2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| | | G | BL | S | G | BL | S | | | |
| 1 | Terga super | 5.0 | 47.0 | 18.3 | 0.8 | 32.8 | 15.8 | 16.7 | 5.9 | 22.6 |
| 2 | Mulching | 6.8 | 32.3 | 8.5 | 0.0 | 17.8 | 6.3 | 11.1 | 4.9 | 15.0 |
| 3 | Red Amaranth | 7.0 | 39.8 | 16.0 | 2.5 | 26.5 | 26.3 | 7.9 | 4.5 | 12.4 |
| 4 | Farmers Practice (FP) | 8.0 | 68.5 | 26.3 | 2.3 | 48.3 | 29.8 | 16.6 | 6.5 | 23.1 |

**Table 12: Appearance of weeds with dry matter in IPM experiment at Kadmaha, 2007/08**

| TN | Treatment Detail | Weed/0.25m$^2$before 1$^{st}$ weeding | | | Weed/0.25m$^2$ before 2$^{nd}$ weeding at 35 days | | | DM (g) 0.25m$^2$ before 1$^{st}$ weeding | DM(g) 0.25m$^2$ at 35 days | Total DM (g) of 0.25m$^2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| | | G | BL | S | G | BL | S | | | |
| 1 | Terga super | 4.3 | 64.3 | 24.8 | 1.5 | 39.5 | 17.8 | 18.8 | 9.0 | 27.8 |
| 2 | Mulching | 4.8 | 28.5 | 17.5 | 1.8 | 22.8 | 13.0 | 12.3 | 7.5 | 19.8 |
| 3 | Red Amaranth | 2.8 | 43.3 | 30.5 | 1.5 | 36.3 | 17.0 | 12.5 | 8.8 | 21.3 |
| 4 | Farmers Practice (FP) | 2.8 | 48.0 | 43.8 | 1.8 | 39.3 | 26.5 | 18.8 | 7.5 | 26.3 |

**Table 13: Combined analysis over sites (Kadmaha & Noha) of the weeds observed in IPM experiment in Morang district during F. Y. 2007/08**

| TN | Treatment Detail | Weed/0.25m$^2$before 1$^{st}$ weeding | | | Weed/0.25m$^2$ before 2$^{nd}$ weeding at 35 days | | | DM (g) 0.25m$^2$ before 1$^{st}$ weeding | DM(g) 0.25m$^2$ at 35 days | Total DM(g) Of 0.25m$^2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| | | G | BL | S | G | BL | S | | | |
| 1 | Terga super | 4.6 | 55.6 | 21.5 | 1.1 | 36.1 | 14.8 | 17.71 | 7.44 | 25.15 |
| 2 | Mulching | 5.8 | 30.4 | 13.0 | 0.9 | 20.3 | 9.6 | 11.69 | 6.19 | 17.88 |
| 3 | Red Amaranth | 4.9 | 41.5 | 23.3 | 2.0 | 31.4 | 21.6 | 10.19 | 6.61 | 16.80 |
| 4 | Farmers Practice (FP) | 5.4 | 58.3 | 35.0 | 2.0 | 43.8 | 28.1 | 17.68 | 7.00 | 24.68 |

**Table 14: Appearance of weeds with dry matter in IPM experiment at Shivaganj, 2007/08**

| TN | Treatment Detail | Weed/0.25m$^2$before 1$^{st}$ weeding | | | Weed/0.25m$^2$ before 2$^{nd}$ weeding at 35 days | | | DM (g) 0.25m$^2$ before 1$^{st}$ weeding | DM(g) 0.25m$^2$ at 35 days | Total DM (g) of 0.25m$^2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| | | G | BL | S | G | BL | S | | | |
| 1 | Terga super | 1.0 | 26 | 5.8 | 0.0 | 8.0 | 12.0 | 2.15 | 2.20 | 4.35 |
| 2 | Mulching | 1.0 | 15.8 | 1.3 | 1.3 | 12.5 | 5.8 | 2.65 | 5.35 | 8.0 |
| 3 | Red Amaranth | 1.3 | 13.3 | 6.5 | 1.3 | 7.0 | 8.3 | 2.70 | 2.35 | 5.05 |
| 4 | Farmers Practice (FP) | 1.0 | 18.3 | 3.0 | 4.0 | 9.0 | 7.8 | 2.20 | 2.75 | 4.95 |

**Conclusion**

- Water hyacinth was found most effective to improve the quality of jute fibre followed by jute bag with gravel which fetches more price as compared to other methods of retting by this way this method found profitable and it also reduces the retting period (2-3) days therefore it might be recommended for the retting of jute bundle.

- Spraying of targa super @ 2ml/lit water was found effective to control grassy weeds therefore, it could be recommended to control the weeds in jute field.

- Red amaranth was found effective to suppress the weeds and also sold as leafy vegetable therefore it might be recommended to control weeds in jute field and to earn some extra money**.**

**Acknowledgement**

Authors would like to express their sincere gratitude to Executive Director Dr. B. Mishra and Directors of NARC for their invaluable suggestions, guidelines and personnel keen interest for the implementation of these activities effectively. They are grateful to Mr. Sanjay Yadav, Member Secretary, NARDF for the arrangement of budget to accomplish these activities successfully on time. They would like to thank to the farmers of Outreach Research Site of Jute Research Program, Itahari for their participation in conducting the experiments. Last but not least staffs of JRP deserve appreciation for their contribution in managing the experiments and excellent word processing.

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# Community Based Seed Production of Jute and its Impact in Farmer's Community

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**Abstract**

Jute (*Corchorus olitorius and Corchorus capsularis*) is a commercial crop in Nepal i.e. mainly cramped in the terai district of Eastern Development region. It plays a vital role in the generation of employment opportunities for about 100 thousand people in agriculture, trade and industrial sector. A total of 12.5 mt Jute seed produced by the farmers involved in three (CBSP) group formed in Siraha district during the fiscal year 2007/08 - 2009/10 which is not sufficient therefore, such program should be continued until its sustainability and existing farmer's group advanced to cooperative.

**Key words:** CBSP, Jute, Productivity, sustainability and variety

## Introduction

Jute is an important industrial crop of Nepal and generates employment opportunity for above 0.1 million people. The sectors creating employment are Jute agriculture, trade and industries. The annual demand of raw jute for running Jute industries in the country is about 0.1 million metric ton however, domestic production meets nearly 20% of the requirement (JRP, 2009). The Jute area has been declining in order  presently cultivated in 11678 ha of land (ABPSD, 2009) while reached up to 56714 ha previously (JRP, 2009) that might be due to the involvement of several factors behind it in which lack of quality type required quantity of Jute seed also. Fig.1 Shows the Situation of jute seed demand and supply on national level while Fig.2 district wise seed demand.

**Fig.1: Status of improved jute seed supply and demand**

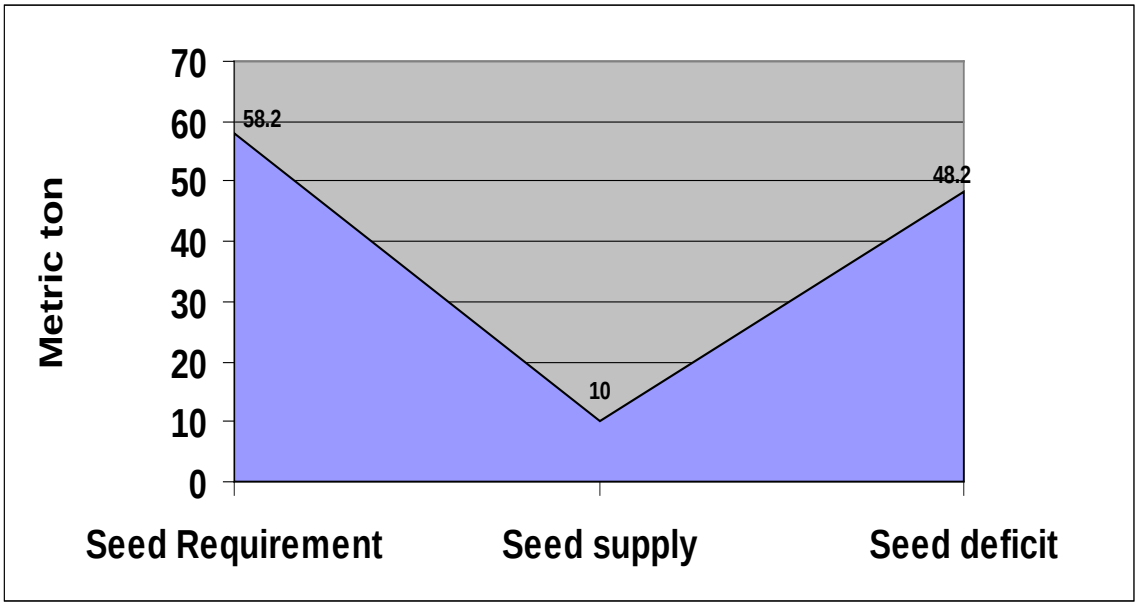
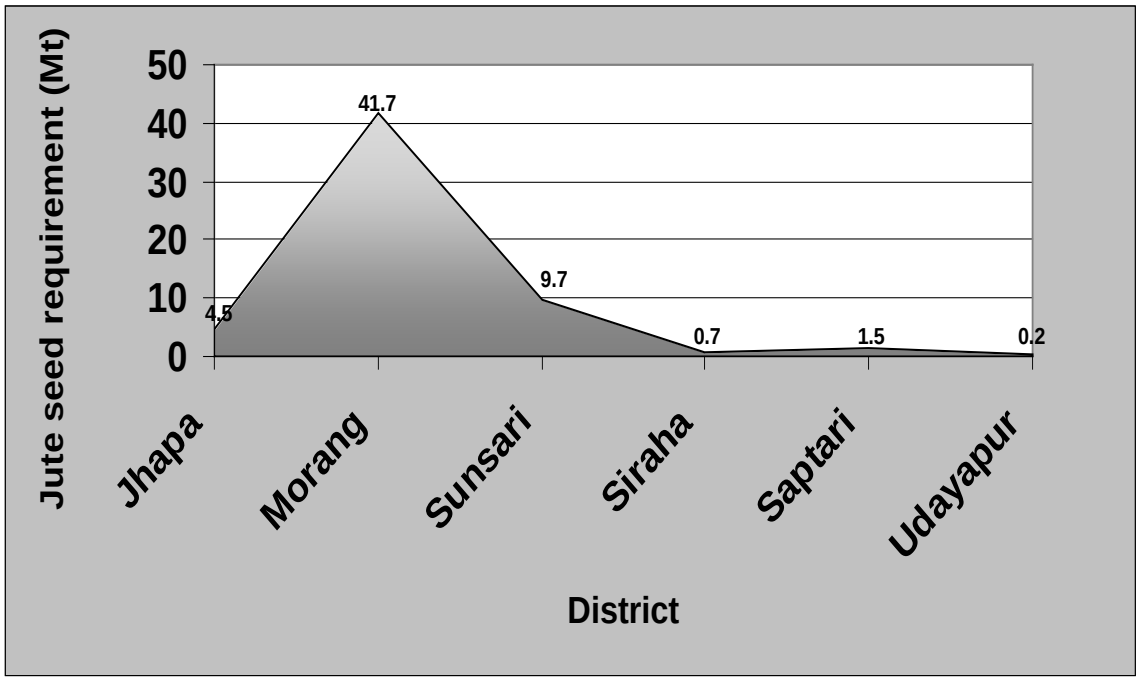


**Fig.2: District-wise jute seed requirement**




Therefore, Jute seed production program was launched with the participation of farmers of some VDC of Siraha district based on the following objective:

- To fulfill the demand of Jute seed.
- To produce quality type seed.
- To make available Jute seed to the place of consumption with the formation of Community Based Seed Production (CBSP) group.
- To establish the transportation system of Jute seed from the place of origin to the place of consumption through GOs/NGOs/Agrovet.

## Materials and Methods

Three CBSP groups were formed in Siraha district in which two Shree Dhamini Mai Group and Shree Shiv Shankar group in Muksar VDC on July 5, 2007 while one Shree Dhamini Mai group in Bishnupurkati VDC on July 6, 2007, participation of farmers in that groups are mention in Table 1.

**Table 1: Farmers participated in CBSP group formed at Muksar & Bisnupurkatti VDC of Siraha district**

| Group | Number of farmers involved | | | | | | |
|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Dalit | Janjati | Others | Total |
| Shree Dhamini Mai Group, Muksar | 22 | 3 | 25 | 1 | 20 | 4 | 25 |
| Shree Shiva Shankar Group, Muksar | 25 | 0 | 25 | 1 | 20 | 4 | 25 |
| Shree Dhamini Mai Group, Bishnupurkati | 20 | 1 | 21 | 1 | 17 | 3 | 21 |

Jute seed was distributed to the farmers on 25% subsidy. Tripal and gunny bag were also provided to each group.

Training program was arranged for the farmers of CBSP group on Jute Seed Production and conducted at Muksar VDC on June 23, 2007 and at Bishnupurkati VDC on June 2, 2008 in which 34and 28 farmers Participated respectively. Farmers acquainted with cultivation practices, disease, insect and weed control mechanism and storage of Jute. Information regarding seed certification marketing system was also provided to the farmers. Jute Research Program, Itahari also cooperated in the contract of selling of Jute seed between agrovet (Deepika Krishi Kendra, Biratnagar, Morang) and farmers of CBSSP group. Transpiration of Jute seed was managed by the project fund from the place of production to agrovet.

**Results and Discussion**

It is indicated from Table- 2 that 12500 kg Jute seed was produced by three CBSP groups in Siraha district within the project period (F.Y. 2007/08 - 2009/10) of two varieties JRO- 524 and JRO- 632.

**Table- 2: Produced quantity of Jute seed by CBCP group of Muksar & Bishnupurkati VDC of Siraha district during the fiscal year 2007/08 - 2009/10**

| S.N. | Name of Group | Variety | Production quantity of Jute Seed (kg.) | | | |
|---|---|---|---|---|---|---|
| | | | 2007/08 | 2008/09 | 2009/10 | Total |
| 01. | Shree Dhamini Mai Group, Bishnupurkati | JRO- 524 | 800 | 1400 | 2000 | 4200 |
| | | JRO- 632 | 0 | 0 | 0 | 0 |
| | | Sub total | 800 | 1400 | 2000 | 4200 |
| 02. | Shree Dhamini Mai Group, Muksar | JRO- 524 | 1050 | 1600 | 0 | 2650 |
| | | JRO- 632 | 0 | 0 | 2500 | 2500 |
| | | Sub total | 1050 | 1600 | 2500 | 5150 |
| 03. | Shree Shiva Shankar Group, Muksar | JRO- 524 | 650 | 1000 | 0 | 1650 |
| | | JRO- 632 | 0 | 0 | 1500 | 1500 |
| | | Sub total | 650 | 1000 | 1500 | 3150 |

| | | | | | |
|---|---|---|---|---|---|
| | **Grand Total:** | 2500 | 4000 | 6000 | 12500 |

Fig.3 reveals that area of Jute cultivation for seed purpose in Siraha district and its production has been increasing in order in which at the end of the project the crop planted in 20 ha of land and produced 6.0 mt. seed i.e. the highest record within the project period.

**Fig.3: Area and production of jute seed at project site, Siraha**

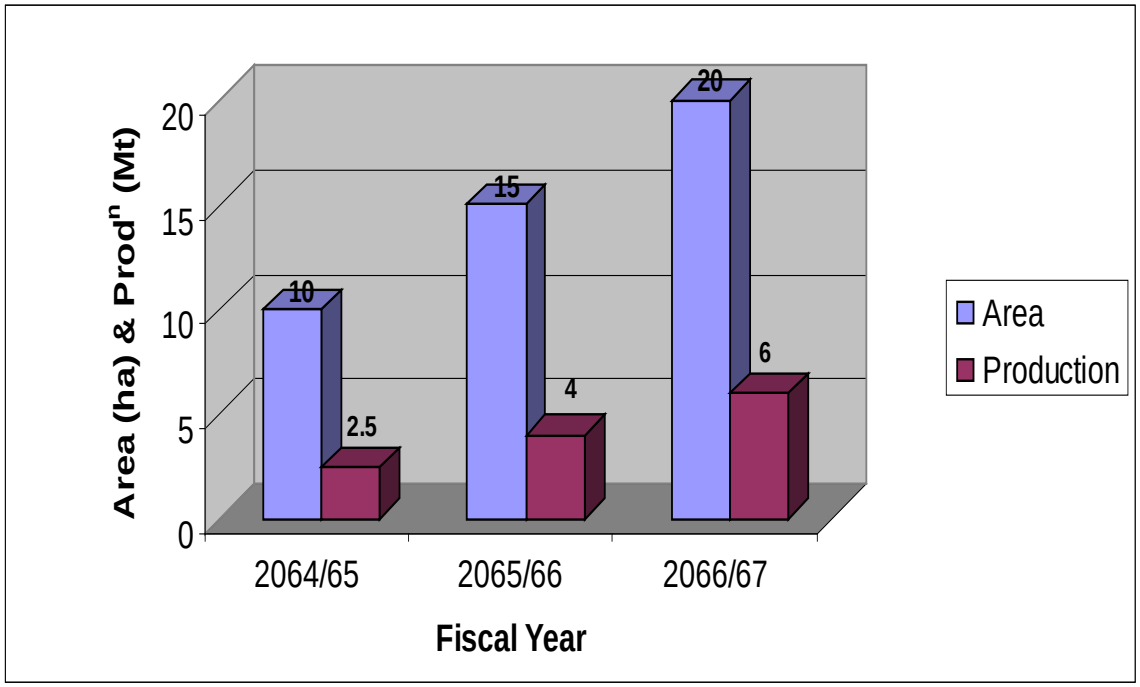



Fig.4 shows that 97% male farmers participated in the training among 62 arranged by JRP indicating that there becomes less participation of female farmers in terai belt.

**Fig.4: Status of gender inclusion in CBSP training, Siraha**

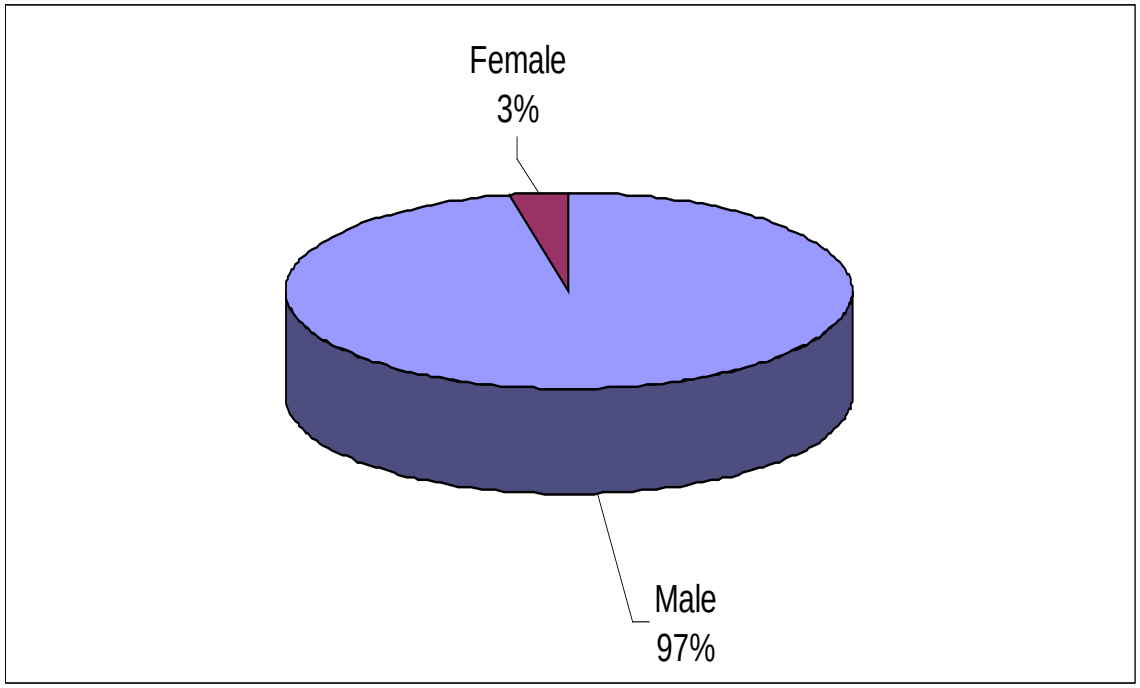


Fig.5 indicates the maximum participation of Janjati (80%) in the training program conducted at both Muksar and Bishnupurkati VDC of Siraha district on June 23, 2007 and June 2, 2008 respectively which is in accordance with the purpose of the project.

**Fig.5: Ratio of farmers inclusion based on ethnicity in CBSP, training**

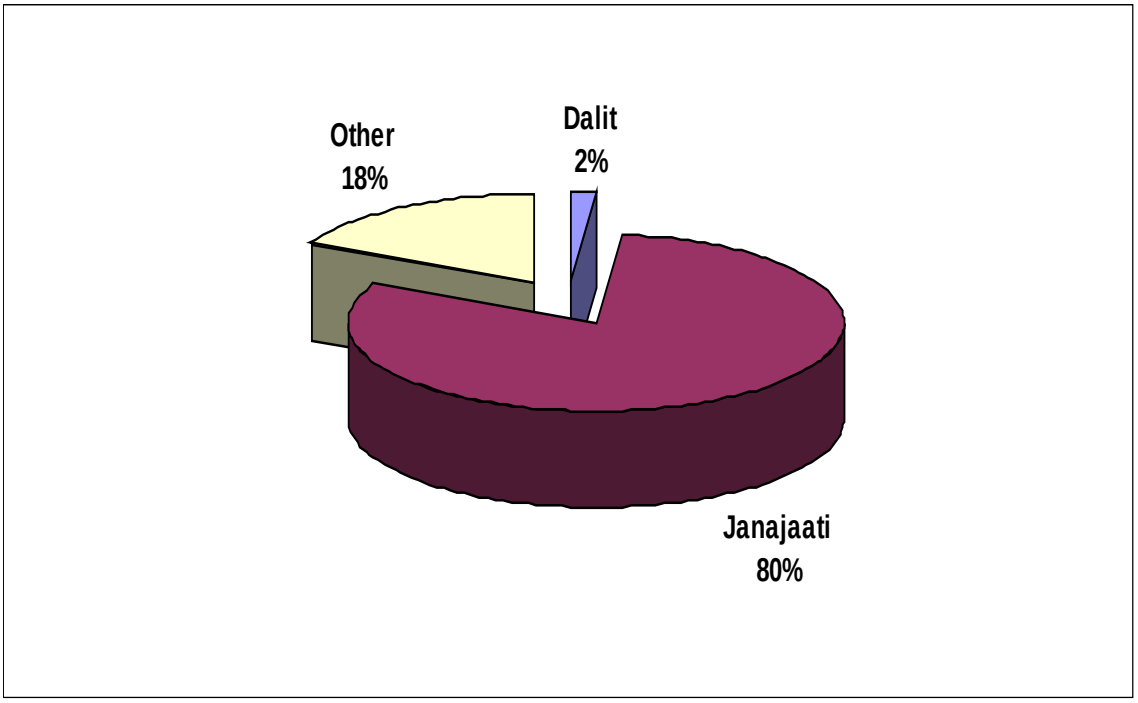



Table 3 reveals the changes in the number of farmers of food sufficiency classes i.e. 3, 4 & 4 became 6, 8 & 8 respectively in the group 1, 2 & 3 during the fiscal year 2007/08 to 2009/10 in the class "C".

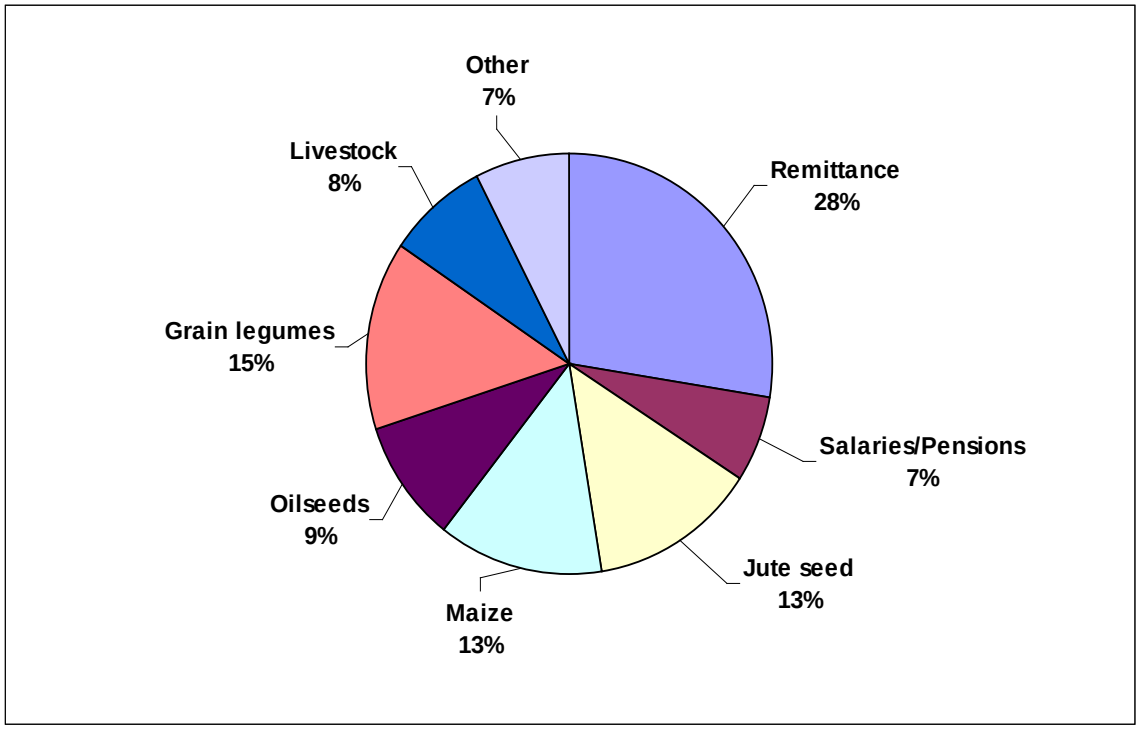
**Table 3: Changes in food sufficiency classes of farmers involved in CBSP Program Conducted in Siraha district during the F.Y. 2007/08 to 2009/10**

| S. N. | Name of group | Number of farmers according to food sufficiency class | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2007/08 | | | | 2008/09 | | | | 2009/10 | | | |
| | | A | B | C | Total | A | B | C | Total | A | B | C | Total |
| 1. | Shree Dhaminimai group, Bishnupurkati | 12 | 6 | 3 | 21 | 10 | 7 | 4 | 21 | 7 | 8 | 6 | 21 |
| 2. | Shree Dhaminimai group, Muksar | 14 | 7 | 4 | 25 | 11 | 8 | 6 | 25 | 8 | 9 | 8 | 25 |
| 3. | Shree Shiva Shankar group, Muksar | 13 | 8 | 4 | 25 | 10 | 9 | 6 | 25 | 7 | 10 | 8 | 25 |

**Note:** A = Food available for less than 6 months; B = Food available for 6-9 months; C = Food available for more than 9 months

Ratio of family income through Jute seed production of CBSP group formed in Siraha district became 13% (Fig. 6).

**Fig.6: Ratio of source of family income of jute seed producers**




## Conclusion

The CBSP Program on Jute should be continued until its sustainability and existing farmer's group promoted to cooperative. Majority of seed production sites are located in Siraha district but most of fibre production site in Jhapa, Morang and Sunsari district therefore, GOs/NGOs/ Agrovet should established the system of transporting the seed from the place of origin to the place of consumption.

## Acknowledgement

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# Jute Research Program and Area of Support Needed to Develop its Capabilities

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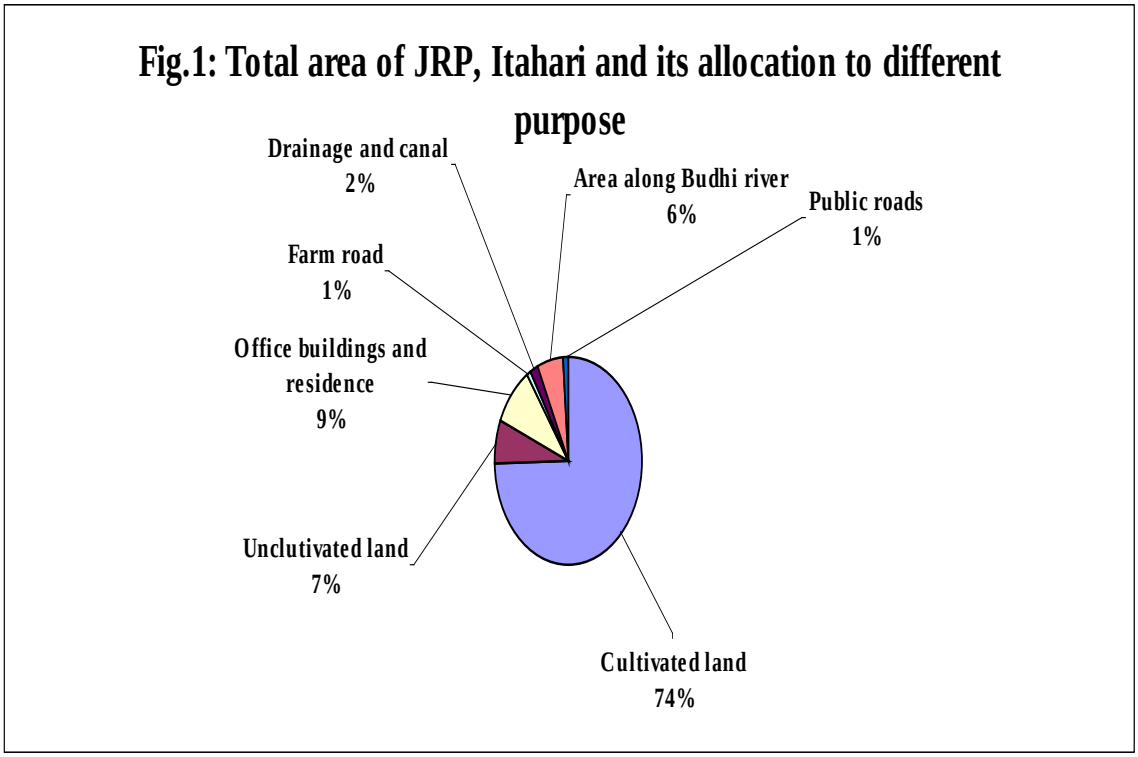
## Background

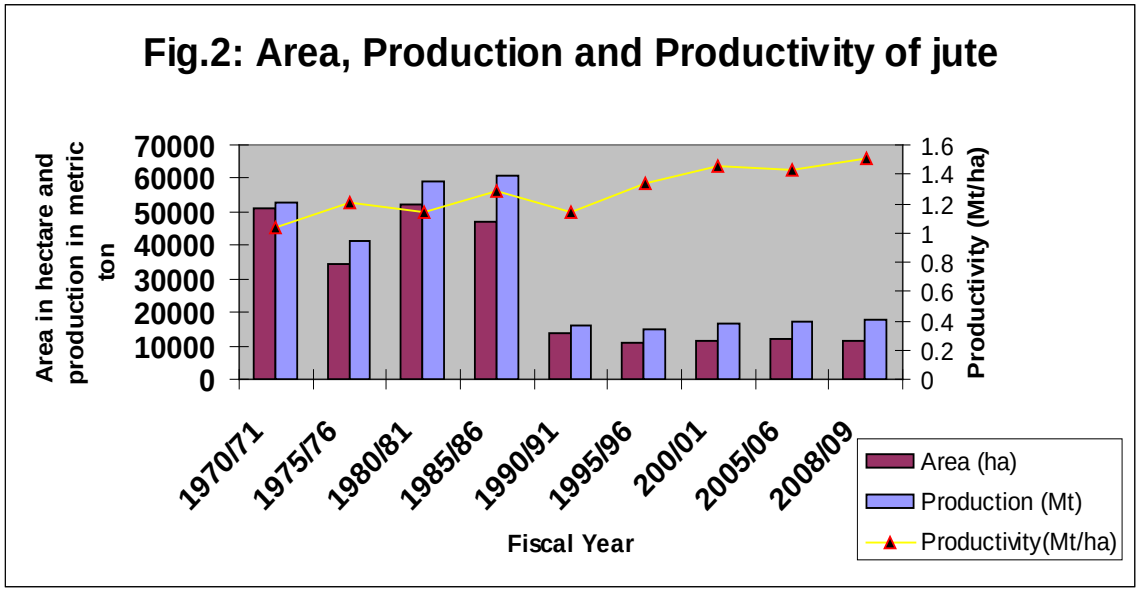
1970 – Jute Development Board
1993 – Nepal Agricultural Research Council
Research - NARC
Extension - DoA
Seed supply – The then AIC



**Farmers' Practice of Jute Retting**

**Importance**

- Industrial crops and provides employment opportunities for more than 0.1 million people
- Eight jute industries are in operation and their demand of raw jute fiber is about 0.1 million Mt
- Annual domestic production of jute fiber is about 0.017 million Mt.
- Annual exports of jute goods is about 0.064 Million Mt, worth of 2760 million rupees
- Jute crops improves soil fertility by adding 23 kg nitrogen and 10 kg phosphorus/ha
- Natural fibers help to mitigate environmental pollution



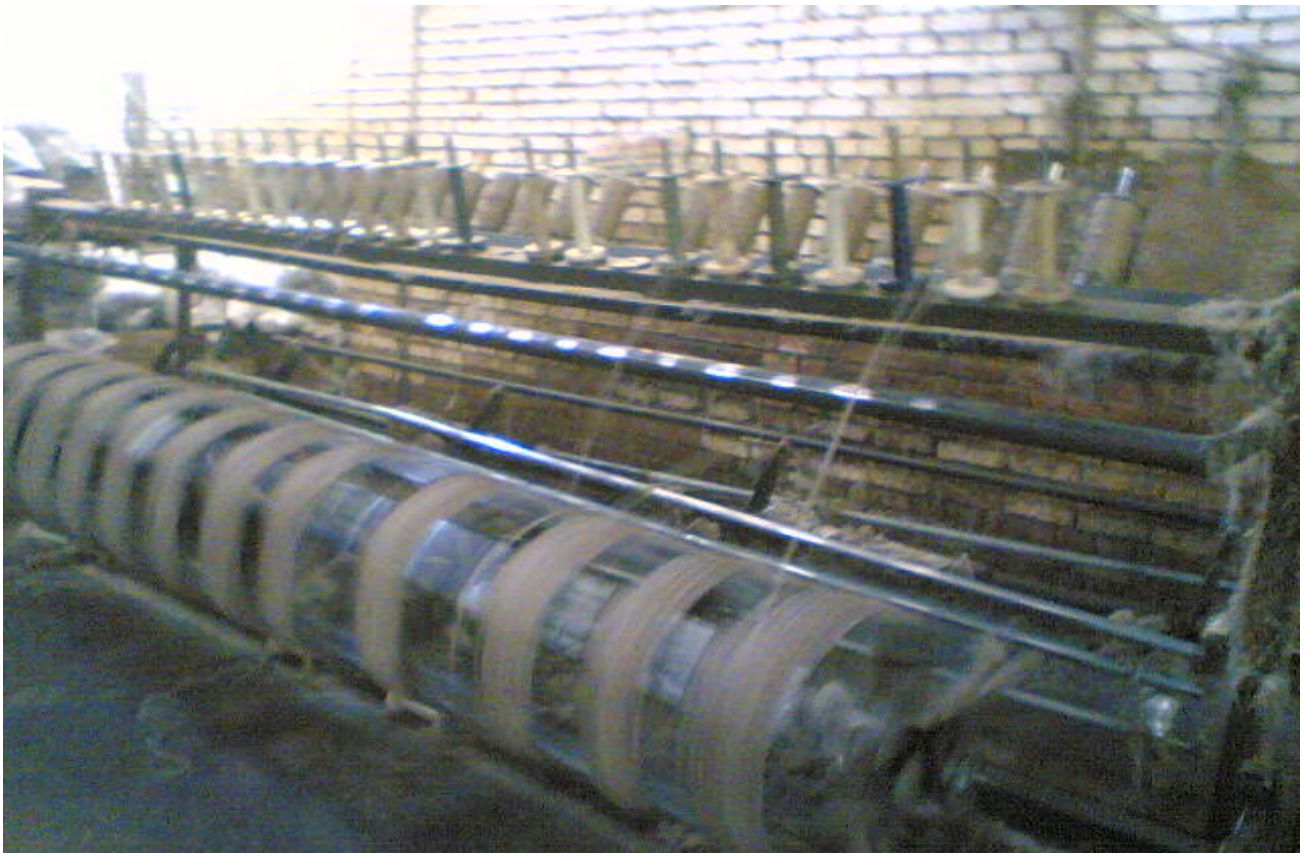
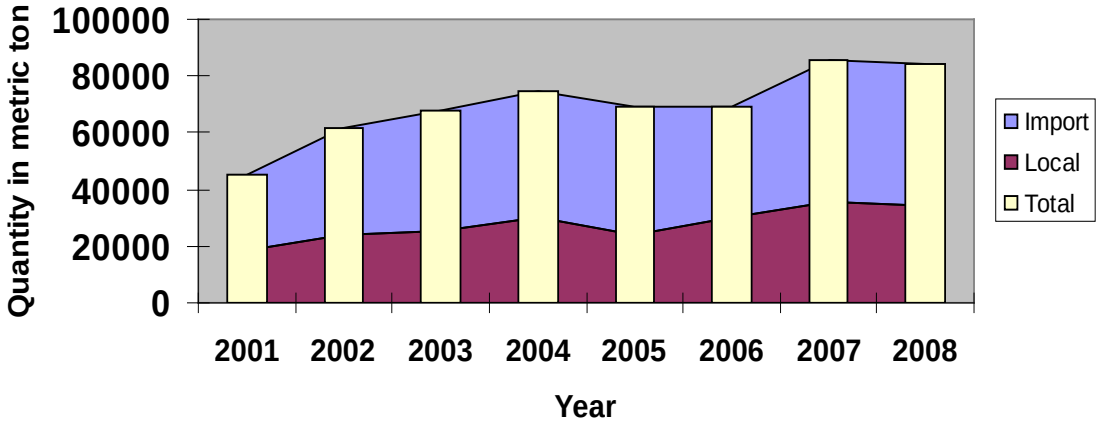


**Fig.3: Status of jute procurement by jute industries**



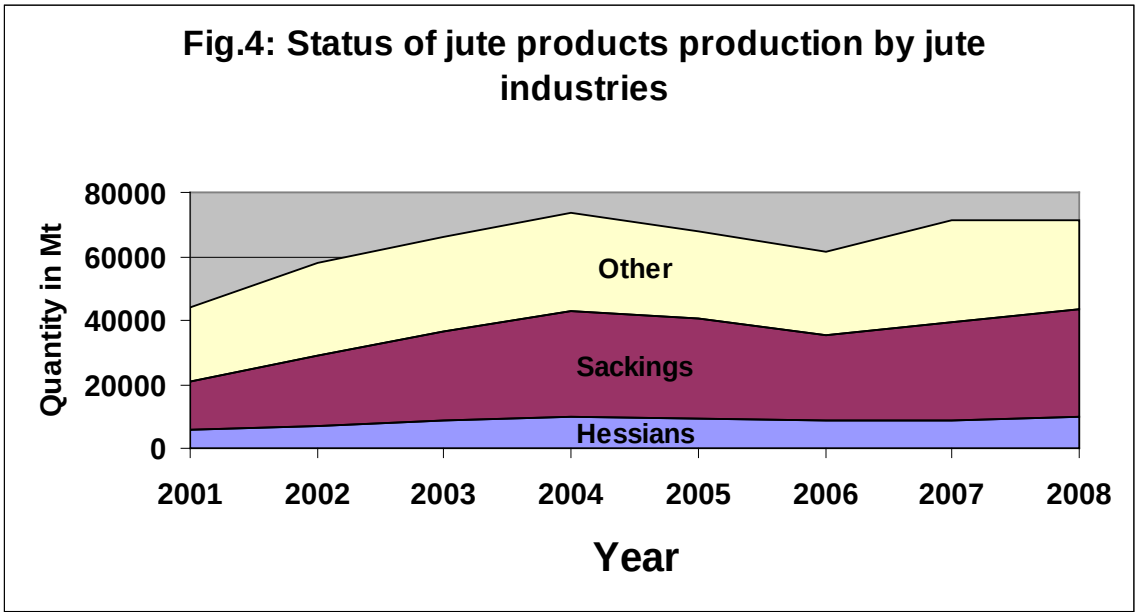


Fig.4: Status of jute products production by jute industries
Quantity in Mt
80000
60000
40000
20000
0
Other
Sackings
Hessians
2001
2002
2003
2004
2005
2006
2007
2008
Year

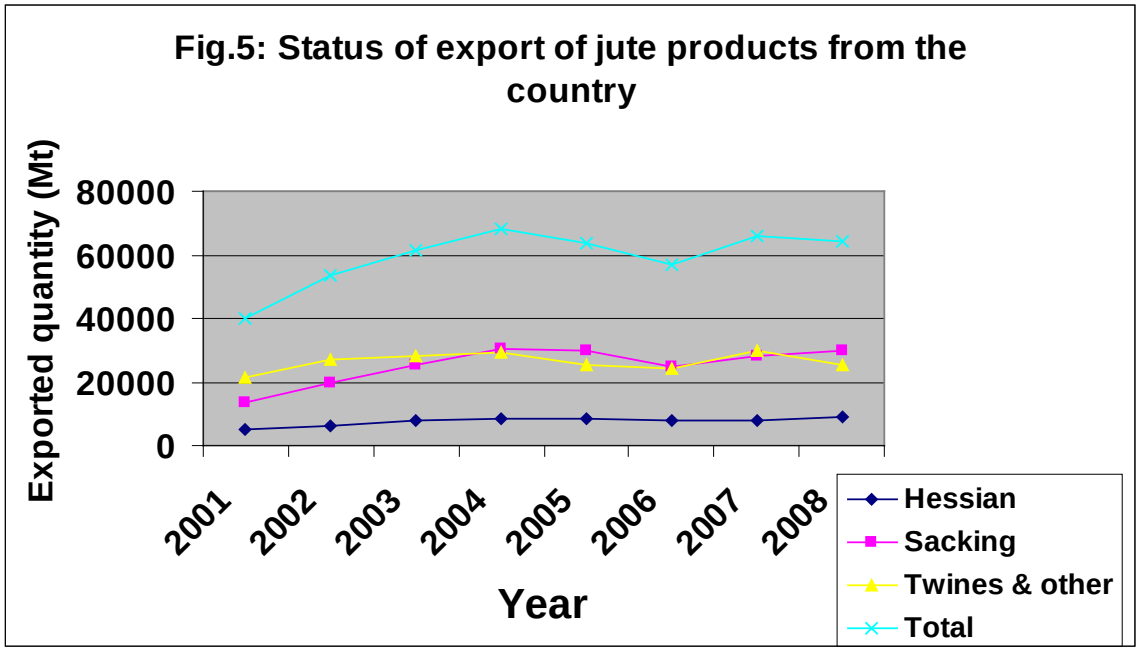
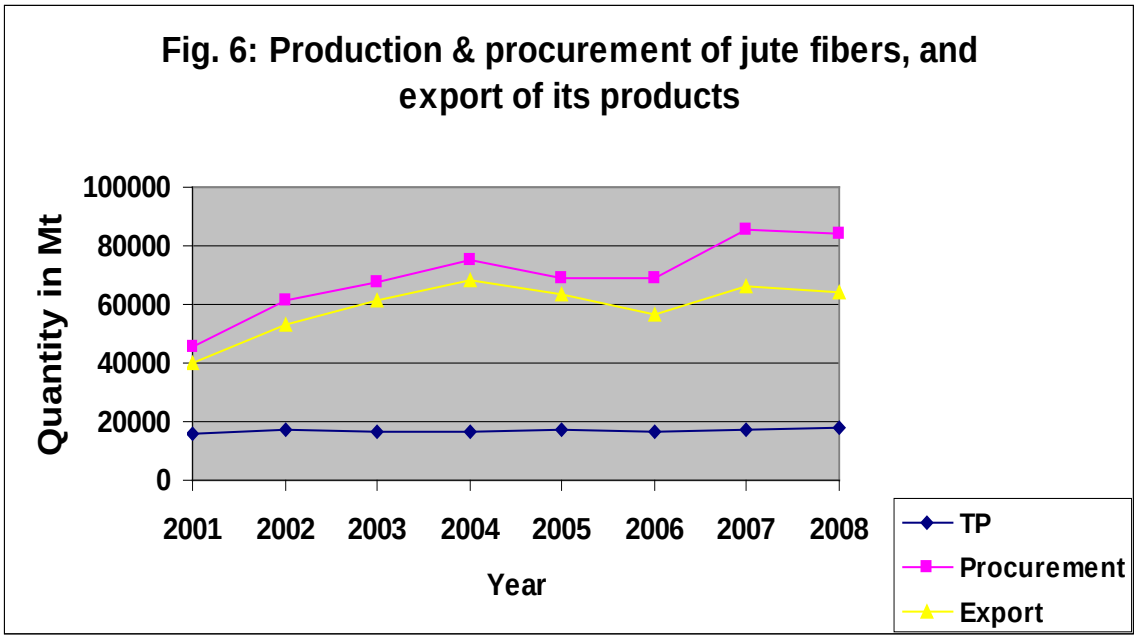


Fig.5: Status of export of jute products from the country
Exported quantity (Mt)
80000
60000
40000
20000
0
2001
2002
2003
2004
2005
2006
2007
2008
Year
Hessian
Sacking
Twines & other
Total




**Farmers' Perception**

**Fig.7: Percent of Farmers Adopting Jute based Cropping System**

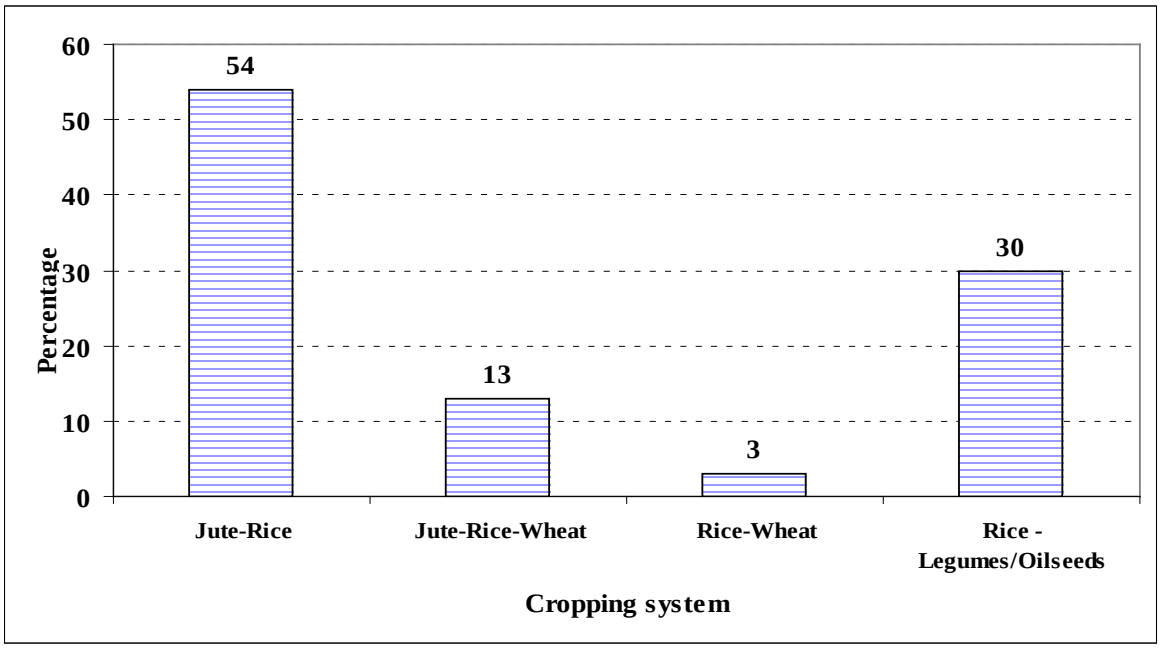


**Fig.8: Status of Jute Production**

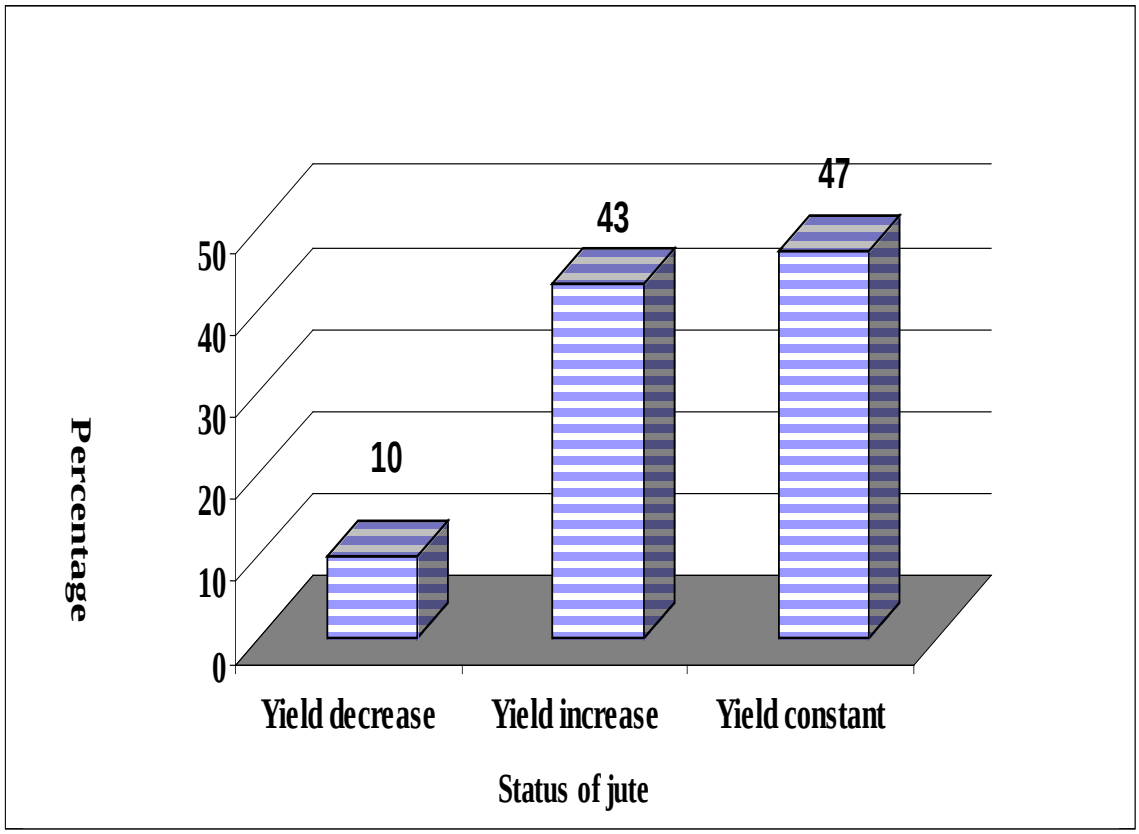
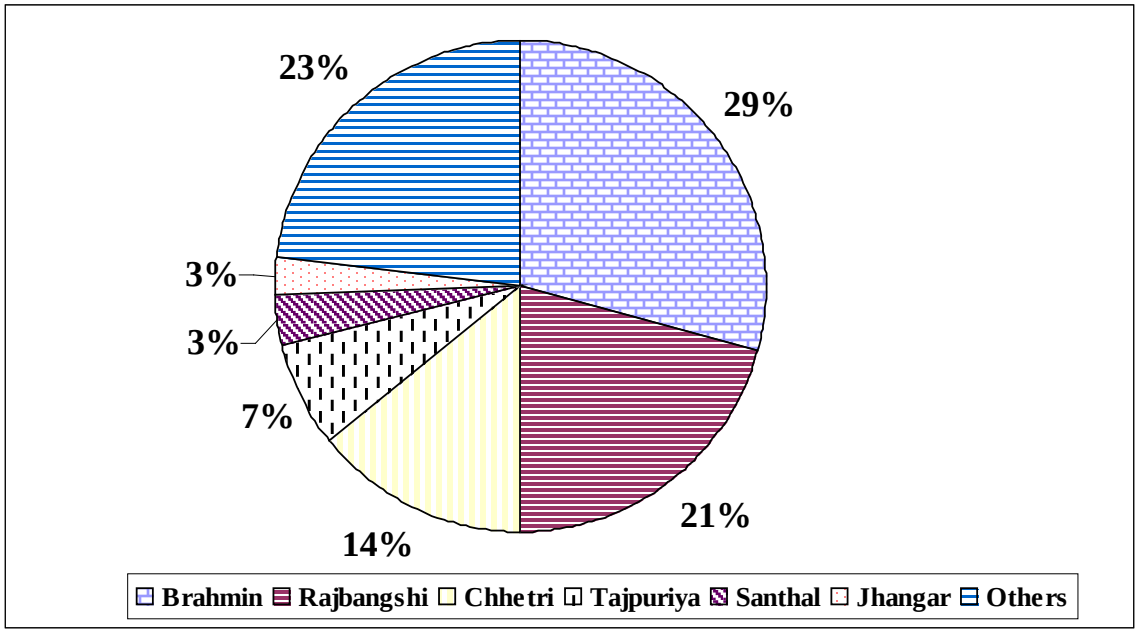
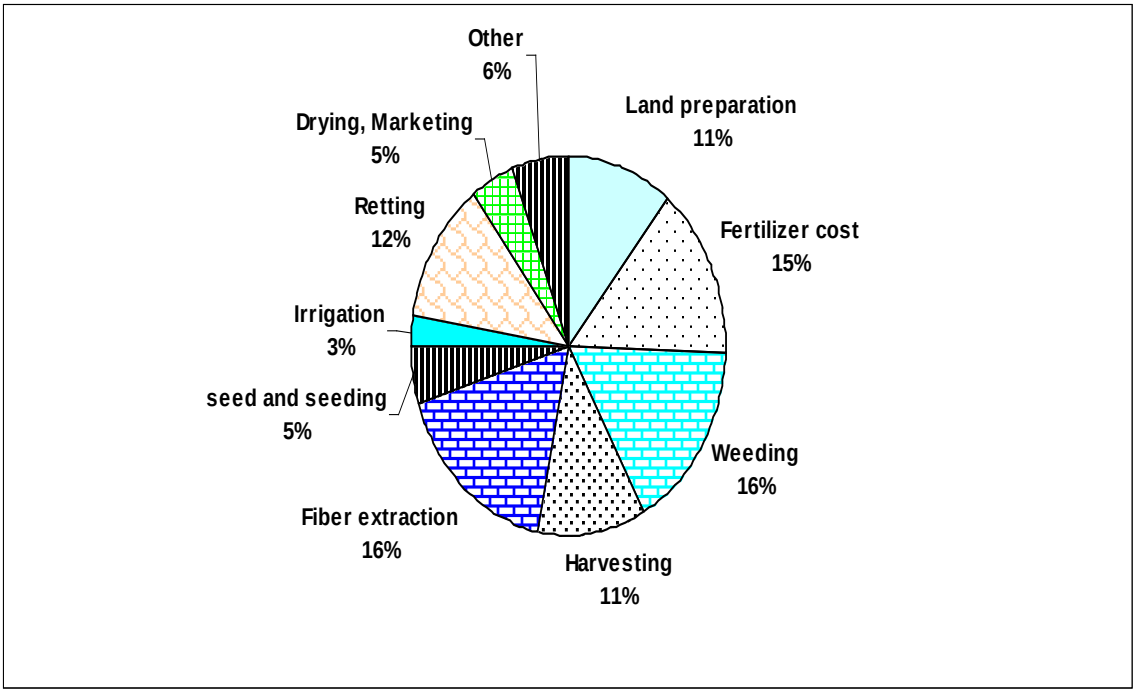



**Fig.9: Population Distribution by Different Ethnicity**



## Major Constraints

## Fig.10: Cost of Jute Cultivation




## Jute Cultivation and Processing

- Profit margin in jute cultivation is low (low price of jute fibre at harvest)
- Other remunerative crops are emerging and jute cultivation is becoming confined to marginal land
- Unavailability of quality jute seed of HYVs
- High weed infestation during early growth stage
- Labor shortage at peak season

- **Insects and disease complex**

- Inadequate retting pond/water
- Policy issues need to be addressed for provision of subsidy in inputs (seeds, fertilizers etc.) and marketing of both jute seed and fibre
- Low investment on jute research

**Recommended technologies**

**Varietal development**

1. **Itahari 1 (IJO/LISA):**

- Sada jute recommended in 2056 BS
- Suitable for J-R-W, J-Veg and J-R-F
- It withstands moisture stress at early stage
- It bears less branches and becomes ready for harvest at 120 DAS
- It produces an average yield of 1665 kg/ha

**Itahari 2. (IJO/T-86)**

- Tossa jute introduced from Taiwan and recommended in 2056 BS
- Suitable for J-R-W, J-Veg and J-R-F
- It withstands moisture stress at early stage
- It bears less branches and becomes ready for harvest at 120 DAS
- It produces an average yield of 1575 kg/ha

**Crop management:**

- Optimum planting time of Sada jute is 30 Chaitra to 15 Baishakh for increased fibre yield and for Tossa it is after 15 Baishakh

- Appropriate harvesting time is 120 DAS for both Sada and Tossa

- Fertilizer rate is 60:30:60 and 40:20:40 NPK kg/ha, respectively, for Sada and Tossa

- Detopping at 30 and 45 DAS in Sada and 30,45 and 60 DAS in Tossa is profitable for higher seed production

- J-Potato and J-Gobhi sarson are profitable cropping sequences in partially irrigated condition

**Promising Technologies**

- Application of Targa Super @2.0 ml/L at 15-20 DAS,

**Mulching @10.0 t/ha at 0-3 DAS**

**Mix-cropping of red amaranths with jute for weed management**

**Jute bundle pressed with sand/gravel packed plastic bags in retting pond**

**Jute bundles pressed with water hyacinth improves the fibre quality**

**Technology Dissemination**

**Mechanisms of technology transfer**

- It is done through OR programs in collaboration with DADOs, I/NGOs, CBOs and other stakeholders
- Training to farmers is organized regarding jute cultivation and processing

- Presenting research outputs in different workshops (VLPRW, RTWG, National Seminars, Technical meeting)
- Farmer's field day, joint monitoring
- Leaflets and booklets covering jute production technologies; annual reports and proceedings covering research results are published and distributed

**Promising jute genotypes**

JRO- 524, DS-066, DS-058, O-4

**Future Strategy**

- Development of high yielding and quality fibre producing varieties of jute for different eco-systems
- Development and dissemination of resource conservation technologies especially for weed, insects and disease management
- Development and promotion of economic and suitable retting technologies for quality fibre production
- Production and distribution of quality jute seed
- Increased collaboration with GOs, I/NGOs, donors and other agencies for jute research and development
- Assessments of constraints and potentials of jute cultivation and processing
- Investment on jute research and development, capacity and capability improvement
- Policies are needed for provision of subsidy in inputs and improved marketing of outputs for profitable jute farming
- Development of jute entrepreneurship is pertinent to capture and mobilize rural youth force

**Area of Support**

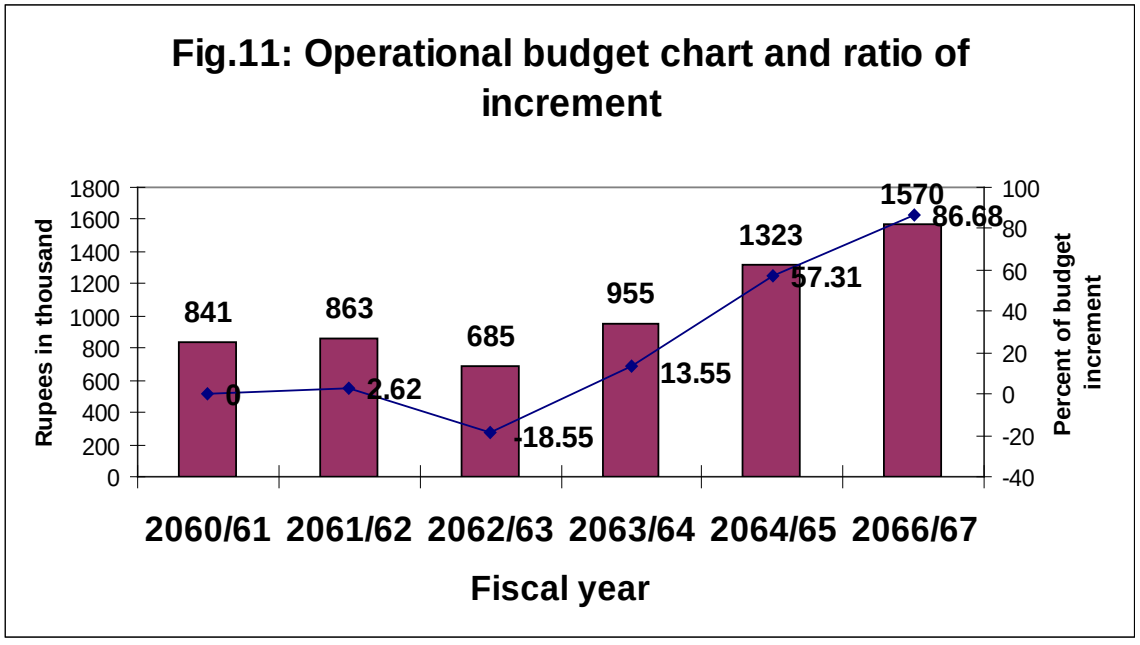
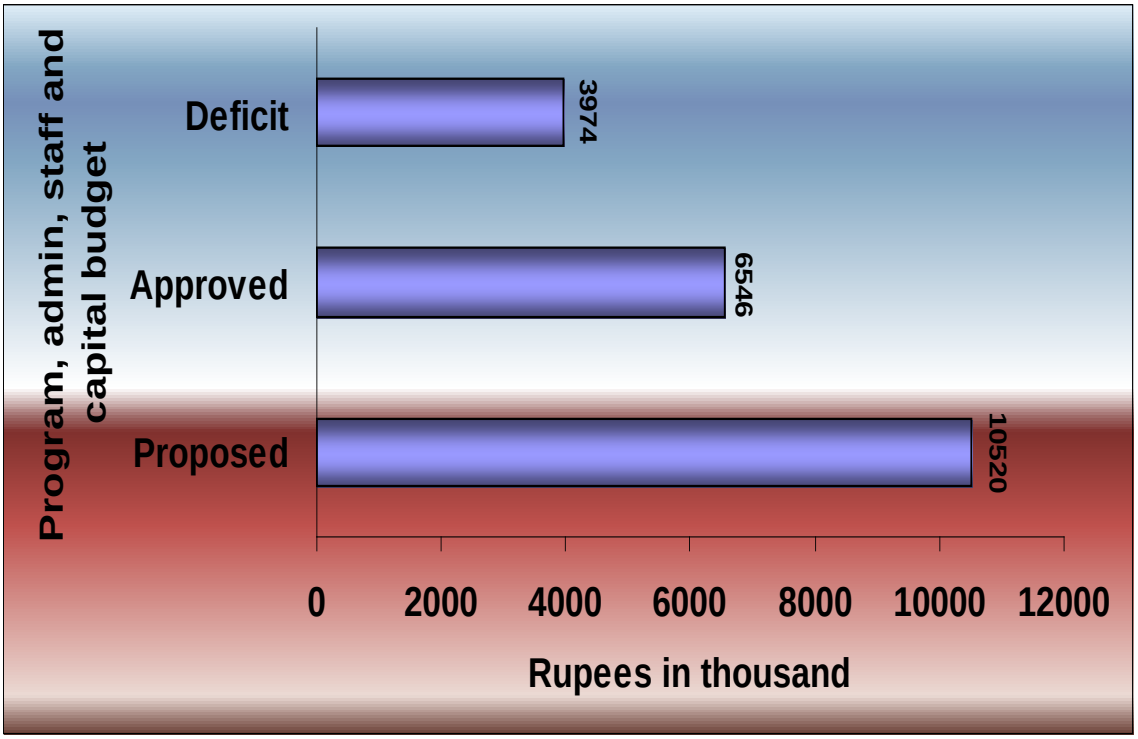


**Fig.12: Status of total budget of the JRP, Itahari**




1. Policy Level – IJST – GM exchange – training
2. Laboratory equipments – Breeding, pp, soil laboratory
3. Farm machinery – Tractor and accessories, fiber extractor
4. Financial support – operational cost & physical facilities
5. Logistic support – Lab. buildings, multimedia, computers

# Role of commercial crops particularly jute in improving livelihoods of resource poor and marginal farmers of ETR

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## 1. Introduction:

Commercial crops are cash crop in nature. These crops play the important role in income generation of concerned farmers. Besides income generation, commercial crops also generate considerable amounts of employment. It is another fact that commercial crops are only the sources of raw materials for different agro-based industries. Commercial crops have importance in import substitution. In addition to these facts, these crops have social and cultural value. Commercial crop mainly includes jute, sugarcane, oilseeds and cotton.

## 2. Jute, a Commercial Crop:

Jute is the most useful and versatile fiber gifted to human being by the nature and popularly known as the golden fibre. It is one of the cheapest and the strongest of all natural fibres and considered as fibre of the future. It is a long, soft, shiny fibre that can be spun into coarse, strong threads. Jute plant is generally 6 to 12 feet in length. The jute plant's fibres lie beneath the bank and surround the woody central part of the steam. Jute is second only to cotton in world's production of textile fibres.

India, Bangladesh, China and Thailand, are the leading producers of Jute. It is also produced in southwest Asia and Brazil. Nepal is in 9th position from the point of area coverage. India is the world's largest producer of raw jute and jute goods followed by Bangladesh, contributing approximately 66% percent and 30% respectively of global production. Though India is the largest producer of raw jute in the world, Bangladesh produces the best quality fibre.

The jute fibre is also known as Pat, Kosta, Nalita, Bimli or Mesta. The crop itself improves soil fertility, and its sticks are indispensable to the farmers for fuel, fencing and thatching. Jute is used to manufacture traditional products and packaging materials. The industrial products based on jute are environment friendly and have a world-wide popularity. The use of jute for paper pulp and geo-textile has improved the possibilities for extensive global use.

The two main types of jute, white jute (Corchorus Capsularies) and dark jute or tossa (Corchorus Olitorius) are grown in India, Bangladesh, Thailand, China, south Asian countries and Brazil. Jute (Corchorus capsularis & Corchorus olitorius), Kenaf (Hibiscus cannabinus) and Roselle (H. sabdariffa var (Altissima) are vegetable bast fibre plants. In the trade there are usually two names of jute**,** White and Tossa. Corchorus capsularis is called White Jute and Corchorus olitorius is called Tossa Jute. White and Tossa Jute fibres are finer and stronger than Mesta and are, therefore, better in quality. Kenaf known as Mesta or Ambari (Hibiscus Cannabinus) is also considered as a variety of Jute.

Jute is cultivated in Indian subcontinent, Thailand, China and Africa. Mesta is a coarser, more fragile fibre, and is used by the jute mills in admixture with jute to obtain certain desired properties. Jute is a rainy season crop, sown from **March to May** according to rainfall and type of land. It is harvested from **June to September** depending upon whether the sowings are early or late.

**3. Production of Jute in Nepal:**

From 1984/85 to 2009/10

Area

- Maximum (1985/86): 47191 ha.
- Minimum (1992/93-93/94): 9000 ha.
- Present (2009/10): 13103 ha*

Production

- Maximum (1985/86): 61102 mt.
- Minimum (1992/93-93/94): 10000 mt.
- Present (2009/10): 20965 mt*

*Prelimenary data, MOAC

(Source: Statistical information on Nepalese Agriculture 2008/2009)

**4. Improving Livelihood:**

Let us discuss the important saying: **Poor soil and poor people go together**. What does it mean? It means poor (marginal) soil and poor (marginal) people are interrelated with each other. Thus, poor people manage soil poorly and soil exists as poor soil. Similarly poor soil yields poor and ultimately increases poverty. This is true in general but except in case of jute. In fact jute is that crop which cultivate by marginal farmers and in marginal land but it improves of soil by adding organic matter.

**4.1 Dimensions of Livelihood Improvement:**

The followings are the dimensions of livelihood improvement of marginal people.

- Economic Dimension
- Social Dimension
- Cultural Dimension

**4.1.1 Economic Dimension:**

The economic dimension concerned with economic upliftment of farmers. Economic upliftment of farmers can be materialized by two ways the first is directly through enhancing employment generation and income generation; and the second is by indirectly through enhancing soil fertility and fitting jute into cropping pattern.

**4.1.1.1 Employment Generation:**

Jute and kenaf cultivation requires about 200-400 man-days per hectare (m-d/ha). Fibre retting and extraction are also labour-intensive, depending upon productivity and the level of technology used, taking 50-100 m-d to complete one hectare (www.**fao.org)**. Jute cultivation requires an estimated 215 m-days of work per ton of fibres, and the cost of labour represents between 60 and 70 percent of total production costs (www.**intracen.org**).

Jute industry supports an estimated 5 million people in the poorest regions on earth (**www.jutenotplastic.com)**. Jute supports nearly 4 million farm families, besides providing direct employment to about 2.6 lakh industrial workers and livelihood to another 1.4 lakh persons in the tertiary sector and allied activities in India (www. **fibre2fashion.com)**.

In Bangladesh, no firm figure is available on the number of households involved in various activities relating to jute, *viz.* production, manufacturing, making of jute handicrafts and various utility items, transportation, insurance, packaging and handling, etc. In between one-fourth and one-third of all rural households are directly involved with jute related activities, which may mean that between 4.6 and 6.0 million rural households have at least one member involved in one way or another with jute. Even though jute production is seasonal and employs producers for only a month or two of each year, employment in jute production and associated activities could be in the order of one million on a full time equivalent basis (www.fao.org).

As far as concerning the Nepalese context, it is estimated that Jute cultivation provides full employment to 10 thousand -19 thousand populations (Report of NICDEP). However, in Nepal, it is believed that there is more than 100 thousand population involve in jute production (Chaudhari, BN). Similarly more than about 15 thousand people are employed in jute industries (The Kantipur Daily). The DOA has estimated that more than 52 thousand employment has been generating by jute sector (Source: NICDEP). DOA has purposed the jute project with the target of increasing employment opportunity for additional 3 thousand for FY067/68.

#### 4.1.1.2 Income Generation:

Income generation from jute is possible only either through selling the product, by-products and derivatives in market or by working as agriculture labour or industrial labour. The major product, by-products and derivatives of jute are jute fibres, jute seed, jute-sticks and seedlings as vegetables.

##### 4.1.1.2.1 Jute Fibres, Sticks and Derivatives:

Although the price of jute fibres fluctuates as according to the season, it is the main source of income from jute cultivation. Jute fibre gets low price at harvesting time and gets highest at jute planting time. The average rate of jute fibre is Rs 35.00 per kg in 2066. Prevailing rate of raw jute is near about Rs 54 per kg. It is said that 91 thousand mt (ie 260 mt per day) jute fibre need for Nepalese jute industries (The Kantipur Daily). Jute sticks can also be sold at good price. The average dry stem production of jute ranges from 20-40 ton per hectare. (www.commodityonline.com/commodities/fibers/jute.php). Home made jute derivatives like bags, mats, carpets etc are also the regular source of the income of rural marginal people.

#### 4.1.1.2.2 Jute Seed:

Jute seed may be the good source of income of concerned farmers. In fact seed jute is being cultivated in marginal and unirrigated land by marginal farmers. On an average 3-4 q/ ha of jute seed is obtained in case of olitiorius jute and 4-5 q/ha in capsularis jute. However, under Siraha condition the seed yield of olitorius jute is more and it varies from 5-7 q/ ha (Ghimire, TB). The average rate of jute seed is Rs 65 per kg at present.

#### 4.1.1.2.3 Labor Wages:

As we know that jute is labour intensive crop. In case of jute there are two types of labour is important, namely agriculture labour and industrial labour. Jute needs considerable amounts of labour from land preparation to processing of fibres. There are certain pre- sowing and pre- harvesting activities which require much labour. Important such activities include land preparation and weeding. Besides the pre-sowing and pre-harvest activities, other most important activities that require intensive labour are harvesting, retting, extracting. All these are the example of agricultural labour.

Another type of labour is industrial labour. Industrial labours are worked in jute industries to produce jute industrial derivatives or finishing product. In eastern terai region of Nepal, there is 11 jute mills are running with the capacity of 95200 mt per year (Ghimire, MC). Now, labour job in jute industries is getting importance day by day for marginal people.

Either agricultural or industrial labour gets daily wages or monthly salary. The government has fixed Rs 175 per day or 4,600 per month minimum wages for the labourers working in jute industries (The Himalayan Times). Similar wage rate can be found in the case of agriculture labour.

#### 4.1.1.2.4 Selling as vegetable:

There is a practice of using Jute seedlings as vegetables in Eastern Terai and have very good market value. Beside this, mix-cropping of red amaranthus with jute for weed management is profitable. It is better to sow 300 gm per kattha seed of red amaranthus for optimum profit. Red amaranthus as mix cropping, in one hand, controls weeds and the other it can be used as leafy vegetable. Due to its nutritive value it can be sold easily in near by market.

#### 4.1.1.2.5 Enhancing soil fertility:

It is indirect benefit from jute. It is a quickly available fibrous biomass. Bio-mass production of jute is high as compared to forest species. Jute produces 98 kg per day per ha against 29 kg per day per ha in case of forest product (http://www.angelfire.com/co4/juteexporter/jutelinks.htm). Jute adds about 4 mt / ha organic matter in soil (Chaudhari, BN). This will increase the production of next crop.

#### 4.1.1.2.6 Fitting jute into cropping pattern:

It is also indirect benefit from jute. Jute is easy crop. It does not hamper the major crops of eastern terai either on irrigated or unirrigated condition. So far as rice and wheat are

considered as major crops jute fits on the cropping pattern very nicely. On irrigated condition the cropping intensity can reach up to 300 percent. The cropping pattern may be as Jute-Rice-Wheat/ Vegetables /Mustard /Potato. Similarly on un-irrigated land the cropping intensity can reach up to 200 percent and the cropping pattern may be as Jute-Rice/Wheat/Mustard/Lentil (Chaudhari, BN).

### 4.1.2 Social Dimension:

Jute crops also have social value. Depending upon the area coverage of jute, it indicates the farmers social status whether they belong to upper or lower status. In addition, the crop meets cash requirements to celebrate Dashain and Tihar festivals. Celebrating Dashain and Tihar without taking loan from local feudal/ money lenders increases the social prestige.

### 4.1.3 Cultural Dimension:

Jute is used for food and fuel-wood, fencing and thatching, to make carpet and bed-clothes, and so many other materials. Jute seed is also needed in religious functions like SATA BIJ. Eastern people should burn SANTHI at Tihar. Thus jute is not only the important commercial crop but also indispensable culture of people of eastern terai region.

### 4.2 Way of improvement livelihood through Jute:

As we know that jute is income and employment generating crop. It plays the role in improving the livelihood of people. As people are marginal, have small land holdings or no land, how can they improve their livelihood? This is the serious matter. But, they have the chance to improve their livelihood through communal/ cooperative base jute farming either by taking land in lease or other similar manner.

## 5. Some facts about jute:

Plastic Bags are slow to decompose and cause untold harm to wild-life. Plastic manufacturing uses valuable mineral resources and also has a negative impact on carbon emissions. Billions of plastic bags are used once and thrown away. Destruction of plastic releases a carcinogen known as benzene in air (www.jutenotplastic.com). Like wise plastic bag pollution is a threat to our ecosystems.

In the time it takes you to read this material 3 million plastic bags will have been produced on this planet. That equates to 500 billion plastic bags a year consuming 60 million barrels of oil to manufacture them. In the UK alone we use 150 million plastic bags per week, the majority of which end up on landfill sites or being burnt, which releases a plethora of toxic chemicals into the air (www.jutenotplastic.com).

Only 1 in every 200 bags is recycled and this requires energy and resources to collect and process the bags. A person’s use of a plastic check-out bag long it takes to get from the shops to their homes. Plastic bags however, can take between 15 and 1000 years to break down in the environment. In the marine environment plastic bag litter is lethal, killing at least 100,000 birds, whales, seals and turtles every year. After an animal is killed by plastic bags its body

decomposes and the plastic is released back into the environment where it can kill again (www.jutenotplastic.com).

The alternative is as simple as it is environmentally sound, use an eco bag, made of by jute. These bags are strong, spacious and long lasting. Jute Bags are eco-friendly. Jute is 100% bio-degradable. Jute is non pollutant, produces non toxic gases or harmful gases by product. Jute is a fast growing crop with a much higher carbon dioxide assimilation rate than trees. It is proven fact that one hectare of Jute plants consumes over 15 tones of CO2 which is several times higher than trees (www.jutenotplastic.com).

Abundant availability, renewable and sustainable resource is the nature of jute. It is also ddurable in nature and has the life span of over a thousand plastic carrier bags. Jute is a natural bast fibre, a vegetable fibre composed of cellulose which is the main building material of all plants, like all natural fibres jute is totally biodegradeable.

Jute production creates much needed employment in poorer regions of the world. Jute bags are strong, trendy and reusable. Bast fibre grows the entire length of the plant stalk from roots to tip. Groups of fibres are contained in the pithy layer between the thin outer bark and the woody core. When discarded, jute totally decomposes putting valuable nutrients back into the soil.

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# पूर्वान्चलमा जुट खेतीको अवसर र चुनौती

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## १. परिचय

जुट ( JUTE ) नेपालको पूर्बान्चल बिकास क्षेत्रको एउटा महत्वपूर्ण औद्योगिक बाली हो । पूर्बान्चल बिकास क्षेत्रको खास गरी झापा, मोरङ्ग, सुनसरी, सप्तरी, सिराहा र उदयपुर जिल्लाहरुमा लगभग १२,००० हे.मा बार्षिक १६,००० मे.ट.कच्चा जुट उत्पादन हुने गर्दछ ।

नेपालमा जुटले लगभग १ लाख जनतालाई रोजगारीको अवसर प्रदान गरेको छ । हाल नेपालमा जम्मा नौ वटा जुट प्रोसेसिङ्ग उद्योगहरु चालु हालतमा छन् जस्को बार्षिक एक लाख मेट्रिन टन कच्चा जुटको आबश्यकता पर्दछ । जबकी हाम्रो देशको जम्मा उत्पादन १६,००० मे.टन प्रति बर्ष मात्र रहेको छ । बाकीको ८० प्रतिशत चाहिने कच्चा जुटहरु छिमेकी मुलुकहरुबाट पुर्ति भईरहेको छ ।

जुट मिलहरुले उत्पादन गरेको जुटको सरसामानहरु छिमेकी मुलुकमा पनि निर्यात हुने गरेको छ । जस मध्ये भारतमा बार्षिक ०.०६४ मिलियन टन जुटको सरसमानहरु निर्यात गरी लगभग २७ लाख रुपैया नेपाल भित्रिने गरेको छ ।

जुटको मुख्य उत्पादन कच्चा रेसा हुन्छ । जसबाट बिभिन्न सर समानहरु बन्ने गर्दछ जस्तै : बोरा, झल्ला, डोरी, पर्दा आदि । जुटको उप उत्पादन मा जुटको लठ्ठी ( सन्ठीं ) हुन्छ । जसलाई हामी दाउरा (fuel wood) र बार बनाउन काममा प्रयोग गर्दछौ । कागज उद्योगहरुले पनि जुटलाई कच्चा पदार्थको रुपमा प्रयोग गर्न थालेका छन् ।

आजभोली प्लाष्टिकको  थैलाले बनाएको बाताबरण प्रदुषण लाई कम गर्न जुटको थैला प्रयोग गर्न आबश्यकता देखाएको छ । यदि हामी सबैले जुटको थैला प्रयोगमा ल्यायौं भने बाताबरणलाई प्रदुषित हुनबाट निकै हद सम्म कम गर्न यसले महत्वपूर्ण भुमिका खेल्ल सक्छ ।

अर्को जुटले ( पात, डाठ आदि ) सडाएर माटोमा हान्दा माटोको उर्बरा शक्ति पनि बढाउने काम गर्दछ । यसले प्रागांरिक बस्तु माटोमा थप्ने काम गर्दछ । जुट बाली यस क्षेत्रको जनताको आर्थिक स्थिति उकास्नमा महत्वपूर्ण भुमिका खेल्ने निर्विकल्प रुपमा रहेको छ ।

- जुटको वीउ उत्पादन भने सिरहा जिल्लामा हुने गरेको छ ।
- हाल सरकारी तवरबाट गरिएको वीउको उत्पादनले देशको कुल मागको करिव ८ प्रतिसत माग आपूर्ति यस वर्ष हुने अनुमान छ ।
- ४७१९१ हे.(१९८५/८६) बाट घटेर हाल यो बाली जम्मा ११५९० हे.(२००७/०८) मा मात्र खेती हुने गरेको छ ।

- यसको प्रयोग मुख्यतया रेसा उत्पादनको लागी र सहायक रुपमा दाउरा (fuel wood) को रुपमा हुने गर्छ। उक्त जुट रेसाबाट जुट जन्य अन्य तयारी वस्तुहरु बनाईन्छ।
- नेपालको उत्पादनले नेपाली उद्योगहरुलाई करिव २० प्रतिसत कच्चा पदार्थको आपूर्ति हुने अनुमान छ।
- जुटका तयारी बस्तुमध्ये जम्मा ५ प्रतिसत मात्र नेपालमा आन्तरिक प्रयोग हुने गरेको छ।

## २. जुट बालीको नेपालमा स्थिति :

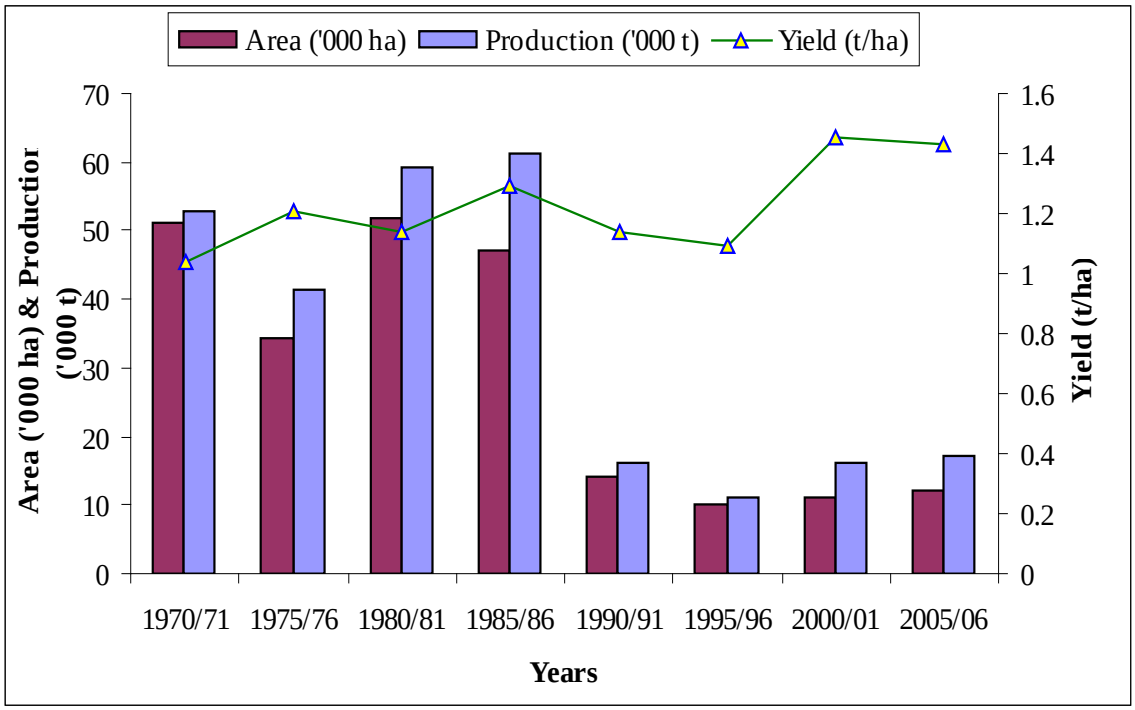
सन १९६९/७० ताका नेपालको जुट बालीको क्षेत्रफल ५६७१४ हेक्टर र उत्पादन ६७५१४ थियो भन्ने अभिलेखहरुमा पाईन्छ। तर यो स्थिति अहिले पूर्ण रुपमा परिवर्तन भैसकेको छ। जुटको क्षेत्रफल जम्मा १२,००० हेक्टर तथा जुट रेशाको उत्पादन १७,००० मे.टन मा अहिले झरीसकेको छ। बिगत २० बर्षको ( १९८५/८६–२००५/००६ ) जुटको क्षेत्रफल र उत्पादनलाई हेर्ने हो भन्ने क्षेत्रफल ७४.४७ प्रतिशत र उत्पादन ७२.०१ प्रतिशतले घटिसकेको छ। तर जुटको उत्पादकत्व भन्ने १०.८५ प्रतिशतले बढेको छ। जुटको दिनानुदिन मांग बढे पनि यसको क्षेत्रफल र उत्पादन घटदै गएको छ।

बिगत ५ बर्षको जुटको तथंयाकले जुटको क्षेत्रफल ६ प्रतिशतले र उत्पादन ४ प्रतिशतले बृद्धि भएको देखाएको छ। हालको जुटको उत्पादकत्व १४३४ के.जी / हेक्टर रहेको छ।( MOAC,2006/07 ) तर यो उत्पादकत्व हाम्रो छिमेकी मुलुक भारत भन्दा निकै कम रहेको छ। ( २.२ मे.ट. )

नेपालको जुट उत्पादनमा मुख्य बाधकको रुपमा उपयुक्त र गुणस्तरीय बीउको अभाब ,प्राबिधिक ज्ञानको कमि ,अध्याधिक ज्यामीको आबश्यकता ,अध्याधिक लागत खर्च र कम / अनिश्चित जुटको बजार भाउ रहेको छ। जसले जुट बालीको क्षेत्रफल र उत्पादन घट्नुमा प्रमुख भुमिका खेलेको छ।

सन् १९७०।७१ देखि २००५।०६ सम्मको नेपालको जुट रेसाको क्षेत्रफल, उत्पादन र उत्पादकत्व चित्र नं - १ मा दिईएको छ।

चित्र नं- १ विभिन्न बर्षको नेपालमा भएको जुट रेसाको उत्पादन/उत्पादकत्वको स्थिति

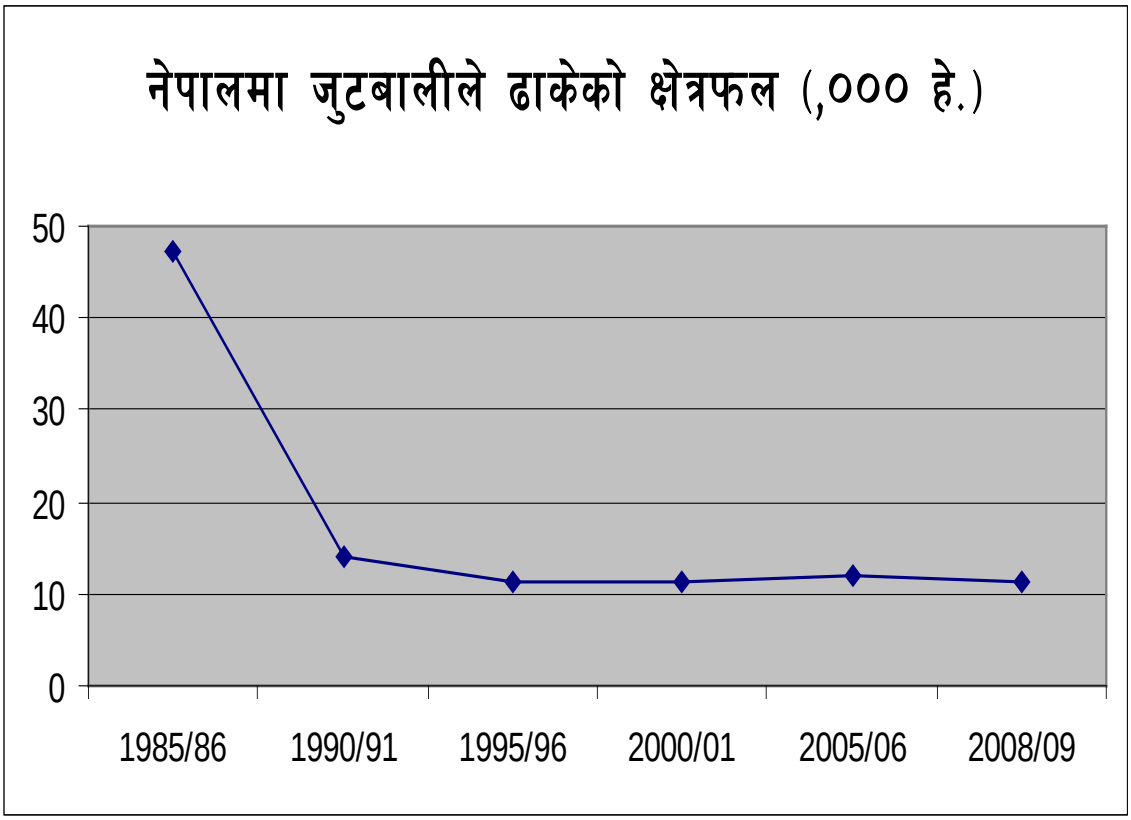



## ३. नेपालमा जुटबालीले ढाकेको क्षेत्रफल, हे.

सन् १९८५।८६ देखि सन् २००८।०९ सम्मको जुट बालीको क्षेत्रफल दिईएको छ । जस अनुसार सबभन्दा बढि जुट सन् १९८५।८६ मा लगाईएको थियो भने पछिको बर्षहरुमा जुट लगाउने क्षेत्रफल घट्दै गएको छ ।

| बर्ष | क्षेत्रफल, हे. |
|---|---|
| १९८५/८६ | ४७१९१ |
| १९९०/९१ | १४००० |
| १९९५/९६ | १११५० |
| २०००/०१ | ११२८९ |
| २००५/०६ | ११९७५ |
| २००८/०९ | ११४०३* |

Source: Statistical information on Nepalese Agriculture-2007/08
Note: * Preliminary data of MOAC.

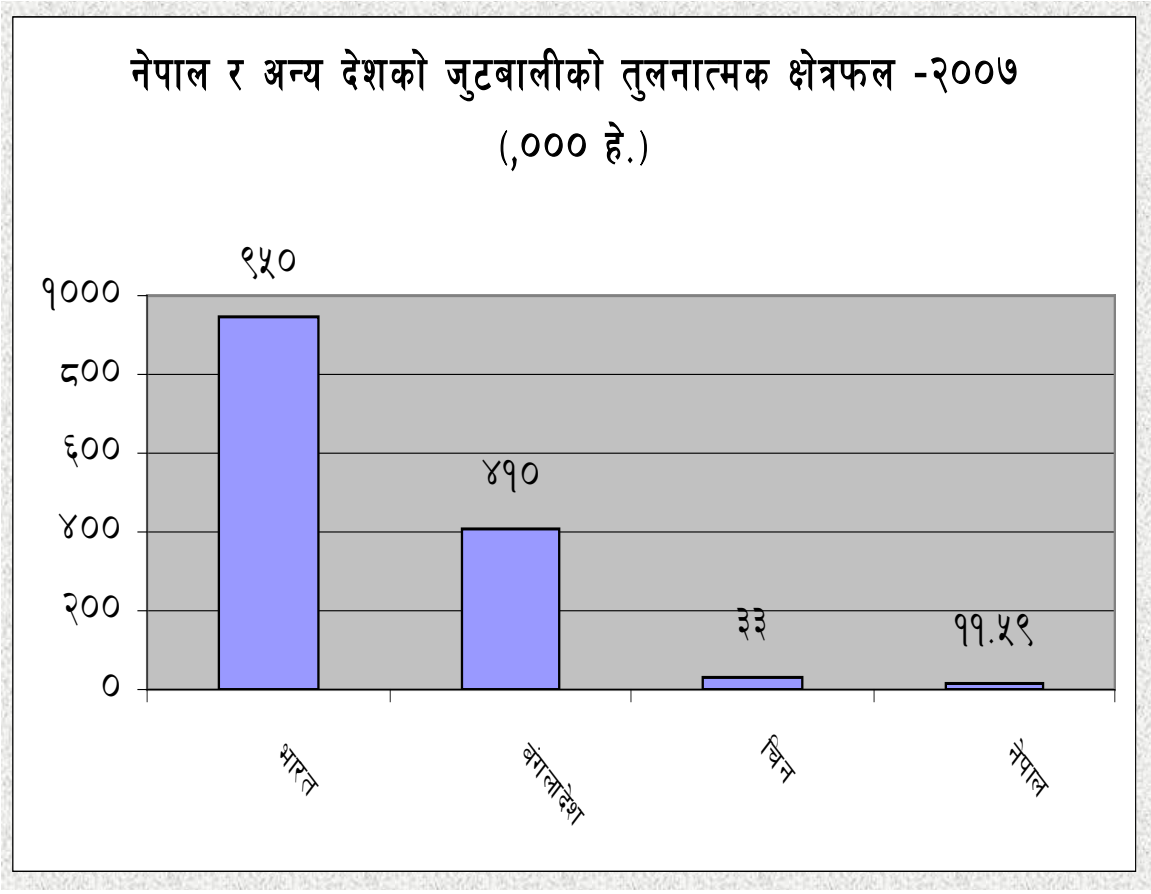



## ४.नेपाल र अन्य देशको जुटवालीको तुलनात्मक क्षेत्रफल-२००७

भारत, बँगलादेश, चिन र नेपालको जुट लगाउने क्षेत्रफल दिईएको छ । जस अनुसार भारतमा सबभन्दा बढि जुटको खेती ९५०००० हे. मा हुन्छ भने सवभन्दा कम नेपालमा जम्मा ११५९० हे.मा मात्र जुट लाग्ने गर्दछ ।

| देश | क्षेत्रफल, हे. |
|---|---|
| भारत | ९५०००० |
| बंगलादेश | ४१०००० |
| चिन | ३३००० |
| नेपाल | ११५९० |

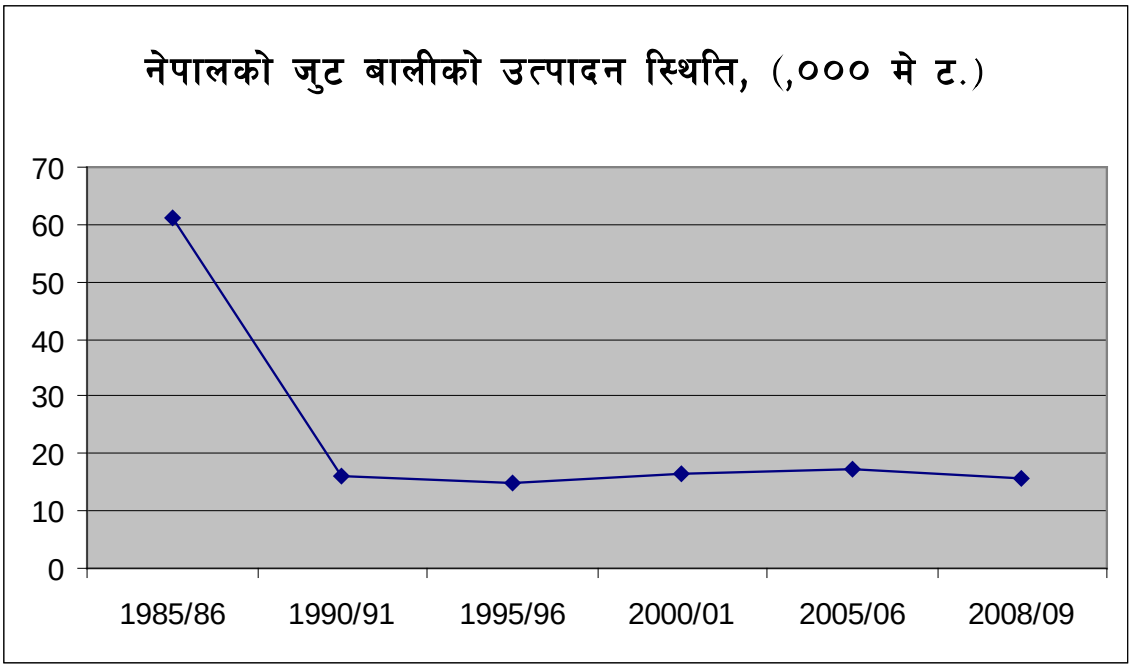
Source:http://faostat.fao.org/site/567/DesktopDefault.aspx?PageID=567#ancor




**नेपालको जुट उत्पादनको स्थितिः**

| बर्ष | उत्पादन, मे. ट. |
|---|---|
| १९८५/८६ | ६११०२ |
| १९९०/९१ | १६००० |
| १९९५/९६ | १४९५० |
| २०००/०१ | १६३९२ |
| २००५/०६ | १७१०० |
| २००८/०९ | १५६९४* |

Source: Statistical information on Nepalese Agriculture-2007/08
Note: * Preliminary data of MOAC.

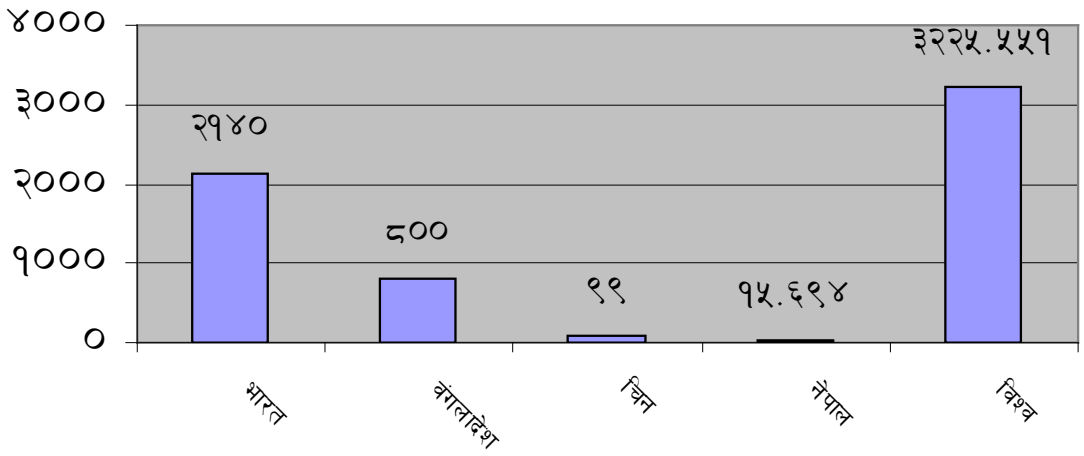



## ५. नेपाल र अन्य देशको तुलनात्मक उत्पादन (२००८)

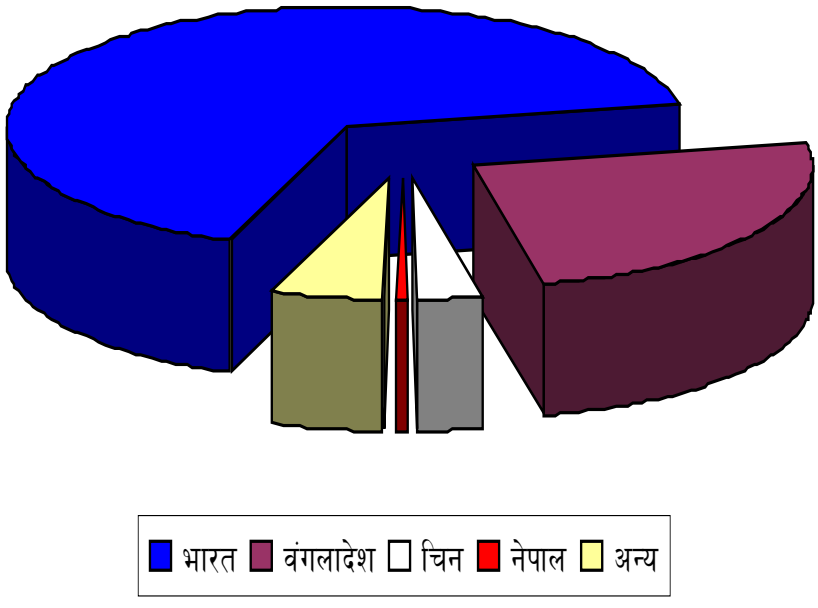
| देश | उत्पादन, मे.ट. |
|---|---|
| भारत | २१४०००० |
| वंगलादेश | ८००००० |
| चिन | ९९००० |
| आइभरी कोष्ट | ४०००० |
| थाईल्याण्ड | ३१००० |
| बर्मा | ३०००० |
| ब्राजिल | २६७११ |
| उजबेकिस्तान | २०००० |
| नेपाल | १५६९४ |
| ीभियतनाम | ११००० |
| विश्व भर | ३२२५५५१ |

Source:http://faostat.fao.org/site/567/DesktopDefault.aspx?PageID=567#ancor

नेपाल र अन्य देशको जुटको तुलनात्मक उत्पादन -२००८ (,००० मे. ट.)



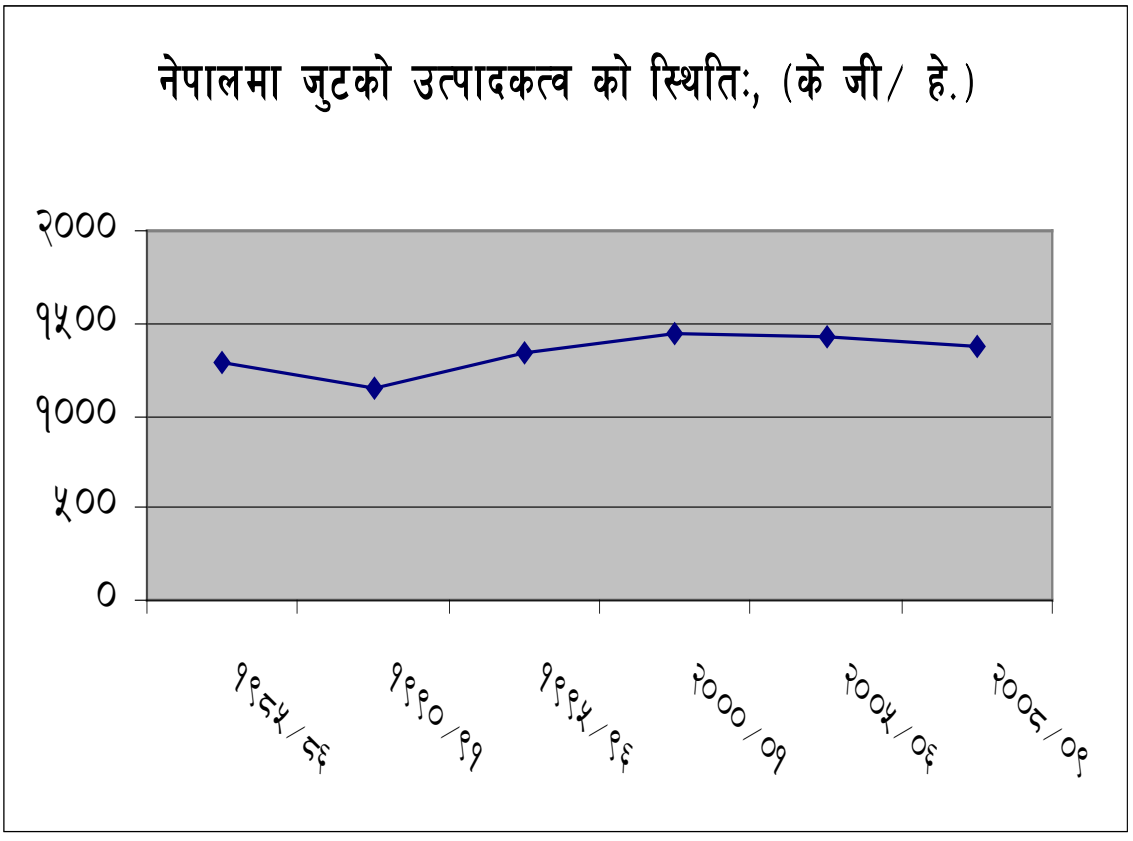

# जुटको तुलनात्मक उत्पादन -२००८



## ६. नेपालमा उत्पादकत्वको स्थितिः

| वर्ष | उत्पादकत्व, के जी/हे |
|---|---|
| १९८५/८६ | १२९५ |
| १९९०/९१ | ११४३ |
| १९९५/९६ | १३४१ |
| २०००/०१ | १४५२ |
| २००५/०६ | १४२८ |
| २००८/०९ | १३७६* |

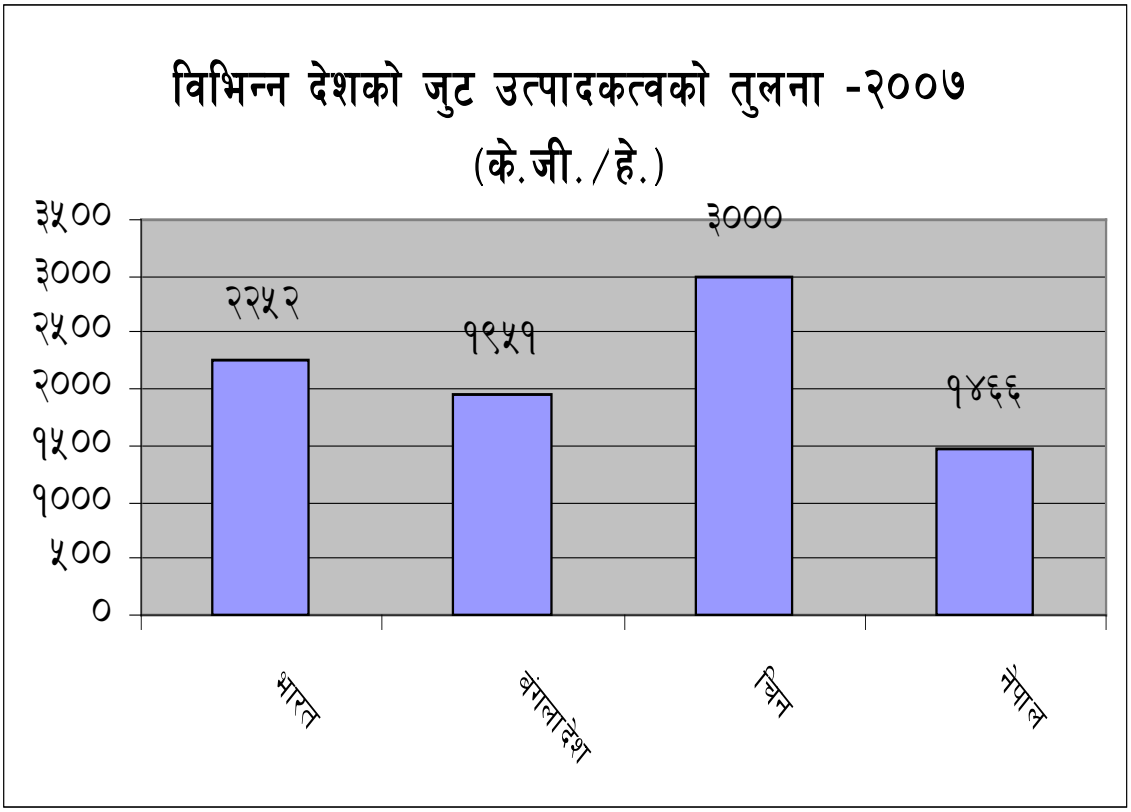
Source: Statistical information on Nepalese Agriculture-2007/08
Note: * Preliminary data of MOAC.



## ७. जुटको तुलनात्मक उत्पादकत्व, के जी/हे. (२००७)

| देश | उत्पादकत्व, के जी/हे. |
|---|---|
| भारत | २२५२ |
| बंगलादेश | १९५१ |
| चिन | ३००० |
| नेपाल | १४६६ |

Source:http://faostat.fao.org/site/567/DesktopDefault.aspx?PageID=567#ancor



## ८. विभिन्न जिल्लाको जुट बालीको क्षेत्रफल, उत्पादन, उत्पादकत्व

पूर्वान्चलको झापा, मोरँग, सुनसरी, सिरहा, सप्तरी र उदयपुरमा जुटको व्यवसायिक उत्पादन हुने गर्दछ । खास गरेर नेपालको जम्मा उत्पादनको ८० % जुटको उत्पादन सुनसरी, मोरँग र झापा जिल्लामा हुने गर्दछ ।

**सन् २००६।०७ को जिल्लाहरुको जुट बालीको क्षेत्रफल, उत्पादन, उत्पादकत्व**

| क.स. | जिल्ला | क्षेत्रफल - ( हे.) | उत्पादन ( मे.ट.) | उत्पादकत्व ( मे.ट./हे.) |
|---|---|---|---|---|
| १ | झापा | १२०० | ११५२ | १ |
| २ | मोरँग | ८२०० | १२३०० | १.५ |
| ३ | सुनसरी | २०७५ | ३११२ | १.५ |
| ४ | सप्तरी | ७५ | ७५ | १ |
| ५ | सिरहा | १३६ | १३६ | १ |
| ६ | उदयपुर | ४० | ४० | १ |
| | जम्मा | ११७२६ | १६८१५ | १.४३ |

## ९ जुट जन्य उद्योगहरुः

- नेपालमा हालसम्म १० वटा जुट मिलहरु रहेका छन् ।
- भारतमा करिब १०० वटा जुट मिल संचालनमा छन्
- वंगलादेशमा करिव ६० वटा जुट मिल छन् ।

Sources: 1. International workshop report on Promotion of jute and jute derivatives in Nepal, 2005.
2. Annapurna Post Daily,2066/02/27

**नेपालमा भएका जुट मिलहरु र तिनिहरुको क्षमता:**

| क्र स | मिलको नाम | स्थापना भएको वर्ष | बर्षिक क्षमता, मे ट. |
|---|---|---|---|
| १ | विराटनगर जुट मिल्स | १९३६ | १४००० |
| २ | श्री रघुपति जुट मिल्स | १९४६ | १२५०० |
| ३ | गुहेश्वरी ट्वेन (Twine) | १९८१ | ६००० |
| ४ | नेपाल जुट ईण्डस्ट्रिज | १९८२ | ६३०० |
| ५ | सि एम जुट मिल्स | १९९० | ६६०० |
| ६ | अरिहन्त मल्टी फाईबर्स | १९९२ | २५००० |
| ७ | बाबा जुट मिल्स | १९९३ | ७००० |
| ८ | निक्की जुट मिल्स | १९९५ | १५०० |
| ९ | स्वस्तिक जुट मिल्स | २००१ | ६६०० |
| १० | पाथीभरा जुट मिल्स | १९९३ | १५०० |
| जम्मा क्षमता | | | ८७००० |

Source: International workshop report on Promotion of jute and jute derivatives in Nepal, 2005

## १०. आयात-निर्यात स्थिति:

- नेपालको उत्पादनले आन्तरिक मागको करिव २० प्रतिसत माग पुराहुन्छ ।
- भारतबाट ५० हजार मे. ट. कच्चा जुट आयात बर्षेनी हुने गर्छ ।
- बंगलादेशबाट ३० हजार मे. ट. कच्चा जुट आयात बर्षेनी हुने गर्छ ।
- नेपालको बार्षिक कुल माग करिव ९० हजार मे.ट.कच्चा जुट रहेको छ ।

श्रोत: अन्नपूर्ण पोष्ट दैनिक, २०६६/०२/२७

## ११. जुटका उपलब्ध जातहरु:

**सिफारिस जातहरु:**

१. ईटहरी -१: सादा जुट
२. ईटहरी -२: तोषा जुट

**प्रचलित जातहरुः**

**१. सादा जुटः**

- जे. आर. सी.-३२१ (सोनाली)
- जे. आर. सी.-२१२ (सोबुज सोना)
- जे. आर. सी.-७४४७ (श्यामाली), कम प्रचलित

**२. तोषा जुटः**

- जे. आर. ओ.-६३२ (वैशाखी तोषा)
- जे. आर. ओ.-७८३५ (बासुदेव)
- जे. आर. ओ.-५२४ (नविन)
- जे. आर. ओ.-८७८ (चैताली तोषा), कम प्रचलित

## १२. जुट खेतीको अवसर र चुनौती

### अवसर

- पूर्वान्चलमा १० वटा चालु हालतमा जुट कारखाना रहेको, प्रशस्त उत्पादन गर्न सकिने क्षेत्रफल
- किसानहरुको परापूर्वकाल देखि गर्दै आएको पेशा
- प्लास्टि झोलालाई विस्थापन गर्न सकिने माध्यम
- Bio-Degredable
- Environmental friendly

### चुनौती

- प्रोसेसीगँ प्रकृया साह्रै झन्झिटिलो
- यसका उत्पादनहरु साह्रै महँगो हुने
- लागत मूल्य बढि हुने
- गुणस्तरिय वीउको अभाव
- श्रमीकको न्यूनता
- सिचाईको अभाव
- लागत मूल्य भन्दा वजार मूल्य कम निर्धारण गर्ने परिपाटी
- Marginal land मा खेती गर्ने चलन
- जुट रेसाको गुणस्तर कम हुने

## १३. जुटका समस्याहरु

- वीउ उत्पादनका समस्याहरु:
- अपेक्षाकृत नाफा नहुनु ।
- वीउ उत्पादकहरु संस्थागतरुपमा संगठीत नहुनु ।
- उच्च गुणस्तरको विउ आपूर्ति देशभित्र नहुनु ।
- रेसा उत्पादनका समस्याहरु
- वीउमा परनिर्भरता ।
- झारपात नियन्त्रण ।
- कामदार बढी लाग्ने (गोडाई र पोष्ट हार्भेट काममा) ।
- रेटीङ् पोखरीको अभाव ।
- रेसा भण्डारणको समस्या ।
- लागत कम लाग्ने प्रविधिको अभाव ।
- समन्वय सम्बन्धि समस्याहरु:
- अनुसन्धान र प्रसार विचको कमजोर समन्वय ।
- उत्पादक र उद्योग विचमा कमजोर समन्वय ।
- उत्पादक, उद्योग र सरकार बीचको कमजोर समन्वय ।
- बजारिकरण सम्वन्धि समस्या:
- कच्चा जुटको भाउमा व्यापक उतार चढाव आउनु ।
- उत्पादक र उद्योग बीच करारमा उत्पादन गर्ने र खरिदगने अभ्यास नहुनु ।

## १४. जुट अनुसन्धान कार्यकम, ईटहरी, सुनसरीको जुट सम्बन्धि मुख्य मुख्य उपलब्धिशरु

- JRO 524 is on pipe line for release
- DS066, DS058, and O-4 identified as promising genotypes
- F2 and F3 populations are under evaluation
- Pure line selection is going on
- Nucleus seed of above 250 accessions are being maintained
- Sowing of jute is suitable for seed production in Itahari conditions
- Application of micro-nutrients (Sulphur, Boron and Zinc) along with NPK produces higher fibre and seed yield
- Spraying of Bavistin before flowering and soil application of Trichoderma are effective for stem rot management
- Green manuring with Dhaincha and Sunhemp produces higher fibre yield
- Application of Targa Super @2.0 ml/L at 15-20 DAS,
- Mulching @10.0 t/ha at 0-3 DAS and

- Mix-cropping of red amaranthus with jute for weed management
- Jute bundle pressed with sand/gravel packed plastic bags in retting pond and
- Jute bundles pressed with water hyacinth improves the fibre quality.

**Technology transfer**

- It is done through OR programs in collaboration with DADOs, I/NGOs, CBOs and other stakeholders
- Training to farmers is organized regarding jute cultivation and processing
- Presenting research outputs in different workshops (VLPRW, RTWG, National Seminars, Technical meeting)
- Leaflets and booklets covering jute production technologies; annual reports and proceedings covering research results are published and distributed

**Constraints for Jute Cultivation and Processing**

- Profit margin in jute cultivation is low (low price of jute fibre at harvest)
- Other remunerative crops are emerging and jute cultivation is becoming confined to marginal land
- Unavailability of quality jute seed of HYVs
- High weed infestation during early growth stage
- Labor shortage at peak season
- Inadequate retting pond/water
- Policy issues need to be addressed for provision of subsidy in inputs (seeds, fertilizers etc.) and marketing of both jute seed and fibre
- Low investment on jute research and development, infrastructure, research capacity and capability

## १५. भविश्यको रणनीतिः

- IJSG सदस्यता लिन पहल गर्नु पर्ने ।
- जुटसंग सम्बन्धित निकायहरु विच समन्वय सुदृढ गराउनु पर्ने ।
- वीउ उत्पादन कार्यक्रमलाई बजारिकरण गर्न सहकारी संस्थाको स्थापना गरि सुदृढ र विस्तार गरिनुपर्ने ।
- जुट र यसको प्रयोग सम्वन्धि ब्धबचभलभकक कार्यक्रम ल्याउन पहल गुर्नपर्ने ।
- जुट सम्वन्धि प्रभावकारी प्रसार कार्यक्रम जिल्ला स्तरमा नियमित कार्यक्रमको रुपमा सञ्चालन हुनु पर्ने ।
- जुटबाली अनुसन्धान उत्पादन लागत कम गर्न तथा मानव श्रम घटाउन केन्द्रीत हुनुपर्ने ।
- रेशा उत्पादन गर्न कम लागत लाग्ने प्रविधिको विकास गर्नु पर्ने ।

**Appendix I: Program Schedule of workshop of the NARDF funded project**

Date : 12 Baisakh, 2067 (25th April, 2010)
Venue : Regional Agricultural Research Station, Tarahara, Sunsari
Convener : H. K. Prasai
Rapporteur : YR Thapa and B. Gupta

| Time | Contents/Topic | Presenter/Facilitator |
|---|---|---|
| 8.00-8.30 | Registration of the participants | K. P. Pokhrel and J. Dahal |
| 8.30-10.00 | Welcome address and highlights on the objective of the workshop<br>Introduction<br>Chairperson<br>Chief guest | <br>Coordinator, JRP<br><br>ED, NARC<br>Member Secretary, NARDF |
| 10.00-10.15 | Tea Break | |
| 10.15-10.30 | Jute Research Program and area of support needed to develop its capabilities | H. K. Prasai |
| 10.30-10.45 | Major outputs of the NARDF funded project | R. C. Prasad |
| 10.45-11.00 | Discussion | |
| 11.00-12.30 | Lunch Break | |
| 12.30-12.45 | Low cost production technologies of jute | R. C. Prasad |
| 12.45-13.00 | CBSP of jute and its impact in farmers' community | Y. P. Yadav |
| 13.00-13.15 | Discussion | |
| 13.15-13.45 | Tea Break | |
| 13.45-14.00 | Role of commercial crops particularly jute in improving the livelihoods of resource poor and marginal farmers of ETR | Chief, National Industrial Crops Development Program, Hariharbhawan |
| 14.00-14.15 | Opportunities and challenges of jute cultivation in ETR | Dr. S. K. Sah, RD, Regional Directorate of Agriculture, Biratnagar |
| 14.15-14.30 | Discussion | |
| 14.30-15.00 | Documentary | |
| 15.00-16.00 | Few words:<br>(a) Farmers' representative<br>(b) Representative of Jute Association of Nepal<br>© Representative of Jute Industries- Dr. M. C. Ghimire<br>(d) Project Manager, CADP, Biratnagar<br>(e) Team Leader, CADP, Biratnagar<br>(f) Regional Director, RARS, Tarahara<br>(g) Regional Director, Regional Directorate of Agriculture, Biratnagar<br>(h) Chief, National Industrial Crops Development Program<br>(i) Director, Crops and Horticulture Research , NARC<br>(j) Chief guest<br>(k) Vote of Thanks<br>(l) Chairperson remarks and closing of the workshop | <br><br><br><br><br><br><br><br><br><br><br>Y. R. Thapa |

**List of Participants**

01. Executive Director, NARC
02. Director, Planning and Coordination, NARC
03. Director, Crops and Horticulture Research, NARC
04. Director, Finance, NARC
05. Member Secretary, NARDF
06. Chief, Industrial Crops Development Program, Hariharbhavan
07. Regional Director, Regional Directorate of Agriculture, Biratnagar
08. RD, RARS, Tarahara
09. Team Leader, CADP, Biratnagar
10. Deputy Team Leader, CADP, Biratnagar
11. Project manager, CADP, Biratnagar
12. District Agriculture Development Officer, Jhapa, Morang, Sunsari, Saptari, Siraha and Udayapur district
13. Farmers representatives- Jhapa-1, Morang- 2, Sunsari- 2 and Siraha-1
14. Jute Association of Nepal
15 Jute industries- (Shree Raghupati Jute Mills Ltd, Guheshwari Twine (P) Ltd, Nepal Jute Industries (P) Ltd., CM Jute Mills Pvt Ltd, Arihant Multi fibers Ltd, Baba Jute Mills Pvt Ltd, Swastik Jute Mills Pvt. Ltd. and Chandra Shiva Jute Pvt. Ltd.)
16. RARS, Tarahara Staff (R. K. Mahato, A. Sherpa, S.S. BK, D. Sharma, Sovit Yadav, Mrs. P. Ojha and D. Chamlagain)
17. RSTL, Jhumka
18. NSC, Itahari
19. Weed Scientist, IAAS, Rampur
20. CG Seeds and Fertilizers Pvt, Ltd, Duhabi, Sunsari
21. Dipka Agrovet, Biratnagar and Shiwani Agrovet, Biratnagar
22. JRP staffs

**Appendix II: List of participants of Workshop**

| S.N. | Name | Designation | Institution |
|---|---|---|---|
| 01. | B. N. Chaudhary | RD | RARS, Tarahara |
| 02. | R. C. Prasad | Coordinator | JRP, Itahari |
| 03. | Dr. K. R. Chaudhary | DTL | CADP, Biratnagar |
| 04. | S. K. Kamat | Planning Officer | CADP, Biratnagar |
| 05. | R. N. Jha | Agri. Engneer | CADP, Biratnagar |
| 06. | Dr. M. C. Ghimire | Adviser | Nepal Jute Industry Association |
| 07. | O. P. Karna | Senior ADO | Siraha |
| 08. | R. P. Gautam | SMS | ADO, Jhapa |
| 09. | A. S. Ansari | ,, SMS | Morang |
| 10. | S. Yadav | SMS | ADO, Sunsari |
| 11. | B. R. Parajuli | Crop Dev. O. | NCCDP, Kathmandu |
| 12. | V. L. Sah | Manager | National Seed Compony |
| 13. | R. S. Sah | SMS | RADO, Biratnagar |
| 14. | H. K. Prasai | T8 | JRP, Itahari |
| 15. | Y. P. Yadav | T7 | JRP, Itahari |
| 16. | Y.R. Thapa | T6 | JRP, Itahari |
| 17. | B. Gupta | T6 | JRP, Itahari |
| 18. | S. H. Paudel | A6 | JRP, Itahari |
| 19. | K. P. Pokhrel | A6 | JRP, Itahari |
| 20. | T.B. Karki | A6 | JRP, Itahari |
| 21. | J. N. Dahal | T6 | ,, ,, |
| 22. | Y. T. Serpa | T6 | RARS, Tarahara |
| 23. | S. L. Yadav | A6 | RARS, Tarahara |
| 24. | B. Yadav | T6 | RARS, Tarahara |
| 25. | T. P. Aryal | T6 | ,, ,, |
| 26. | S. S. Bishowkarma | T6 | RARS, Tarahara |
| 27. | S. P. Sarma | T6 | RARS, Tarahara |
| 28. | G. Pyakurel | T6 | ARS, Pakhribash |
| 29. | R. K. Pokhrel | A5 | RARS, Tarahara |
| 30. | P. Ojha | T4 | RARS, Tarahara |
| 31. | R. B. Yadav | JT | RSD Office, Jhumka |
| 32. | M. P. Bhattarai | Proprietor | Dipika Agri Center, Biratnagar |
| 33. | S. P. Rajbansi | Farmer | Gauriganj, Jhapa |
| 34. | T. P. Rajbansi | Farmer | ,, ,, |
| 35. | K. N. Chaudhary | Farmer | Nocha- 4, Morang |
| 36. | B. K. Sah | Farmer | Laukahi, Sunsari |
| 37. | G. Tamang | Farmer | Siraha, Bisnupur |
| 38. | H. L. Yonjan | Farmer | Siraha, Jamdhawa |
| 39. | M. K. Sah | ,, | Bhokraha, Sunsari |
| 40. | G. P. Limbu | Driver | JRP, Itahari |
| 41. | S. Chaudhary | Driver | Siraha |
| 42. | M. N. Chaudhary | JTA | Seed & fertilizer |

**Appendix II: Continue**

| S.N. | Name | Designation | Institution |
|---|---|---|---|
| 43. | N. Jargamagar | Driver | ADO, Jhapa |
| 44. | R. B. Tamang | ,, | CADP, Biratnagar |
| 45. | D. P. Guragain | ,, | ,, ,, |
| 46. | D. P. Chaulagain | Driver | RARS, Tarahara |
| 47. | N. Karki | A3 | JRP, Itahari |
| 48. | B. N. Chaudhary | T3 | JRP, Itahari |
| 49. | R. K. Shrestha | A3 | JRP, Itahari |
| 50. | Y. Pradhan | Reporter | RSS, Itahari |
| 51. | S. Yadav | ,, | NTV, Itahari |
| 52. | M. Mahaseth | Peon | ,, ,, |

**Appendix III: Documentary show on Jute**

A documentary on Jute cultivation, processing, marketing and low cost production technology development was shown in the workshop.