AINP on J&AF

Annual Report-2013-14

Executive Summary

Crop Improvement

During the year 2013-14, a total of 22 projects comprising of 123 trials were evaluated on jute and allied fibre crops at various centres under crop improvement programme. Ten projects for jute, seven for mesta, three for sunnhemp and one each for flax and ramie were evaluated which includes germplasm evaluation, national hybridization programme, IETs, AVTIs, AVTIIs and adaptive trials at different centres.

Three varieties viz. JRC-9057 (Ishani) of *Capsularis* jute, JRKM 9-1 (Satyen) of kenaf and R-1411 (Hazarika) of rami have been identified for release during the 27th Annual Workshop held at CRIJAF, Barrackpore. The release proposal of these varieties have already been furnished to the CVRC vide letter no. F.No.4 (38)113-14/926, dated 16.09.2013.

Germplasm Evaluation

Seventy-five accessions each in *tossa*(*C. olitorius*) and white (*C. capsularis*) jute, 160 accessions in roselle (*H. sabdariffa*) and 75 germplasm lines in kenaf (*H. cannabinus*) were evaluated with their two respective checks at different locations.

C. capsularis: Average fibre yield (g/plant) over four locations was recorded to be 9.11±1.38 g/plant with a range of 5.80(CIN-103) to 13.17(CEX-69) g/plant. None of the germplasm lines outperformed the best check variety JRC 517 (14.54 g/plant) for fibre yield.

C. olitorius: Average fibre yield over the three locations was recorded to be 11.77±1.59 g/plant with a range of 7.82 (OIN-116) to 15.88 (OIJ-296) g/plant. Out of 75 accessions, 32 lines out-performed the best check JRO 204 (12.13 g/plant).

H. sabdariffa: Out of 160 accessions evaluated at two locations, 28 genotypes surpassed the yield of best check HS 4288 (11.5 g/plant). R-72 was recorded as best performer, producing 16.87 grams of fibre per plant followed by R-77 and R-326.

H. cannabinus: Average plant height of 75 accessions evaluated at Aduthurai centre ranged from 134 to 226 cm with a mean of 177.6±25.3 cm. Basal diameter varied from 0.80 cm to 1.64 cm with a mean of 1.16±0.20 cm.

National Hybridization Programme

C. capsularis: 29, 32 and 25 F3 progenies were evaluated at Kalyani, Bahraich and Katihar centres, respectively. Progenies from cross combination CIN-149 × JRC 321 (13.8 g/plant) at Kalyani and CIN-117 x CIJ-100 (13.79 g/plant) at Katihar out-performed the best check for fibre yield. Fibre yield in general, was found too low at Bahraich centre.

Twenty five F_9 populations were evaluated at Kalyani centre. Progenies from cross combination Padma × CIN-312 performed best for fibre yield (12.4 g/plant), followed by CIN-149× UPC-94 (12.2 g/plant)

C. olitorius: A set of 37 F_2 populations evaluated at Kalyani, Coochbehar and Rahuri centres. Progenies of cross combination OIJ-015 × OIN–574 (12.2 g/plant) at Kalyani and OIJ 015 × OIJ 267 (40.27 g/plant) at Coochbehar centre exhibited higher fibre yield than checks. The populations accumulated low biomass (172.39±32.78 g/plant) and exhibited low fibre yield (5.29±1.06 g/plant) at Rahuri centre.

Another set of twenty three populations of F8 generation evaluated at Kalyani. Progenies of cross combination TJ-40 ×O1J-100/TAN/NY/018C (12.2 g/plant) out performed best check JRO 8432 (11.6 g/plant).

Crossing superior germplasm

Six superior germplasm of *C. olitorius* each at Coochbehar (OEX-33, OEX-34, OEX-35, OEX-36, OEX-37 and JRO-8432) and Kalyani (OIN-714, OIN-515, OIJ-214, OIJ-216, OIN-791 & OIN-581) centres were crossed in half diallel and line x tester fashion, respectively.Few single crosses have been attempted in Katihar centre.

Yield Evaluation trials

***Tossa* jute (*C. olitorius*)**

IET: NJ-7010 turned to be the best performing entry with 37.90 q/ha fibre yield followed by NJ-7005 (34.68 q/ha) national check JRO 204 (33.70q/ha) and BCCO-8 (32.23q/ha).

AVT-I: Test entry KRO-4 was found to be the best performer with 28.38q/ha fibre yield followed by check JRO 8432 (27.28q/ha), and test entry KRO-5 (26.10q/ha) and JROK-10 (25.99 q/ha).

Adaptive Trial: Test entryJROG-1 (29.65 q/ha) out yielded the best check variety JRO 524 by 7.82% based on11 locations in Odisha, West Bengal, Bihar and Assam.

White jute (*C. capsularis*)

IET: Test entry BCCC-3 turned to be the best performing with fibre yield of 31.87q/ha followed by check variety JRC 517 (31.00q/ha), NDJC-2013 (30.63q/ha) and JRC-698 (30.25q/ha).

AVT-I: Test entry NCJ-28-14 performed best with 25.37q/ha fibre yield followed by check JRC 698(23.75q/ha), BCCC-2 (25.11q/ha) and JRCJ-3 (24.59 q/ha).

AVT-II: Based on pool analysis over location and year mean (grand mean), test entry NCJ 28-10 (26.39 q/ha) was the best performer followed by BCCC-1 (25.50q/ha), NDJC-2011 (25.31q/ha) and JRCJ-2 (25.11q/ha).

Kenaf (*H. cannabinus*)

IET: Check variety AMC 108 (30.78 q/ha) was found to be the best performer being very close to the test entry JRK-2011-1 (30.77 q/ha). Almost all test entries outperformed the other check variety MT 150 (27.78 q/ha) for fibre yield.

AVT-II: Test entry JBMP-2 (26.61 q/ha) was found to be the best performing followed by

JBMP-1 (25.34 q/ha) and JBMP-3 (25.12 q/ha) which outyielded better check variety AMC 108 (25.03 q/ha).

Adaptive Trial: Two entries *viz*. JBMG-4 and JBMG-5 evaluated at five locations four states. JBMG-4 (22.26 q/ha) out yielded best check varietyAMC 108 (19.50 q/ha) by 14.17%.

Roselle (*H. sabdariffa*)

IET: Test entries JRR-2012-1 (36.03 q/ha) and AHS-249 (33.54 q/ha) identified as the better performing entries over both the check varieties AMV 5 (32.37 q/ha) and HS 4288 (26.15 q/ha).

AVT-I: AHS-230 was found to be the best performer with 30.80 q/ha fibre yield followed by test entry AHS-233 (26.48) and JRR-2011-1 (25.95 q/ha).

AVT-II: Test entry JBRP-01 was the best performer with 28.29 q/ha fibre yield followed by AHS-216 (27.57 q/ha) and best check variety HS 4288 (26.12 q/ha).

Adaptive Trial: Out of three test entries evaluated in Odisha and Andhra Pradesh, CRIJAF

R-8 (23.67 q/ha) outyielded the best national checks variety AMV 5 (21.13 q/ha)by 12.02%.

Sunnhemp (*C. juncea*)

IET: Test entries Sanai-9 (12.41 q/ha), Sanai-6 (12.26 q/ha) and Sanai-10 (12.20 q/ha) identified as the better performing entries over both the check varieties SUIN 053 (12.08 q/ha) and SH 4 (11.79 q/ha).

AVT-I: All test entries *viz*. SUIN-5 (8.93 q/ha), SUIN-3 (8.51 q/ha), SUIN-4 (8.38 q/ha), SUIN-1 (8.35 q/ha) and SUIN-2 (7.82 q/ha) performed better than both the check varieties SH 4 (7.73 q/ha) and K 12 Yellow (7.64 q/ha).

AVT-II: Test entry SUIN-62 (8.77 q/ha) performed marginally better than the best check SUIN 053 (8.69 q/ha) followed by test entry SUIN-63 (8.67 q/ha).

Adaptive Trial: Test entry JRJ-610 with an average yield of 10.83 q/ha outyielded the best check SUIN 053 (9.21 q/ha) with 17.60% yield superiority in state of Uttar Pradesh.

Ramie (*B. nivea*)

IET: Test entry R 1415 exhibited maximum dry fibre yield (24.13 q/ha//yr) owing to the highest dry fibre recovery (3.12%) followed by R 1414 (21.94 q/ha/yr), and R 52 (20.71 q/ha/yr).

Flax (*L. usitatissimum*)

AVT-II: Test entry JRF-5 (21.27 q/ha) marginally out yielded the check variety JRF-2 (20.91 q/ha) but difference was not significant.

Adaptive Trial: On the basis of evaluation at four locations in Uttar Pradesh and one location in West Bengal test entry JRF-2 recorded raw fibre yield 16.59 q/ha at farmer's field.

Crop Production

In the year 2013-14, total 17 research projects comprising of 60 trials were conducted on jute and allied fibre crops at different AINP centres under crop production programme. The new *C. olitorius* genotype JROG 1 recorded significantly higher fibre yield over check varieties at Kalyani, Coochbehar and Kendrapara centres and maximum fibre yield was obtained with

fertilizer dose of 100 kg N: 21.8 Kg P: 41.7 kg K/ha. However, none of the new *kenaf* genotypes (JBMG 4 and JBMG 5) under adaptive trial recorded any significant increase in fibre yield over the check variety HC 583 at both Kendrapara and Amadalavalasa centres. Fibre yield of kenaf genotypes increased significantly upto 60 kg N + 13.2 kg P + 25 kg K/ha level at Amadalavalasa centre only. Among the three roselle genotypes under adaptive trial, CRIJAF R 5 and CRIJAF R 8 recorded significantly higher fibre yield over the check variety AMV 5 at Amadalavalasa centre only and the fibre yield of roselle genotypes increased significantly up to fertilizer dose of NPK @ 60 : 13.2 : 25 kg/ha level. Fibre yield of new sunnhemp entry JRJ 610 was significantly higher (9.04 q/ha) over the check varieties SH 4 and SUIN 053 at Pratapgarh centre only and the fibre yield increased significantly upto 20:40:40 kg NPK/ha only.

Targeted yield (3.5 t/ha) of jute fibre was achieved with ST-TY based fertilizer application in Kalyani only. However, the integration of FYM with ST-TY based fertilizer application could achieve the targeted yield at Bahraich and Katihar also. Integration of FYM along with ST-TY based fertilizer application could achieve the higher target (4t/ha) at Kalyani only. Targeted yield (5.5 t/ha) of rice was achieved with ST-TY based fertilizer application at Bahraich only. Higher yield target of 6.5 t/ha was achieved at Kalyani centre when FYM was applied in combination with ST-TY based fertilizer application.

Application of fertilizer on soil test and targeted yield basis along with lime achieved the targeted jute fibre yield (3.5 t/ha) at Coochbehar only. In corporation of FYM along with ST-TY based fertilizer application achieved the targeted jute fibre yield at Kendrapara also. Targeted grain yield (5 t/ha) of rice with ST-TY based fertilizer application was achieved at Coochbehar only. Targeted yield of mesta was not achieved either at Aduthurai or at Amadalavalasa.

The results of weed control trials revealed that quizalofop ethyl 5 % EC @ 60g with one hand weeding and use of nail weeder twice (1st at 5 DAE and 2nd at 10 DAE) followed by one hand weeding within the row at 15 DAE recorded the comparable fibre yield with two hand weeding (15-20 DAE and 35-40 DAE) treatment at Kalyani, Kendrapara, Katihar and Bahraich centres. The highest net return was recorded with two hand weeding treatment but the highest benefit cost ratio was recorded with post emergence application of quizalofop ethyl @ 60 g/ha at 15 DAE with one hand weeding at 15-20 days after herbicide application at Bahraich and Katihar centres. In mesta, the highest fibre yield was obtained when weeds were controlled by application of pretilachlor 50 EC @ 900 ml/ha followed by one hand weeding at Amadalavalasa, whereas, two hand weeding treatment and application of quizalofop ethyl @ 60 g/ha at 15 DAE + one hand weeding at 15-20 days after herbicide application were comparable and recorded comparatively higher fibre yield of mesta at Aduthurai.

At Coochbehar, maximum seed yield of *capsularis* jute was recorded when the crop was sown on 1st week of July with a spacing of 60 cm x 15 cm spacing while at Nagaon, the highest seed yield was observed with crop sown on ^{6th} July with 45 cm x 10 cm spacing (6.09 q/ha) and topping at 45 days after sowing. At Bahraich, sowing of *capsularis* jute on 15th June with a spacing of 60 cm x 15 cm and topping at 45 DAS recorded maximum seed yield

of the crop. Maximum seed yield of *olitorius* jute was recorded at Rahuri when crop was sown on 31st July with a spacing of 45 cm x 30 cm and topping was done. Under the drought condition the highest fibre yield recorded when jute was sown on 30th March to 3rd week of April with one irrigation and application of 80 kg N + 18 kg P + 33 kg K/ha along with bunding all around the field and it was comparable when crop was on the same date with three irrigations and application of 60 kg N +13 kg P +25 kg K/ha at Kalyani and Kendrapara. At Amadalavalasa, the highest fibre yield of mesta was recorded when crop was sown with onset of monsoon with application of 60 kg N + 13 kg P + 25 kg K/ha +30 kg S/ha, and the fibre yield was almost similar when mesta was sown on same date in open furrow with 60 kg N + 13 kg P + 25 kg K/ha.

CRIJAF microbial formulation used for retting performed very well in various AINP centers located at different agro-climatic region. Jute retting was completed in 9 to 15 days in most of the centers with microbial formulation compared to 15 -22 days required in control, while Coochbehar centre recorded same duration (20 days) with treated and untreated one. Nagaon centre recorded 20.9 days with microbial formulation compared to 29.8 days in control. In case of mesta, the retting was completed in 8 to 9.2 days with formulation compared to 14-18 days in control. The treated fibre of jute recorded fibre strength of 25.4 to 29.4 g/tex compared to 18.9 to 28.5 g/tex in untreated fibre.

The results of jute-pulse strip cropping at Kalyani and Kendrapara indicated that higher system productivity recorded with jute-pulse strip crop and sole crop of jute, whereas, higher net return and benefit-cost ratio was recorded with sole crop of green gram (Variety- Pant Mung 5). The sole jute cropping recorded the highest system productivity and net return at Bahraich and Katihar but the highest benefit-cost ratio obtained in jute and green gram strip cropping.

The maximum green biomass of mesta was recorded with variety MT 150 (415.86 q/ha) at Bamra, Odisha while both at Amadalavalasa and Aduthurai centres, varieties MT 150 and JBM 2004-D recorded significantly higher biomass of the crop as compared to AMV 5. The green biomass of mesta variety increased upto 160 kg N/ha level at Bamra and Aduthurai centres while the increase was significant upto 80 kg N/ha only.

The sowing of mesta crop on 15th May with spacing of 45 cm x 10 cm and topping at 45 DAS was found suitable for seed production of mesta at Aduthurai. Sowing on 6th August with a spacing of 45 cm x 10 cm recorded significantly higher seed yield of mesta at Amadalavalasa. At Kendrapara, maximum seed yield of mesta (7.35 q/ha) was recorded with 45 cm x 10 cm though no significant variation was observed in seed yield between the two topping dates. Maximum seed yield of sunnhemp was achieved with a spacing of 30 cm x 10 cm at Rahuri (12.75 q/ha) while the effect of spacing on seed yield was found non-significant at Aduthurai.

At both the centres, variation in the dose of N, P and K did not bring significant variation in seed yield of the crop. At Amadalavalasa, maximum value of seed yield and yield attributes were recorded with spacing of 60 cm x 15 cm (16.45 q/ha) and with a fertilizer dose of 20:60:60 (NPK, kg/ha) (18.56 q/ha).

Fibre yield of ramie (17.64 – 17.79 q/ha) recorded with integrated nutrient management treatments (125% N from inorganic + 50% N from FYM / ramie compost) was statistically at par with yield observed (18.45 q/ha) in 150% recommended fertilizer dose at Barrackpore and may be recommended for south Bengal conditions. Similarly in sisal, combined application NPK @ 90:30:60 kg/ha + sisal waste @ 20 t/ha recorded maximum dry fibre yield (16.3 q/ha) of the crop at Bamra, Odisha. The suitable sowing time for fibre flax was found to be early December (9th) for Kalimpong and end of December (25th) for Wellington centres and end of October (30th) for Pratapgarh as the crop recorded maximum biomass and fibre yield when sown during these periods, respectively. Row spacing of 15 cm was found suitable for flax crop in all the three centres as it gave maximum value of biomass and yield with this spacing.

Crop Protection

Pest and disease scenario in jute and mesta crops was monitored during the active growing season. The experiment was conducted at seven centres (23 locations). Yellow mite, Bihar hairy caterpillar (BHC), semilooper, stem weevil were the most common insect pests in jute while in mesta aphid, leaf hopper, whitefly, mealybug and semilooper were prevalent. At Barrackpore yellow mite was severe (122 mites/cm^2) during 2nd week of May and BHC became serious during 3rd week of July. Yellow mite was major pest at Katihar, Kendrapara, Bahraich and Coochbehar. Semilooper and BHC were prevalent at Nagaon and indigo caterpillar was specific to this location.

Stem rot and root-rots were most severe at Barrackpore, Coochbehar, Katihar and Kendrapara. Mosaic and anthracnose were prominent at Katihar, Bahraich, Kendrapara and Nagaon. Seed ling blight was specific to Nagaon. Stem-rot appeared at later stage (85–105 DAS) of crop growth. Anthracnose disease was maximum recorded at Nagaon (34.05%), Bahraich (18.70%) and Katihar (3.56%) during 60-105 DAS. Mosaic incidence was maximum at Bahraich (68.80%), Kendrapara (33.33%) and Katihar (11.48%). Seedling blight incidence was high at Nagaon (1.80%) at 35DAS.

Fifty *tossa* jute (*C. olitorius*) lines were screened at four locations against root knot nematode under pot culture conditions. At Coochbehar, Nagaon and Kendrapara all the entries were rated as either susceptible or highly susceptible. At Bahraich, 5 (OIJ -040, OIJ-223, OIN-701, OIN-911 and OEX-33) were found to be highly resistant while 16 entries were resistant against the root knot nematode.

Under natural field conditions at Katihar 6 accessions of *tossa* jute (OIN-06, OIN-09, OIN-69, OIN-71, OIN-83, OIN-508) were free from stem weevil infestation. KTC-1 recorded least infestation by semilooper. OIN-09 and OEX-05 recorded least Bihar hairy caterpillar infestation. Among the white jute (*C. capsularis*) germplasm CIN-02, CIN-06, CIN-09 were free from yellow mite while CIN-10, CIN-50 were free from stem weevil. At Kendrapara, *tossa* jute lines OIN-48, OIN-130, OIN-508 recorded least yellow mite infestation. Accessions OIN-76, OIN-1123 were free from stem and root rot disease. *Capsularis* germplasm CIN-11, CIN-64, CIN-116, CIN- 367 and CEX-25 recorded relatively less yellow mite infestation. CIN-13, CIN-101, CIN-105, CIN-139 and CIN-523 recorded least stem weevil infestation and accessions CIN-65, CIN-364 were free from stem and root rot disease.

At Nagaon o*litorius* accessions OIN-06, OIN-68, OIN-104 and OIN-130 recorded least yellow mite infestation (6.1 no./cm^2). Accessions OIN- 150, OIN-62, OIN-104, OIN-112 and OEX-13 showed least susceptibility to stem weevil while OIJ-88 recorded relatively less BHC infestation. *Capsularis* accessions CIN-10, CIN-7 and CIN- 53 showed relatively less incidence of stem weevil. Yellow mite infestation was less in CIN-1, CIN-26, CIN-93, CIN-116, CIN-117, CIN-138, CIN-179, CIN-210 and CIN-259 while BHC infestation was less in CIN-26 and CIN-130. Among *olitorius* jute germplasm at Coochbehar the accessions OIN-15, OIN-30, OIN-59, OIN-490, OIN-138 and OIN-104 recorded relatively less yellow mite infestation. Semilooper damage was least in OIN-09, OIN-25 and accession OEX – 9 was free from root rot incidence. Among the *capsularis* accessions CIN-48, CIN-43, CIN-20 and CIN-06 were least infested with semilooper.

At Amadalavalsa, 41 mesta accessions were screened for insect pests and disease resistance under natural epiphytotic conditions. Among these, three (AS-80-9, AS-80-19, AR-80) were least susceptible to aphids. R-271 was resistant against white flies, R-40 against semilooper, R-347 against leaf hoppers and R-128 against mealybug. Only one accession (R-79) was identified as highly resistant to foot and stem rot disease.

For management of stem rot under integrated crop management system early sowing (15^{th} March) was effective in reducing stem rot incidence at Coochbehar, Bahraich and Kendrapara while late sowing (30^{th} March), was effective in reducing stem rot incidence at Barrackpore and Katihar. Disease severity increased with the higher nutritional dose (N:P:K-80:40:40) at Barrackpore, Coochbehar and Kendrapara while reverse trend was observed at Bahraich and Katihar. Seed treatment with *T. viride* @10g/kg + Butachlor 2kg a.i./ha as pre-mergence +spraying of carbendazim @ 0.1% + spraying of endosulfan @ 0.15% at 15 days interval significantly reduced disease incidence at Coochbehar, Bahraich and Katihar though at Barrackpore and Kendrapara the treatment failed to produce such effects.

In a seed crop at Bahraich, spraying of carbendazim @0.1% at pod setting stage also reduced seed infection (2.37%) and seed discolouration however seed yield was maximum when sown at June end (3.52 q/ha). Early sowing (15thApril) resulted higher yellow mite infestation in jute at Barrackpore. Hence, application of abamectin 1.8 EC@ 0.0015% on a late sown (15^{th} May) crop at 45 and 60 DAS were significantly least mite concentration. Similar trend was observed at Katihar. However, at Bahraich, Coochbehar and Kendrapara, other spray schedules consisting of dicofol 18.5 EC (0.045%), quinalphos 25 EC (0.04%), fenazaquin 10 EC (0.015%), profenophos 50 EC (0.10%) produced similar results. For semilooper and BHC, application of fenazaquin 10 EC @ 0.015% at 45 and 60 DAS followed by profenophos 50 EC @ 0.10% at 70 and 80 DAS was most effective at all the centres.

In ecofriendly management of insect, pests and diseases in jute, the integrated organic module consisting of FYM (5 t/ha), Azotobacter (5 g/kg seed), PSB (5 g/kg seed), *Trichoderma viride* (5 g/kg seed) and soil application of *T. viride* (2kg/ha), *Pseudomonas flurorescens* (0.2% foliar spray) and neem oil (0.03%) was most effective against jute stem rot.

Among the five fungicides tested at Barrackpore and Amadalavalsa against foot rot disease of mesta caused by *Phytopthora parasitica var. Sabdariffae* seed treatment with metalaxyl MZ

8% WP @ 2g/kg followed by 0.2% foliar spray at 30 and 45 DAS was found most effective. In biorational management of yellow mite in jute treatment application of azadirachtin (10000 ppm), *Lecanicillium lecanii* ($2x10^8$ CFU/g), spiromesifen 240 EC (0.07%) individually or in combinations significantly reduced pest population. These treatments were equally effective against this pest at Barrackpore. At Coochbehar, Katihar and Nagaon application of spiromesifen 240 EC (0.07%) at 35 and 50 DAS caused the maximum reduction in mite population 57 DAS.

Six *tossa* jute lines from advanced varietal trial (AVT-I) along with check were screened for resistance against major diseases and insects at Barrackpore. However, no significant difference could be observed among these.

Similarly entries of white jute in AVT-I were screened along with the checks. All the lines were susceptible to BHC, semilooper, yellow mite and stem rot stem. However, all the test line were less susceptible to stem weevil at 60 DAS compared to the check. In another trial in AVT-II entries of white jute were screened along with the check.

Among the five advanced lines of *H. sabdariffa* tested at Barrackpore for resistance against stem rot disease, AHS-233 was least infected. In AVT-II JBRP-02, recorded least incidence (9.32%) foot and stem rot where as in JBRP-01 the extent of disease incidence was 14.05%.

Appearance of stem rot, wilt, leaf spot and pod borer was recorded on six lines of sunnhemp along with a check at Barrackpore. However, no significant difference could be observed in any of the lines for any disease or pest. Similarly eight sunnhemp lines were tested under AVT-II. The lines varied non-significantly in terms of their resistance status.

At Amadalavalsa, in AVT-I for screening of roselle varieties ASH-230 was resistant to aphids, leaf hoppers, white flies, mealybug and semilooper while in AVT-II for screening of roselle varieties JBRP-01 was resistant to all the major insect pests.

Fibre Quality 2012-2013

Tossa jute

IET: Hard root content varied from 5 to 15 % at UBKV, and 5% at Nagaon. Fibres of all the entries were found to be very fine in nature. The fibre grade varied from TD-4 to TD-5 at UBKV and from TD-3 to TD-4 at Nagaon.

AVT-I: Root content varied from 10 to 15 % at UBKV, 20-25 % at Nagaon and 5 to 15 % at Katihar. In general, Tenacity of all the entries were weak and fibre grade varied from TD-4 to TD-5.

AVT-II: Root content varied from 8 to 15 % at UBKV, 10-20 % at Nagaon and 8-10 % at

Katihar. Fineness value varied from fine to very fine. Fibre grade varied from TD-3 to TD-5.

White jute

IET: Hard root content varied from 8 to 25% at Bahraich, 25 to 40% at UBKV, 8 to 40% at Nagaon Tenacity values were very weak and fibre grades ranged fromW-4 to W-6.

AVT-I: Hard root content varied from 20 to 35% at Baharaich, 15 to 20% at UBKV, 40 % at Nagaon and 30- 40% at Katihar. All the entries are very fine in nature. Fibre grades varied from W-4 to W-6.

AVT II: Samples from Nagaon and UBKV showed 30-40 % root content. All the entries were very fine in nature. Fibre grade varied from W-5 to W-6.

Roselle

IET: Hard root content varied from 12 to 40% in Aduthurai. Fibre of all the entries was coarse in nature. Fibre grade varied from B-2 to B-4.

AVT-I: High hard root content was observed in all samples. Strength value showed average in nature. Fibre grade was B-3-B 4

AVT- II: High Hard root content was observed in all samples. Strength value showed average in nature. Fibre grade ranged from B-3- B4.

Fibre quality 2013-2014

***Tossa* jute**

IET: Root content of fibre samples varied from 5 to 15 % at BCKV, 15 to 35 % at UBKV, 25 to 35 % at CRIJAF and Nagaon with high defects. Fibres were, in general, weak to average in tenacity and fine to very fine from all the centres. Grade varied from TD 4 to TD 5 except samples from CRIJAF.

AVT-I: Root content varied from 8 to 25 % at BCKV, 25 to 35 % at BCKV, CRIJAF and 15 to 25 % at Nagaon. Tenacity values were fairly average to fairly good from all centres. Fibre grade varied from TD-4 to TD-5.

White Jute

IET: Very high root content (30-40%) was observed in all centres. Fibre was weak in strength and fine in nature. Grade varied from W5 to W6.

AVT-I: Samples from all the centres showed 30-40% root content and were weak in tensile strength. All the samples were very fine in nature and fibre grade varied from W5 to W6.

AVT-II: All the samples showed 30-40% root content and tenacity values of all the samples varied from average to fairly good with W5 – W6 grade.

Roselle

IET: Sample from UBKV showed high root content (30-50%) and was weak in tenacity and fine in nature. Fibre was of B-3 grade.

Sunnhemp

IET: Tenacity values of samples were average in BCKV, CRIJAF and Budbud centres.

AVT-I: Comparatively high tenacity was recorded in samples from Budbud in comparison to BCKV and CRIJAF.

AVT-II: Comparatively high tenacity was recorded in samples from Budbud in comparison to BCKV and CRIJAF.