# Research project funded under ISOPOM

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of Project</th>
<th>Implementing Agency</th>
<th>Duration of Project</th>
<th>Total Cost of Project (Rs in Lakhs)</th>
<th>Fund Released (Rs in Lakhs)</th>
<th>Outcome of the Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>“Development and promotion of promising varieties/lines with high yield and high oil content for enhancing production and quality of groundnut oil in drought prone environments to boost the income of small and marginal groundnut farmers in India”</td>
<td>ICRISAT, Hyderabad</td>
<td>2010-2015*</td>
<td>577.76</td>
<td>577.76*</td>
<td>Four high oil lines namely ICGV 05155, ICGV 06420, ICGV 03042 and ICGV 03043 have been developed and being tested in AVT in Zone V during Kharif 2015 after testing under AICRP-G for 2 years. Four new high oil containing varieties viz. ICGV 07038 (DGR), ICGV 06138 &amp; ICGV 07222 (JAU) and ICGV 03057 (RARS, Tirupati) are proposed for testing during Kharif 2015 under AICRP-G trials in second year. Three high oil yielding lines viz. ICGV 03042, ICGV 06424 and ICGV 07222 were evaluated in AICRP-G trials during Rabi 2014-15 at JAU, Junagarh. 50 Farmer Participatory Varietal Selection Trials conducted during Kharif 2014 in Gujarat, AP and TN. QTL analysis has been done for oil content and oleic acid content. High oleate lines developed through back crossing are tested in Preliminary Evaluation Trial at ICRISAT, TNAU, RARS-Tirupati and DGR, Junagarh. 171 entries with high oleic acid content (61-85%) and O/L ratio (3.4 to 3.9) are evaluated in two separate trials. 199 back cross progenies are under Progeny Row Trials at TNAU. Phenotyping for oleic acid content and O/L ratio is being done during Kharif 2015. Nine promising selections were evaluated at RARS, ANGRAU and phenotyping for oleic acid content is under progress. NIRS technique for oil estimation and fatty acid content was calibrated and is now routinely used in breeding programme. Release proposal at National/State level of superior high oil containing lines will be submitted during 2015-16.</td>
</tr>
</tbody>
</table>

*Revalidation of remaining funds of Rs 25.66 lakhs has been approved for completion of remaining work during April, 2015 to December, 2015.*
## Adaptive research project on oilseeds funded under NMOOP

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of Project</th>
<th>Implementing agency</th>
<th>Duration of Project</th>
<th>Total cost of the project (Rs. in lakhs)</th>
<th>Fund released (Rs. in lakhs)</th>
<th>Outcome of the Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Productivity enhancement of rapeseed-mustard crops through technology implementation and their refinement under farmer’s field conditions in the state of Uttarakhand.</td>
<td>GBPUA&amp;T, Pantnagar</td>
<td>2015-16 to 2016-17</td>
<td>35.66</td>
<td>13.37</td>
<td>Approved on 02.06.2015.</td>
</tr>
<tr>
<td>4.</td>
<td>Bridging the production gaps in potential districts of sunflower and sesame through dynamic technology transfer.</td>
<td>IIOR Hyderabad</td>
<td>2015-16 to 2016-17</td>
<td>57.48</td>
<td>-</td>
<td>Approved on 28.08.2015. (Administrative approval being issued)</td>
</tr>
<tr>
<td>S.No.</td>
<td>Name of the project</td>
<td>Implementing agency</td>
<td>Duration and date of starting of the project</td>
<td>Total cost of the project, if specified (Rs lakhs)</td>
<td>Funds released (Rs lakhs)</td>
<td>Outcome of the project upto 2013-14</td>
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<tr>
<td>1</td>
<td>National network on integrated development of Jatropha &amp; Karanja</td>
<td>CRIDA, Hyderabad</td>
<td>2005-06 to 2014-15</td>
<td>70.77</td>
<td>49.78</td>
<td>Evaluated the identified genotypes of Karanja in Progeny, Zonal &amp; National Trials. The identified promising genotypes with respect to oil content are:- National Trial: RAK-22 (31.32), TNMP-2 (36.07), TNMP-4 (35.45) Progeny Trial: Acc-13 (29.43), Acc-8 (33.9), Acc-14 (45.08) Zonal Trial: TNMC-9 (33.67), TNMC-23 (32.73), TNMP-20 (35.14) The identified promising genotypes with respect to seed yield (Qtl./ha.) are:- National Trial: RAK-22 (3.4), TNMP-2 (1.2), TNMP-4 (0.7) Progeny Trial: Acc-13 (5.4), Acc-8 (3.9), Acc-14 (3.2) Zonal Trial: TNMC-9 (5.6), TNMC-23 (2.3), TNMP-20 (1.1)</td>
</tr>
<tr>
<td>2</td>
<td>Collection, characterization &amp; evaluation of plant type for mass multiplication &amp; standardization of agrotechniques in Simarouba</td>
<td>ANGRAU, Hyderabad</td>
<td>2008-09 to 2014-15</td>
<td>31.51</td>
<td>19.59</td>
<td>Evaluated the genotypes of Jatropha in National Trial and reported that the genotypes namely HAUJ-37, PJA-1, Pant JCB-3, JIB-12, AJA-1, PJA-1 etc. have been found superior in plant height, collar diameter and number of branches. Similarly, the genotypes of Simarouba namely Palem-4, PDKV SG-25, HAUP-9, PDKV SG-27 etc. have been found superior in terms of plant height, collar diameter and number of branches per plant. The inter-cropping trial of maize, sunflower, finger millet and horse gram with Simarouba concluded that an additional income upto Rs.10,500/ha./year can be obtained during gestation period.</td>
</tr>
<tr>
<td>3</td>
<td>DNA fingerprinting and molecular characterization of Jatropha germplasm collected from diverse agroclimatic zones of India</td>
<td>NBPGR, New Delhi</td>
<td>2005-06 to 2014-15</td>
<td>77.41</td>
<td>47.36</td>
<td>Periodic retesting of total cryo-preserved 1341 germplasms of various TBOs viz Jatropha(767), Karanja (385), Wild apricot (287) and Simarouba (2) showed the retention of initial viability values showing successful cryostorage. The accessions of Jatropha, Karanja and Wild apricot cryopreserved for 67-70 months, 18-80 months and 70-74 months confirmed viability from 55-100%, 60-100% and 33-80%, respectively. A total of 58 genotypes of Karanja and 13 genotypes of Wild apricot have been cryo-stored during 2012-13. About 9 accessions of Mahua have been allotted IC nos. and used for DNA finger printing.</td>
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<tr>
<td>4</td>
<td>Design &amp; development of post harvest equipments for TBOs viz. Jatropha, Karanja, Sinarouba, Tung etc. and commercialization of developed equipments</td>
<td>IIT, Delhi</td>
<td>2005-06 to 2014-15</td>
<td>79.63</td>
<td>45.93</td>
<td>Tung decorticator has been developed after some modification in Karanja decorticator. It has capacity of 35 kg/hr and 75% efficiency. The cost of the machine is Rs 1.00 lakh. Three units of Tung decorticator have been installed at Aizawi, Mizoram. The training programme has been organized for operational know-how. Besides, the other post harvest technologies namely Jatropha and Karanja fruit decorticator, seed decorticator, Jatropha oil expeller developed under R&amp;D programme have been installed in the field which are operating successfully.</td>
</tr>
<tr>
<td>5</td>
<td>Processing of oilseed cakes of Jatropha, Karanja, Mahua and Neem for value addition for biofertilizers and</td>
<td>IIT, Delhi</td>
<td>2008-09 to 2014-15</td>
<td>37.03</td>
<td>22.86</td>
<td>IIT, Delhi has filed an Indian patent during 2013-14 pertaining to bionematicical formulation of Paecilomyces lilacinus comprising of Karanja deoiled cake. For mass multiplication (scaling-up), collaborated with Delhi University for scale-up the product up to 5 -10 Kg (Tray level) and further up to</td>
</tr>
<tr>
<td>6</td>
<td>National network on integrated development of Wild apricot</td>
<td>CSKHPKV, Palampur</td>
<td>2005-06 to 2014-15</td>
<td>46.51</td>
<td>20.71</td>
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<td>7</td>
<td>National network on integrated development of Wild apricot</td>
<td>SKUAT, Srinagar</td>
<td>2005-06 to 2014-15</td>
<td>48.5</td>
<td>30.46</td>
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<tr>
<td>8</td>
<td>Collection, clone multiplication, conservation and biochemical profiling of Kokum (Garcinia indica)</td>
<td>NBPGR-RS, Thrissur</td>
<td>2008-09 to 2014-15</td>
<td>28.56</td>
<td>10.72</td>
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<tr>
<td>9</td>
<td>National network on integrated development of Jatropha</td>
<td>JNKVV, Jabalpur</td>
<td>2005-06 to 2014-15</td>
<td>42.21</td>
<td>20.75</td>
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<tr>
<td>10</td>
<td>National network on integrated development of Karanja</td>
<td>JNKVV, Jabalpur</td>
<td>2005-06 to 2014-15</td>
<td>37.74</td>
<td>21.33</td>
<td></td>
</tr>
</tbody>
</table>

100-250 Kg.

Two training programs (one at Farrukhnagar, Haryana and other at Pilibhit (U.P.) have been conducted on awareness of utilizing non-edible oil cakes as biopesticides and organic manures benefiting 25 farmers at each place. The field experiments are being conducted at Pilibhit (U.P.), Farrukhnagar and Mubarikpur (Haryana), Pratappgarh (U.P.) and Micromodel Complex, IIT Delhi.

The centre has developed best propagation technique and media on seed germination and seedling growth as soil+sand+FYM in a ratio 1:1:1. The selected CPTs were having fruit yield ranging from 45 to 160 kg/tree. The centre has reported that the commercial method of propagation in wild apricot is tongue grafting. Mound layering does increase the number of plants, however, this technique cannot be used for large scale multiplication of plus trees. 70% success in green wood grafting has been obtained, which is applicable if one misses the season for tongue grafting. The centre identified some potential genotypes namely Sh-18, Ku-04, Ku-06, Ku-08, Ku-12, Bd-04 etc. About 1450 Plus Trees have been developed using above technique and planted on farmer's field at Mountain Agriculture Research Station, Leh, J&K.

The centre has reported that the progeny evaluation of 26 CPTs of Wild apricot having oil content range of 45.5% to 54.2% is being undertaken. Wild apricot being slow in growth, data on only growth characteristics have been recorded. The CPT No. 98 has attained maximum plant height. The progeny of collection S-4 from Budgam planted in 2006 recorded 8.5 kg. fruit yield per tree was highest during 2012. This genotype is also having high oil content of more than 50% consistently for the last 3 years. Besides, the genotypes namely S-12, S-13, S-15, S-16 and S-17 have also been found with 50% oil content consistently in 3 years (upto 2012).

The germplasm collections namely IC 342303-2 (3741 fruits), IC 342297-1 (1291 fruits), IC 342301-2 (1244) & IC 136682-2 (1243 fruits) out yielded the check (1196 fruits per tree). The fruit yield was highest in genotype IC 342303-2 with 86.9 kg. followed by IC 342319-2 with 37.4 kg. The variation in oil content in kernel ranged from 33.82 to 47.1% (IC 342327-1). Appropriate vegetative propagation technique has been standardized. The centre has been advised to develop 1 ha. plantation of registered genotypes IC 136687-3; INGR No. 04063 using standardized propagation technique.

The centre has identified CPTs of Jatropha having highest oil content of 42%. It has been reported that genotype NBJ-9 has been performing consistently during last three years. Besides, TFRI-07, NRCJ-7, NRCJ-89 and NDJC-1 have been identified the best performing genotypes in National Trial in terms of capsule yield. The genetic variability for various morphological traits observed in trials concluded that JJ-36-4 has been identified as potential stock from interspecific hybrids. The use of Benzyl adenine can improve yield by increasing female inflorescence.

A total of 62 Candidate Plus Trees (CPTs) have been evaluated in progeny trial with highest oil content of 41.8% in Maihar-1 and highest seed yield of 0.56 kg./tree in 7th year. In provenance trial, the maximum kernel oil content of 41.6% was recorded in provenance JNK-35 whereas JNK-12 recorded highest seed yield of 228 kg./ha. The highest pod yield of 172.8 kg./ha. was recorded in TN&MP-36. The oil content of 3 accessions which started fruiting at the age of
11 National network on integrated development of Karanja

MPKV, Rahuri

2005-06 to 2014-15

<table>
<thead>
<tr>
<th>Year</th>
<th>Maturity</th>
<th>Oil (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-15</td>
<td>66.58</td>
<td>40.14</td>
</tr>
</tbody>
</table>

RAK-27, RAK-23, RAK-28, RAK-4, RAK-14 & RAK-50 have been identified as best genotypes based on growth parameters in Pregenous Trial. RAK-89, TNMP-20, 23, 27, PAVL-AKL etc. have been identified as best genotype based on growth parameters in Zonal Trial. RAK-60, 6, 103, TNMP-6, 21 & 1 have been identified as best genotype based on growth parameters in National Trial. The centre has identified above genotypes for registration/release.

12 Germplasm collection, evaluation and mass multiplication on TBOs (Jatropha, Karanja & Kokum) of Konkan region of Maharashtra and Goa

Dr BSKKV, Dapoli

2008-09 to 2014-15

<table>
<thead>
<tr>
<th>Year</th>
<th>Maturity</th>
<th>Oil (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-15</td>
<td>35.91</td>
<td>17.93</td>
</tr>
</tbody>
</table>

The CPTs of Karanja i.e. KKVPP-17 had the highest oil content of 42%. Other genotypes identified possessing high oil content are KKVPP-03 (38.41), KKVPP-07 (38.22), KKVPP-08 (38.40), KKVPP-09 (36.40), KKVPP-10 (35.74), KKVPP-11 (37.52), KKVPP-12 (37.49), KKVPP-13 (36.56), KKVPP-20 (36.08). The genotypes namely KKVPP-02 (0.79), KKVPP-04 (0.58), KKVPP-07 (0.58), KKVPP-09 (0.61), KKVPP-12 (0.70), KKVPP-13 (1.15) and KKVPP-16 (0.40) have been identified as potential genotypes with high seed yield. The centre has also identified genotypes of Kokum namely KKVGI-06 (52.73), KKVGI-11 (49.41), KKVGI-13 (45.67, KKVGI-26 (44.88), KKVGI-29 (44.86) and KKVGI-36 (52.24) having high oil content. These genotypes have been identified for registration/release for plantation.

13 National Network on integrated development of Karanja

Dr PDKV, Akola

2005-06 to 2014-15

<table>
<thead>
<tr>
<th>Year</th>
<th>Maturity</th>
<th>Oil (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-15</td>
<td>62.59</td>
<td>35.72</td>
</tr>
</tbody>
</table>

The centre has reported highest oil content of 46.42% in the genotype PNK-33 followed by 40.14% in PNK-29. The highest oil content in Zonal Trial was recorded in PKV-PRW (40.08%) and PKVAKL (35.82%).

14 National network on integrated development of Jatropha

ICAR, RCNEH, Manipur

2005-06 to 2014-15

<table>
<thead>
<tr>
<th>Year</th>
<th>Maturity</th>
<th>Oil (%)</th>
</tr>
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<tbody>
<tr>
<td>2014-15</td>
<td>40.76</td>
<td>20.99</td>
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</table>

The centre has reported that the genotypes MNJ-001 (40.77), MNJ-002 (40.87), MNJ-005 (40.28), MNJ-006 (40.34), MNJ-017 (42.89), TFRI-01 (49.20), TFRI-02 (43.32), TFRI-03 (42.36), JIP-02 (42.20), JIP-13 (42.86), JIP-15 (44.12), JIP-17 (43.89) posses high oil content (%) and the genotypes MNJ-002 (15.20), MNJ-002 (22.50), MNJ-005 (14.41), JIP-13 (22.85), JIP-17 (25.67) have been found as high seed yield (q/ha) producing type.

15 National network on integrated development of Jatropha

MPUA&T, Udaipur

2005-06 to 2014-15

<table>
<thead>
<tr>
<th>Year</th>
<th>Maturity</th>
<th>Oil (%)</th>
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<tbody>
<tr>
<td>2014-15</td>
<td>39.88</td>
<td>25.01</td>
</tr>
</tbody>
</table>

The centre has reported that PJ-Sel-1 and TFRI-1 have been identified with oil content 33.6% and 33.2%, respectively in National Trial. The selections PJ Sel-1, TNMC-2 and TFRI-2 have been identified as best genotypes in National Trial in terms of seed yield. It is reported that highest seed yield of 7.7 q/ha in MPCUD-55 followed by 7.6 q/ha in MPCUD-44 and both with oil content of >33% in both the genotypes in Propogation Trial have been found. The centre has reported that the planting of Jatropha at 3 m x 2 m spacing with pruning recorded significantly higher seed yield of 8.85 q/ha over 3m x 3m spacing with pruning and unpruning treatments. The genotype NJB-9 produced highest seed yield of 7.8 q/ha in 5th year of plantation.

16 National network on integrated development of Jatropha & Karanja

TNAU, Mettupalayam

2005-06 to 2014-15

<table>
<thead>
<tr>
<th>Year</th>
<th>Maturity</th>
<th>Oil (%)</th>
</tr>
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<tbody>
<tr>
<td>2014-15</td>
<td>79.78</td>
<td>41.05</td>
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</tbody>
</table>

The National Trial consisting of 16 genotypes was conducted and the genotype Jabalpur was found best for number of fruiting branches/plant and seed yield (kg/ha) with 1.13 tonne/ha. average seed yield and 30.46% oil content. Five high yielding Jatropha hybrids namely CJH 3, 5, 9, 12 & 13 have been found best out of total 30 inter-specific hybrids. The second generation hybrid of CJH 12 & 13 under irrigated condition has been raised and release of hybrid derivatives in next 1-2 years is expected. A total of 20 acre of Hybrids Trials is being maintained. The centre reported that a dwarf hybrid CJH-12 started fruiting in six months with yield potential of 3.5 tonne/ha. The hybrid clones CJH-3, 5, 9 12 & 13 has to be tested in atleast five locations as per the requirement of Varietal Release Committee.
<table>
<thead>
<tr>
<th>No.</th>
<th>Activity</th>
<th>Institution</th>
<th>Start Date</th>
<th>End Date</th>
<th>Seed Oil Content (%)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Collection, evaluation and genetic improvement of Mahua for high yield, oil content as well as superior oil quality</td>
<td>FCRI, Mettupalayam</td>
<td>2010-11 to 2014-15</td>
<td>20.73</td>
<td>10.24</td>
<td>A total of 30 seed sources i.e. 29 from TN and 1 from Chhattisgarh were evaluated for yield and yield attributing characteristics. The percent of oil content of the various seed sources ranged from 27-48%. The highest oil percent was recorded in TNML-12. The characterization of CPTs through bio-chemical and molecular marker techniques as well as standardization of macro-propagation techniques for the production of genetically superior planting stocks is under progress.</td>
</tr>
<tr>
<td>18</td>
<td>National network on integrated development of Jatropha &amp; Karanja</td>
<td>NRCAF, Jhansi</td>
<td>2005-06 to 2014-15</td>
<td>75.74</td>
<td>51.10</td>
<td>The centre has identified high oil content genotypes of Jatropha viz. NR CJ-32 (40.31%), NR CJ-159 (38.90%), NR CJ-35 (37.45%), NR CJ-31 (36.77%), NR CJ-62 (36.60%), NR CJ-63 (35.80%), NR CJ-60 (35.34%), NR CJ-124 (34.90%). The genotypes which possess high seed yield (q/ha) are NR CJ-111 (2.00), NR CJ-128 (1.27), NR CJ-158 (1.18), NR CJ-42 (1.46), NR CJ-70 (1.01), NR CJ-75 (0.26), NR CJ-2 (0.47), NR CJ-89 (0.64) and NR CJ-68 (1.00). Similarly, in Karanja, high oil content(% genotypes) are NR CP-7 (37.90), NR CP-13 (37.87), NR CP-6 (37.73), NR CP-21 (37.07), NR CP-24 (36.80), NR CP-20 (36.70), and NR CP-26 (36.30). Some of these genotypes will be recommended for plantation on large scale.</td>
</tr>
<tr>
<td>19</td>
<td>Germplasm collection, evaluation and development of varieties of Mahua (Bassia latifolia) to increase the oil content yield and oil quality</td>
<td>NDUAT, Faizabad</td>
<td>2010-11 to 2014-15</td>
<td>22.77</td>
<td>9.56</td>
<td>The identified 10 Mahua Candidate Plus Trees (CPTs) have been evaluated in the Progeny Trial. The centre has identified 50 genotypes of Karanja out of which 21 genotypes were recommended for plantation. Some of these genotypes will be recommended for plantation on large scale.</td>
</tr>
<tr>
<td>20</td>
<td>Development of value added products from leaves &amp; oilcakes of Jatropha, Karanja, Neem &amp; Mahua using as a substrate for mass multiplication of Trichoderma spp.</td>
<td>SVBPUA&amp;T, Meerut</td>
<td>2008-09 to 2014-15</td>
<td>29.61</td>
<td>16.61</td>
<td>Trichoderma spp. are fungal antagonists which act through micro-parasitism mainly on soil borne plant pathogens. Use of oil cakes and leaves of Jatropha, Neem and Mahua as substrate may be exploited for mass multiplication of Trichoderma spp. Neem cake was able to support the population dynamics of Trichoderma harzianum upto 105 days, whereas Jatropha, Mahua and Karanja cakes could support the longevity upto 90 days only. Addition of sucrose to the de-oiled cakes of Neem, Jatropha and Mahua were able to enhance the longevity upto 120 days. Among the three nitrogen sources, calcium nitrate was found to be the best in enhancing the population dynamics and longevity, whereas, among three, vitamins, thiamin was found to be the best followed by inositol and biotin. Application of T. harzianum grown on different cakes, FYM and vermicompost enhanced the plant height, greenness and fruit yield. Application of T. harzianum grown on these cakes to soil was also able to induce the systemic resistance in plants against foliar diseases. There has been encouraging results of using above TBO cakes in Trichoderma spp. colony formation.</td>
</tr>
<tr>
<td>21</td>
<td>National network on integrated development of Wild apricot &amp; Cheura</td>
<td>GBPUA&amp;T, Pantnagar</td>
<td>2005-06 to 2014-15</td>
<td>72.41</td>
<td>39.83</td>
<td>The centre has identified the genotype T-24 with 50.98% oil content suitable for release/registration. More than 600 seedlings of Wild apricot collected from different regions of Uttarakhand have been maintained for genetic/quantitative studies. More than 200 seedlings of Cheura were distributed to the farmers for largescale plantation.</td>
</tr>
<tr>
<td>Project</td>
<td>Institution</td>
<td>Start-Year to End-Year</td>
<td>Rating</td>
<td>Description</td>
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<tr>
<td>National network on integrated development of Jatropha</td>
<td>GBPUA&amp;T, Pantnagar</td>
<td>2005-06 to 2014-15</td>
<td>41.8</td>
<td>The centre has identified genotypes i.e. IGAU, Raipur, Pant J. Sel.-2, NBJ-1, JA-9, CRJ-29, TFRI 7 &amp; TFRI-1 with highest seed yield. The composting of leaves and oil cake has been developed. The genotype TNMC-7 and Sagar showed highest oil content of 36.6% and 34.06%, respectively. The centre has reported IGAU, Raipur, Pant J.Sel-2 and TFRI-1 as best genotypes on the basis of seed yield for promotion on commercial level. Jatropha seed decorticator with 3 Qtl./hr. capacity has been designed and manufactured at the centre.</td>
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<tr>
<td>National network on integrated development of Wild apricot &amp; Cheura</td>
<td>Kumaun University, Nainital</td>
<td>2005-06 to 2014-15</td>
<td>73.84</td>
<td>The genotypes of wild apricot namely Bhowali (51.23), Dultidhar (47.78), Jyotidhar (47.60), Jyotidhar (48.70), Nainital (45.81), Nainital (47.20) have been identified with high oil content (%) and the genotypes namely Bhowali (0.14), Bhowali (0.15), Dultidhar (0.13), Jyotidhar (0.10), Nainital (0.09), Nainital (0.09) are identified with high seed yield (q/ha) in trials. The genotypes of Cheura namely Duhari (61.36), Rameshwar (64.26), Rameshwar (51.56), Dhingaltaon (62.65), Hupli (58.64), Hupli (58.82), Matola (62.65), Rameshwarm (49.75) and Dhingra (51.05) possess high oil content (%).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germplasm collection, evaluation and planting of Karanja for improved productivity and higher oil content</td>
<td>FRI, Dehradun</td>
<td>2008-09 to 2014-15</td>
<td>45.47</td>
<td>FRI has 95 Candidate Plus Trees (CPTs) of Karanja as well as 24 progenies/genotypes of Jatropha and observed highest oil content of 41.43% in Karanja and 35% in Jatropha. FRI has established Gene Bank as per assigned objectives and has conducted DNA fingerprinting and genetic diversity analysis at molecular level.</td>
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<td>Collection, characterization &amp; selection of superior plant type for mass multiplication &amp; development of HYV/hybrid variety of Jatropha curcas for better yield &amp; oil content for North Bengal and Assam</td>
<td>UBKV, Cooch Behar</td>
<td>2008-09 to 2014-15</td>
<td>29.06</td>
<td>The centre has reported that four genotypes i.e. TNAU (34.08%), HAUJ-37 (33.53%), PJ-1 (31.4%) and JCP-4 (30.6%), were found superior in National Trial-IV on the basis of oil percentage. Nine superior genotypes have been cryopreserved at NBPGR, New Delhi and IC nos. have been allotted. Besides, 20 genotypes of different accessions are maintained under irrigated condition. On the basis of oil content, some superior genotypes with high oil content namely UBKJ J-23 (38.6%), UBKJ J-3 (38.2%), UBKJ J-4 (36%), UBKJ J-98 (36%), UBKJ J-80 (35%) etc. have been identified.</td>
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<td>Biotechnology-based value-addition of leaves, oilseeds, and cakes of Neem &amp; Jatropha</td>
<td>IIT, Kharagpur</td>
<td>2008-09 to 2014-15</td>
<td>28.15</td>
<td>A library of purified fractions rich in quercitin, quercitin glucoside and chlorogenic acid from Neem leaf, and quercitin glucoside, quercitin &amp; ferulic acid from Jatropha leaf have been made. Two hydrogels were given volunteer trial in the last one year and found promising for skin rash, acne etc. Jatropha hydrogel helped stopping fowl mouth. Based on volunteer trial, the Metabolites content in gel was raged and it helped in removing acne scar by Neem gel. M/s. Tierra Seed, Hyderabad has consulted to be collaborated for further scaling up of the programme.</td>
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* All TBO projects under NOVOD Board have been discontinued w.e.f. 2015-16.