**ALL INDIA COORDINATED RESEARCH PROJECT ON CASHEW**

1. Name : AICRP on Cashew
2. Date of start : ICAR sanction date 18.02.1993
3. Year of start : 1994
4. Name of PI : M.S. Paikra, Scientist (Hort.)
5. Staff position (Total & filled):

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| **S. No.** | **Designation** | **No. of post sanctioned** | **Name of Scientist/ staff** |
| 1. |  (Jr. Horticulturist) | 01 | Mr. M.S.Paikra |
| 2. |  (Jr. Entomologist) | 01 | Dr. A.K. Gupta |
| 3. | Sr. Tech. Asstt. | 01 | Sh. Amitabh Das Gupta |
| 4. |  (Grafter) | 01 | Shri Jagdev |

**6. Major achievements of AICRP on Cashew**

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| **Sr. No.** | **Name of Technology/ Varieties** | **Details of Technology**  | **Specific problem to be solved by adoption of technology** | **Inter-****vention required**  | **Suitability of technology for specified conditions** |
| 1. | Suitable variety of cashew for Chhattisgarh | ‘Indira Kaju-1” is released by State Seed Sub-Committee for Bastar and Jaspur zone of Chhattisgarh with yield potential of15.53 kg/tree, exportable nut size (nut weight -10.50 gm), Kernel weight -2.80 gm with 28.65 Shelling percentage. | No any local cultivar available which is suited for this agro-climatic zone | Grafted plants  | Suitable for planting in Hilly and upland areas. |
| 2. | Softwood Grafting Technique.  | Softwood Grafting technique is standardized for production of quality planting material of improved variety of cashew  | Seedling originated saplings used by farmers | Grafting should be done same thickness of scion and root stock | Six month old grafted plant is suitable for planting |
| 3. | Cashew variety for large scale plantation  | Cashew variety Vengurla-4 having high yield potential of 12-15kg/tree is recommended for large scale plantation in the Bastar region  | Local and low yielder varieties used by farmers | Grafted plants | Suitable for planting in Hilly and upland areas. |
| 4. | Fertilizer dose is standardized for adult tree of Cashew  | Fertilizer dose @ 1000: 250: 250 g N: P: K per tree, respectively for higher yield of cashew. | No any fertilizers applied by farmers | Applied in effective root zone area not near to trunk.  | Applied in periphery of canopy of the tree at twice in a year.  |
| 5. | Flower bud differentiation in the different germplasm of cashew |  The duration of flowering varied from mid December to March in the different germplasm evaluated in the station. Blooming usually starts form January and extend till April. | Farmers have no idea about flower bud differentiation, duration of flowering and initiation of blooming. | No fertilizer should applied after October month. | All conditions |
| 6. | Major insect pest of cashew | Cashew stem and root borer (CSRB), tea mosquito bug, leaf caterpillar, panicle & nut thrips and leaf folder were identified as major insect pest of cashew in Bastar, Chhattisgarh. | Farmers are not aware with insect pest infestation in cashew | Monitor the tree in Flushing , Flowering and Fruiting Stage | All conditions |
| 7. | Management Option for Cashew stem and root borer | For evaluation of insecticides against Cashew stem and root borer the Chlorpyriphos 20 EC (0.2%) is recommended to apply as curative measure after removal grubs from tree. | Farmers do not use any management option for this insect  | Swabbing from collar region to stem (up to height of 1.5 meter) and in exposed roots. | Tree can be marked during fruit collection and management can be adopted two times before onset of monsoon and after monsoon. |
| 8 | Management Option for tea mosquito bug and pest of regional importance of cashew | For management of tea mosquito bug, panicle & nut thrips, leaf caterpillar, leaf folder and leaf folder the application of Monocrotophos 36 SL @ 0.05% at flushing and Carbaryl 50WP @ 0.1% at flowering and fruiting stage is recommended. | No any insecticides used for management of insect pest | Spraying by Foot sprayer or Gatoor sprayer | In Flushing, Flowering stage and if required in Fruiting Stage |
| 9. | New chemical management option for panicle & nut thrips and tea mosquito bug.  | Among new chemicals Lamda-cylohethrin (5 SC) @ 0.003% is recommended for management of panicle & nut thrips and tea mosquito bug. | No insecticides used for management of this insect pest | Spraying by Foot sprayer or Gatoor sprayer | In Flushing, Flowering stage and if required in Fruiting Stage |
| 10 | Recent chemical management option for Leaf Folder of Cashew | Triazophos (40 EC) @ 0.1% is effectively control the Leaf Folder of Cashew when it is sprayed at flushing & flowering stage and if needed then fruiting stage. | No insecticides used for management of this insect pest | Spraying by Foot sprayer or Gatoor sprayer | In Flushing, Flowering stage and if required in Fruiting Stage |
| 11. | Chemical management option for Leaf Caterpillar and Leaf Miner of Cashew | Profenophos (50 EC) @ 0.05% effectively control the Leaf Caterpillar and Leaf Miner of Cashew when it is sprayed on flushing stage & flowering stage and if needed then fruiting stage. | No any insecticides used for management of this insect pest | Spraying by Foot sprayer or Gatoor sprayer | In Flushing, Flowering stage and if required in Fruiting Stage |
| 12 | Tolerance of cashew cultivars and major insect pest of cashew  | The germplasm: Indira Kaju-1, NRCC Selection-2, and CARS-17 escaping the CSRB infestation and some extent in Tea Mosquito bug. | No any germplasm located or found which show any tolerance or resistant for major insect pest of cashew.  | Visual observation | Suitable for upland conditions. |

**7. Impact:** The cashew nut area in Chhattisgarh is increased from 2813 ha during 2005-06 to 16500 ha during 2011-12. The scientists of the project are involved in popularizing cashew through providing quality grafts of the recommended varieties for the state.

**8. State problems and prospectus in relation to AICRP activities.**

1. Lacking of policy matter for procurement of cashew grafts from the registered and reliable sources to maintain the quality planting materials
2. Majority of the cashew plantation are seedling originated that’s why we are not getting quality yield. Hence there is a huge possibility for establishment of cashew garden with grafted plants.
3. In the initial stage of plantation training and pruning is not adopted by the cashew growers.
4. Lack of high yielding cashew hybrids.
5. No use of chemical fertilizers and pesticide hence prospectus to develop the organic cashew orchards.
6. No use of cashew apple and by products of cashew. There is huge scope for popularization of different cashew apple products like jam, jelly, RTS, liquors etc.
7. Yield variation due to climate change.

**9. Future plan of Research for next 5 years.**

**(A) Crop Improvement**

1. Germplasm collection, conservation, evaluation, characterization and cataloguing.
2. Multilocation trial-II with varieties from Bapatla, Vridhachalam & Vengurla.
3. Multilocation trial-III (To evaluate the performance of TMB tolerant accessions and promising hybrids from each centre)
4. Multilocation trial-V (Performance of released varieties/Hybrids)
5. Hybridization and selection (To develop using different combination of promising parents and further evaluation and selection)
6. Introduction of dwarf and compact cashew types from Brazil (home of cashew), Vietnam, Australia, China and African countries through NBPGR.
7. Development of dwarf and compact cashew varieties suitable for high density planting.

**(B) Crop Management**

1. Fertilizer application in high density cashew plantations (To study the response of vegetatively propagated material of cashew to different doses of NPK fertilizers at different spacing for a given regional variety)
2. High density planting -observational trials (To evaluate the performance of different varieties of cashew under high density planting system)
3. Canopy management, rejuvenation of old cashew plantations /orchards
4. Canopy architecturing and management to suit the requirement of different plant densities and system of planting.
5. Intercropping in cashew
6. Organic farming in cashew.
7. Research on value added products of cashew apple.

**(C) Crop Protection**

1. Development of eco-friendly IPM strategies including Entomo Pathogenic Nematodes (EPN) for control of major insect pests.
2. Evaluation of recent & modern insecticide for control of TMB and other insect pest.
3. Influence of biotic and abiotic factors on incidence of pest complex in cashew.
4. Development of forewarning system of TMB in relation to climate change.
5. Screening of germplasm to locate tolerant / resistant types to Major pests of the region.
6. Investigations on panicle drying (in absence of TMB).
7. Analysis of pesticide residues in cashew produce.

**(D) Transfer of Technology**

1. Impact of cashew production technology on increase in area and productivity of cashew.
2. Analysis of socio-economic impact of cashew cultivation.
3. Production and supply of quality planting material of improved cashew varieties.
4. Organizing demonstration plots and trainers training programmes.

**10. List of extendable technologies through KVKs**

1. Establishment of scion bank of high yielding varieties of cashew (Indira Kaju-1, V-4, H-68, NRC-137 etc) to provide sufficient quality planting material of cashew to farmers.
2. Area expansion of cashew adopting improved production technologies in the state in collaboration with KVKs through massive plantation of grafted plants of high yielding varieties namely Indira Kaju-1, V-4, H-68, NRC-137 etc
3. Motivate the cashew growers with KVKs for adoption of standardized fertilizer dose @ 1000: 250: 250 g N: P: K per tree, respectively for higher yield of cashew.
4. To educate and trained farmers about major insect pest of cashew such as Cashew stem and root borer (CSRB), tea mosquito bug, panicle & nut thrips, leaf caterpillar, leaf folder and leaf miner. Also their damage symptom identification.
5. To educate and trained farmers about management of Cashew stem and root borer. The Chlorpyriphos 20 EC (0.2%) can applied as curative measure after removal of grubs from tree.
6. To educate and trained farmers for using chemicals for management of Tea mosquito bug, panicle & nut thrips, leaf caterpillar, leaf folder and leaf miner when it is sprayed on flushing stage & flowering stage and if needed then fruiting stage.