NEWS LETTER-1

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Department of Farm Machinery and Power Engineering
SV College of Agricultural Engineering and Technology
Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh

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Editors- Dr S V Jogdand and Dr B P Mishra

Teaching highlights

1. Twenty four students of final year B. Tech. (Agril. Engg.) deputed to Northern Farm Machinery Training and Testing Institute, Hisar for four weeks training on Tractor and Farm Machinery Testing, Utilization and Repair and Maintenance.
2. Two students of M.Tech. (Agril. Engg.) are pursuing thesis work from CRIDA, Hyderabad.
3. Two Ph.D. Students are awarded with Rajiv Gandhi Fellowship.
4. One M.Tech. Student pursuing Ph.D. got selected as Assistant Agricultural Engineer through Chhattisgarh Public Service Commission.
5. Eight students who were awarded Master's degree in the previous years from the department have qualified National Eligibility Test NET 2016 conducted by ICAR.
6. Two M.Tech. Students have submitted their thesis.
7. One Ph.D. Student is in the process of completion of Ph.D. Thesis work entitled "studies on conservation machinery system under rice chickpea cropping system".
8. Regular teaching programme of UG, PG and Ph.D. is under way as per academic calendar.
9. Faculty members timely performed the duties of External examiner, Internal Examiner, Invigilators, Observers and Flying Squad during the U.G. and P.G. I semester examination.
10. Dr. Ajay Verma, served as facilitator during the "Agro industries attachment programme of College of Agriculture, Chiplima OUAT" held at IGKV Raipur from 10.01.2017 to 15.01.2017.

Research highlights

The department has credit to work on Niche Area of Excellence on Rainfed Farm Mechanization during last five years and the up scaling of the technology is under way by demonstration at different places of the state. Two coordinated research project one each on Utilization of Animal Energy and Farm Implements and Machinery are running effectively and efficiently.

Happy seeder

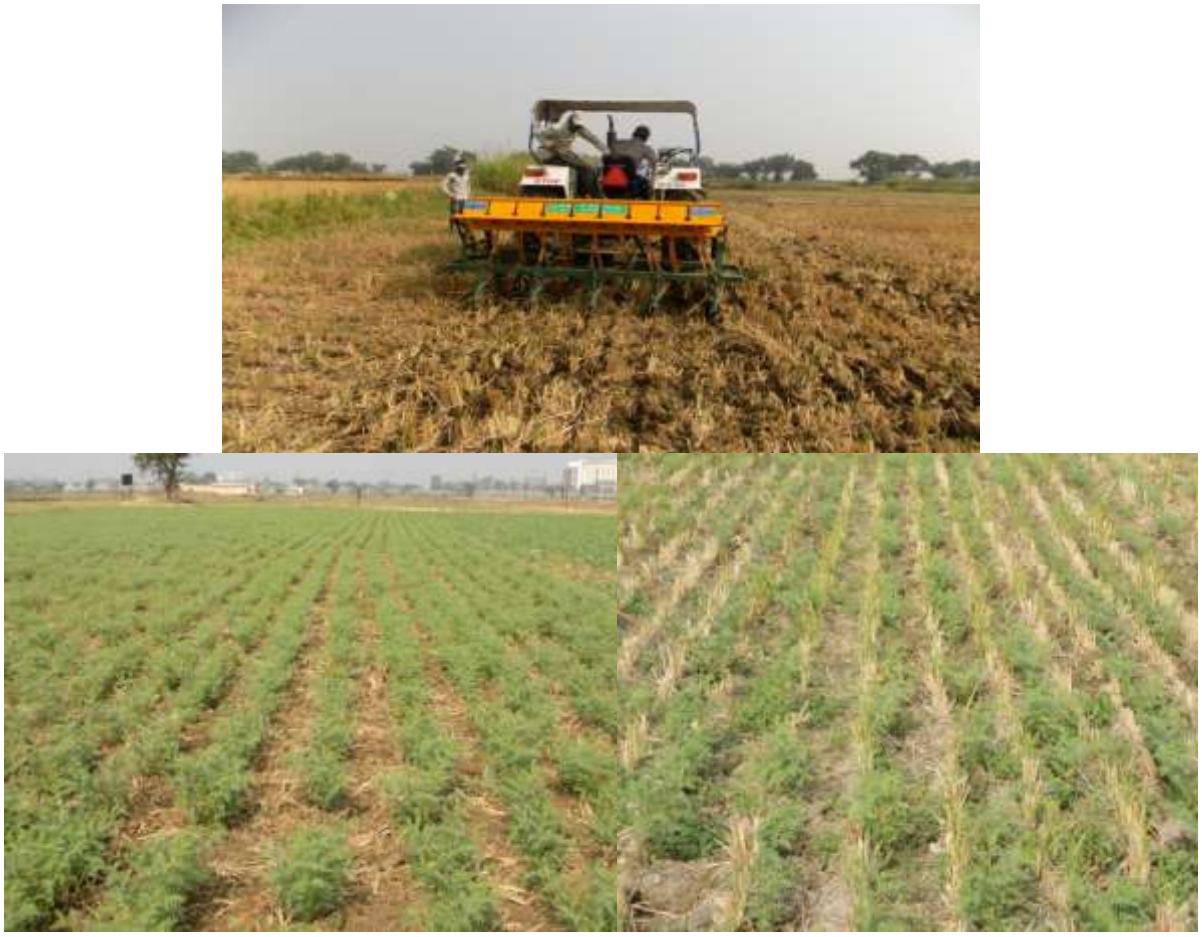
The harvesting of rice crop by combine harvester is becoming popular in Chhattisgarh and on the other side left out crop residues are a major problem for cultivation of second crop in the rice harvested fields. So Rice residues are largely burnt, as machinery for planting into loose residues was unavailable in Chhattisgarh. To overcome the problem of seeding in the presence of rice stubbles

and to exploit the available soil moisture for establishment of second crop in rainfed situation happy seeder was introduced by the department and found appropriate machine. The happy seeder performance under the project was excellent and forced us to demonstrate the concept of seeding in the presence of loose rice straw over a large area. Demonstration has been done for sowing of wheat on 25 ha, chickpea on 25 ha, linseed on 5 ha in seven different villages of Raipur, Bemetara and Durg district. This technology provides an option not to go for burning of rice straw which seriously affect the human and animal health due to air pollution, reduced soil fertility due to loss of nutrients and organic matter.

Happy seeder on combine harvested rice field and established wheat crop

Multi crop planter

The inclined plate planter with inverted T type furrow opener was demonstrated for sowing of direct seeded rice during the Kharif season of 2016.On the same fields the same multi crop planter was used for sowing of chickpea, linseed, sunflower, pea and pigeon pea. More than 25 ha area were covered during the current Rabi season. The machine is found suitable to maintain row to row and plant to plant population with reduce seed rate. Further this planter is found suitable for sowing of almost all the crops grown in Chhattisgarh as conventional sowing as well as zero till planting.



Performance of Multi crop planter and established gram crop

SRI markers

The SRI requires engineering interventions and so different types of SRI markers performance for summer paddy were evaluated in the research fields of IGKV and farmers fields in Gariyaband, Raipur and Naryanpur districts during the month of December and January. The 8 row manual operated SRI marker was found suitable with field capacity of 0.36 ha/h and field efficiency of 62%.

Single row power rice weeder

Gender neutral rotary single row power rice weeder has been developed and performed well in clay loam soil under submerged field condition. The field capacity and weeding efficiency of developed weeder was 0.032 ha/h and 74%. The saving in cost of weeding was in the range of 60 to 70% and saving in time was 65% to 80% as compared to manual weeding.

AICRP on Farm Implements and Machinery

Prototype feasibility testing of laser land leveller:

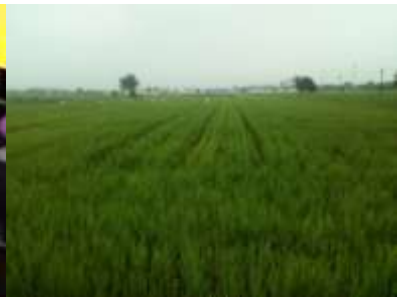
The performance of laser land leveler was assessed over an area of 5 ha and found good. The field capacity of the machine was found to be 0.12 ha /h. The cost of operation was also found to be higher than traditional method due to involvement of machine cost. After use of machine the yield of paddy increases to 10-15%, weed reduction by 25% due to submerged condition and water use efficiency increases to 25%.

Inclined plate planter (commercial) for dry aerobic rice in *Kharif* and others crops in *Rabi*

Incline plate planter was tested for paddy dibbling (only 20kg/ha to 35 kg/ha) lowering the seed rate as compared to traditional drilling technology (60-90 kg/ha). The yield of paddy was found to be 65q/h with significant increased in yield as compared to traditional dry aerobic broadcasting and drilling technology. The technology was appreciated by other scientist visited to the

field as well as farmers of Chhattisgarh.





The same machine was tested for five *Rabi* crops viz. Lentil, chickpea, wheat, pea, red gram. Successfully tested for 20 ha land for chick pea. Germination percentage was found to be 85%, with minimum miss index and multiple index.



Prototype feasibility testing of axial flow paddy thresher

To overcome the issues of energy wastage and tyre damage during tractor treading for threshing of paddy, Axial flow thresher has been introduced in Chhattisgarh. Axial flow paddy thresher (Kissan Bandhu) is fabricated by local manufacturer of Raipur, Chhattisgarh. It was noted that the thresher output capacity was varied from 1.8 t/h to 2.5 t/h as per the feeding techniques of the worker. Cleaning efficiency and threshing efficiency was observed to be 94% and 97% respectively. Seed damage was 2-2.5%, which is under acceptable limit.


AICRP on Utilization of Animal Energy

Testing of pneumatic wheeled bullock cart was done after some modification. Presently cart is capable to carry payload of 650kg.

In addition to teaching to UG and PG classes, the research and extension work on farm mechanization was taken up by the faculty at College of Agriculture and Research Station, Ambikapur. The photographs showing activities are listed below:

Extension highlights

Wire loop type paddy thresher :
Wire loop paddy thresher was demonstrated in front of 10 tribal farmers of Chhattisgarh. Both 2 hp motor and paddle operated machine were demonstrated.

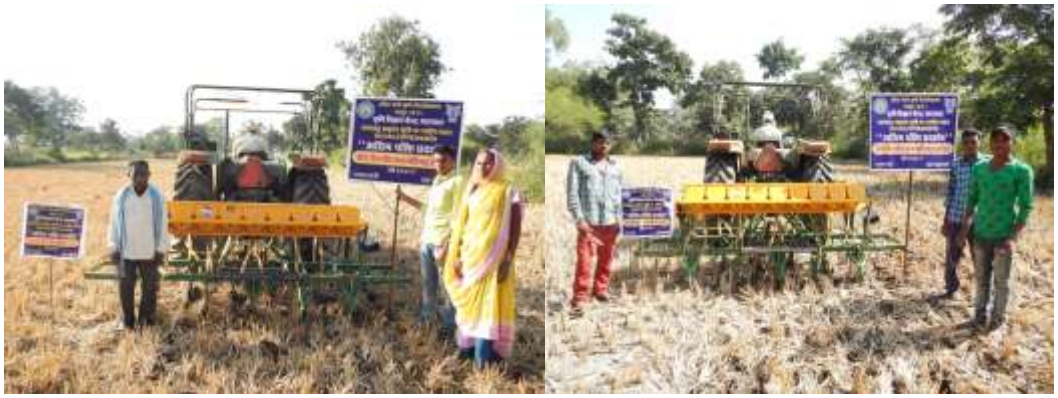
SRI power weeder
Single row power weeder was quite acceptable by the farmers of the area. The machine was demonstrated in 5.0 ha land of different parts of Chhattisgarh. With an average spacing of paddy (25 cm x 25 cm) no crop damage was observed. The weeding efficiency were observed to be 86% (10 DAS after planting), 78% (30DAS after planting).

FLD on animal drawn Indira Seed drill was conducted for line sowing of Chickpea in 1 ha of land at Village Tarwarpur, block Takhatpur district Mungeli under AICRP on UAE.

Number of training programmes have been conducted by different KVKs during December and January 2016 - Looking to the time of tillage, sowing for rabi crop and harvesting and threshing of Kharif crop, training and demonstration of machineries were arranged in different villages as well as on campus also. The KVK Bhatapara activity is given below.

No.	Topic	Details of beneficiaries	
		Male	**Female**
1	Farm mechanization for Rabi crop	23	06
2	Axial flow multi-crop thresher for threshing of paddy	27	09
3	Zero till seed cum fertilizer drill for line sowing of wheat	21	08
4	Zero till seed cum fertilizer drill for line sowing of mustard	24	11
5	Monthly work shop for Agril officers of Balodabazar-Bhatapara district	34	00
6	Farm mechanization for Rabi crop and zero tillage technologies during Pre Rabi cum world soil day kisan mela on 5/12/2016	327	128

FLD on Axial flow multi-crop thresher for threshing of paddy



FLD on Zero till seed cum fertilizer drill for sowing of Mustard and wheat

Awards/Honours/Recognitions

1. Dr. Ajay Verma received Certificate of Excellence in recognition for the efforts made for development of farm machinery for rainfed agriculture on 26th January 2017.
2. Dr R K Naik received Best Poster Award in Brainstorming Workshop and National Seminar on "Emerging Technology for enhancing water productivity" 17-18 Nov. 2016

Scientists' participation in conference /seminars/ trainings /workshops/ Kisan Mela

1. Dr. R. K. Naik attend training on Agricultural Pesticide spraying drone at Chennai conducted by Sree Sai Aerotech innovations Pvt. Ltd, Chennai on 10th November, 2016
2. Dr. Ajay Verma presented a paper as a keynote speaker in Brainstorming Workshop and National Seminar on "Emerging Technology for enhancing water productivity" 17-18 Nov. 2016
3. Dr. V M Victor presented a paper in Brainstorming Workshop and National Seminar on "Emerging Technology for enhancing water productivity" 17-18 Nov. 2016
4. Dr V M Victor and Dr. (Smt.) Neelmani Kerketta, participated and presented the report of AICRP on UAE at Annual workshop of UAE at CIAE, Bhopal during December 2-3, 2016.
5. Dr. Ajay Verma presented a paper on ""Farm mechanization in rainfed agriculture "International Conference on "Climate Change Adaptation and Biodiversity: Ecological Sustainability and Resource Management for Livelihood Security" held on 8-10th December, 2016 at ICAR-CIARI, Port Blair
6. Dr R K Naik participated and presented the report of AICRP on FIM at XXXI, Annual workshop of FIM at TNAU, Coimbatore during January 2-5, 2017.

7. Dr R K Naik participated and presented the report of extramural project on "Development of machinery and process technology for the decortications of *chironji* and value addition of by-products" at ICAR, New Delhi on 23 January 2017.
8. Dr. Ajay Verma presented a paper in 1st Asian Conference on "Water and Land Management for Food and Livelihood Security, WLMFL2017" 20-22 January 2017.
9. Dr. V M Victor presented a paper in 1st Asian Conference on "Water and Land Management for Food and Livelihood Security, WLMFL2017" 20-22 January 2017.
10. Dr Ranjeet Kumar participated and worked as Rapporteur in 1st Asian conference on water and land management on food and livelihood security January 20-22, 2017 at IGKV, Raipur
11. Dr R K Naik participated and delivered lecturer on "Improved farm machinery" in the Krishi pathshala on Krishi yantrikaran on 30th January 2017 during Rastriya Krishi Mela January 27-31, 2017 at Raipur.
12. Dr A K Dave participated and Chaired the Krishi pathshala on Krishi yantrikaran on 30th January 2017 during Rastriya Krishi Mela January 27-31, 2017 at Raipur.
13. Dr Ajay Verma participated and Co-chaired the Krishi pathshala on Krishi yantrikaran on 30th January 2017 during Rastriya Krishi Mela January 27-31, 2017 at Raipur.

Research Publications

1. Ramalu Ch, **Dave A K**, Srinivas I and Laxman B 2016. Studies on wear characteristics of selected rotavator blades. International Journal of Agricultural Engineering 9 (2): 229-233.
2. J. Singh, **R. K. Naik**, S. Patel and N. K. Mishra, (2016) Design and Development of *Chironji* (*Buchanania Lanzan*) Decorticator, *International Journal of Engineering Research & Technology*. 5(1):46-51.
3. D. Parganiha, **R. K. Naik**, S. Patel, D. Khokhar and N. K. Mishra, (2016) Study on the Effect of Moisture Content of Patchouli (*Pogostemon cablinbenth*) Plants on Recovery Percentage of Essential Oil, *International Journal of Engineering Research & Technology*. 5(3):294-297.
4. D. Parganiha, S. Patel, **R.K. Naik**, D. Khokhar and N.K. Mishra, (2016) Effect of shade drying on recovery of essential oil from patchouli (*Pogostemon cablinbenth*), *Progressive Research – an International Journal,* 11(4) : 2033-2035

Consultancy services

Following constancy services provided to the different organization for the development of farm machinery:

No.	Name of the organization	Name of Consultancy Project	MOU No. with date
1	M/S Natural Resources Integrated Development Foundation, Raipur	Technical Support for Rope Formation Machine, on – Exclusive Basis	DRS/ADR-III/2016/7533 dated 02.03.2016
2.	M/S Southern Agro Engine Pvt. Ltd. Chennai (TN)	Technical Support for Improvement in Single Row Rotary Rice Power Weeder, Non – Exclusive Basis	DRS/ADR-III/2016/7533 dated 02.03.2016
3.	M/s Batala Engineering Works, Raipur (CG)	Technology Transfer of Agricultural Implements (Tractor Drawn Indira Soya Seed drill, Gender friendly Ambika paddy weeder, Cycle wheel hoe, Seed treating drum, Bhoram dev seed drill, SRI Transplanting Marker, Maize Sheller, Cono weeder, Hand winnowing fan) Non – Exclusive Basis	DRS/ADR-III/ATMC/2016/104 dated 11.04.2016
4.	M/s Baliram &Sons, 1-B, Industrial Estate, Rajnandgaon(CG)	Technology Transfer of Agricultural Implements (Tractor Drawn Indira Soya Seed drill, Gender friendly Ambika paddy weeder, Cycle wheel hoe, Seed treating drum, Bhoram dev seed drill, SRI Transplanting Marker, Maize Sheller, Cono weeder, Hand winnowing fan) Non – Exclusive Basis	DRS/ADR-III/ATMC/2016/104 dated 11.04.2016