

RESUME

Name : Dr. Raghava Thakur
Designation and Place of work : Ex Dean Agriculture & Chairman Agronomy
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Birsa Agricultural University
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Date of Birth : 02.08.1955
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Academic records :

Exam/Degree	Year	Division	Subjects	University/Board
Ph.D.	1982	-	Agronomy	IARI, New Delhi
M.Sc. (Ag.)	1979	-	Agronomy	IARI, New Delhi
B.Sc. Ag. & AH	1977	1st	Agriculture	G B P U A & T, Pantnagar
Intermediate	1972	1st	Science	Bihar University, Muzaffarpur
Matriculation	1970	1st	Science	Bihar School Examination Board,Patna

Employment record :

Post held Designation	Period	Nature of Duties
Dean,Agriculture	Jul.2014-Feb.2019	Administration
Chairman/Head,Agronomy	Oct.11-Jul.14 &Feb.19-	Administration
University Professor cum Chief Scientist	27.07.1998 –31.08.2020	Teaching, Research & Extension
Associate Professor cum Senior Scientist	09.08.1989 – 26.07.1998	Teaching, Research & Extension
Assistant Professor cum Junior Scientist	10.11.1982 – 08.08.1989	Teaching, Research & Extension.

Working Experience

Research Achievements:

Project Handled

- All India Co-ordinated Research Project on I.F.S(ICAR)
- Scaling up of Water Productivity in Agriculture for Livelihoods Through Teaching cum Demonstration (ICAR).
- Farmers Participatory Action Research Programme (MoWR, GOI).
- Adhoc Project on Water Management of Crops and Cropping System in Jharkhand (ICAR).
- Management of Excess Water under Medium and Low Land Condition (NATP, ICAR).
- Nutrient Management Practices for Important Oilseed based Cropping Systems for Improving Yield and Oil output under Rainfed Conditions (NATP, ICAR)
- Adaptive Research Programme (State Govt).

- All India Co-ordinated Research Project on Cropping System (ICAR).
- NATP Mission Mode (wheat): Increasing wheat production and building up of research capabilities in warmer areas and Eastern India (2001 – 2004) – ICAR.
- BAU – BPDP collaborative activities to suggest crops and cropping system as well as crop production technology for efficient utilization of available water.
- All India Coordinated Research Project on Oilseeds (Niger & Linseed) – ICAR.

Major scientific achievements:

General:

- Wheat seeding beyond optimum time (November) reduces yield. Its seeding after rice usually gets delayed. To overcome this situation :
- Developed Agro-techniques of zero - tilled wheat after transplanted rice: A low cost production technology. This technology saves energy, time and preparation and advances seeding time thereby increases productivity and profitability.
- Excessive soil wetness after lowland rice does not permit tillage operation till Jan – Feb. Hence, land remains fallow. To utilize the land and soil moisture :
- Developed Agro-techniques of surface seeded wheat after transplanted rice on wet soil - a non-traditional technique of wheat establishment, this technology does not require any farm machinery and power source as soil wetness permits seminal roots of wheat to penetrate soil without any hindrance. It utilizes residual soil moisture efficiently and increases land use.
- Traditional concept to fertilize late sown wheat with 80: 40 : 20 kg NPK/ ha irrespective of its seeding time (Dec – mid Jan) does not hold good. To increase the nutrient use efficiency of different degree of late planted wheat.
- Developed judicious nutrient management of wheat planted at different times: Moderately late (1st Dec) N₁₂₀P₆₀K₄₀, Late (16th Dec) N₈₀P₄₀K₃₀, Very Late (1st Jan) N₄₀P₃₀K₂₀ and Extremely late (16th Jan) No response to nutrient. Nutrient use efficiency gradually decreases either with subsequent delay in seeding or increasing nutrient level.
- Developed suitable wheat based cropping systems: Efficient cropping systems viz. groundnut- wheat, soybean- wheat, maize- wheat, rice- wheat- green gram under irrigated condition while black gram- wheat and soybean- wheat under rainfed situation. Rice- potato- green gram is identified as diversification system for traditional rice- wheat system in irrigated eco- system.
- Under limited irrigation intercropping of wheat + mustard (8:2) and wheat + lentil (4:2) has good potential to provide domestic need of cereal, oilseed and pulses to economically poor farmers of this region.
- Developed integrated nutrient management for maize-wheat cropping system: In maize-wheat sequence, 25% N through FYM and 75% N through chemical fertilizer to maize followed by 75% recommended chemical fertilizer (NPK) to wheat produced higher grain yield without any shift in stability compared with 100% chemical fertilizer to both the crops in system thus curtails 25% N dependence on chemical fertilizer for maize and saves 25% recommended NPK for wheat crop in sequence.
- Developed contingent crop planning under aberrant weather condition in Jharkhand as an Agronomist.

Water management:

- Irrigation at crown-root initiation stage in wheat is a must as the yield loss caused due to deletion of irrigation at this stage can not be mitigated by either increasing seed rate or fertilizer and both.
- Under different irrigation supply conditions, wheat receiving 4 irrigations at crown-root initiation, maximum tillering, boot and milk, 3 irrigations at crown-root initiation, boot and milk and 2 irrigations at crown-root initiation and boot stages performed better.
- Timely-sown wheat(2nd fortnight November) consumed 334.5 mm water with water-use rate 2.84 mm/day, water-use efficiency 9.49 kg grain/ha-mm water, water productivity 1053 l water/kg grain to produce 3185

kg grain/ha. Peak water-use rate (4.25 mm/day) coincided with flowering stage of the crop(1st week February) suggesting water supply must be ensured at this stage.

- For estimating evapo-transpiration of wheat crop, month-wise crop coefficient, Cu/E pan ratio (0.23, 0.45, 1.00, 0.81 and 0.41 during November, December, January, February and March for timely-sown and 0.27, 0.74, 0.76, 0.35 and 0.17 during December, January, February, March and April for late-sown) as well as Blaney & Criddle method crop coefficient, K-value(0.32, 0.56, 0.55, 0.46 and 0.34 during December, January, February, March and April) was estimated which can be a guide line for scientists and irrigation engineers of irrigation projects(Subernarekha, Damodar Valley, Koel-Karo, Barakar and many check dams) to release irrigation water as per need during crop season for more income and crop per drop of water.
- Under limited irrigation conditions, different suitable crops were identified. At 3 irrigations wheat, 2 irrigations mustard and lentil and at 1 irrigation linseed and safflower proved to be remunerative and productive.
- Harvesting of rain water in trenches (1 m wide x 1.5 m deep) around the field *in situ* under medium and low land conditions of Jharkhand not only reduces the adverse effect of iron toxicity in increasing 3 times the productivity of transplanted rice but also keep the land under double/triple cropping where mono cropping is in practice.
- Soil moisture content decreases sharply with increasing soil moisture tension from 0.01 to 0.10 M Pa and thereafter it decreases gradually. At 0.05 M Pa tension, the available soil water depletion was 48%, whereas at 0.10 M Pa tension, the depletion was up to 64% and hardly 36% available water remained for the crop under upland soils of Jharkhand which is not sufficient for most of the food crops.
- Transplanted rice producing 43.41q/ha consumed 1076 mm water with water-use efficiency 3.41 kg grain/ha-mm water and water productivity 2932 l water/kg grain. Mean water-use rate was 6.30, 7.74, 8.11, 7.68 and 4.81 mm/day during July, August, September, October and November, respectively indicating water supply must be ensured in the month of September for transplanted rice.
- For estimating water requirement of transplanted rice, month-wise crop coefficient ETc/E pan(1.68, 1.87, 2.04, 1.76 and 1.76 during July, August, September, October and November, respectively) and Blaney & Criddle method crop coefficient, K-value(3.33, 2.82, 1.97, 1.34 and 0.94 during July, August, September, October and November, respectively) was estimated.
- Intercropping of wheat + mustard (8:2 row ratio) and wheat + lentil (4:2 row ratio) irrigated at 1.0 IW/CPE ratio consumed 436 and 399 mm water, with water-use efficiency (6.37 and 7.10 kg grain/ha-mm water) and water productivity (1570 and 1408 litre water to produce 1 kg grain) produced higher 27.79 q/ha (20.57 q/ha wheat + 3.61 q/ha mustard) and 28.33 q/ha (21.12 q/ha wheat + 5.04 q/ha lentil) wheat equivalent yield, respectively than all other combinations of lower irrigation level and cropping systems.
- Intercropping of potato + mustard (1:1 row ratio) and potato + wheat (1:1 row ratio) receiving irrigation at 1.0 IW/CPE ratio consumed 343 and 370 mm water with water – use efficiency of 70.82 and 66.82 kg tuber/ha-mm and water productivity of 141 and 150 litre/kg tuber and produced 5.0 and 6.9 % higher potato equivalent yield, respectively than sole potato (231.36 q/ha) receiving irrigation at 1.0 IW/CPE ratio.
- Potato crop (var. Kufri Ashoka) with mulching @ 10 t/ha and receiving irrigation at 1.0 IW/CPE ratio consumed 249 mm water to produce 232.16 q/ha tuber with 92.43 kg tuber/ha-mm water-use efficiency and required 108 litre water to produce 1 kg tuber which was similar to the crop irrigated at 1.2 IW/CPE ratio with or without mulch. In general, mulching of potato not only saved irrigation (1-2) but induced 4-5 days early emergence, suppressed weeds, reduced diseases, improved quality (size) and tuber yield of potato.

Sl.No.	Name of the Seminar /Symposia Conferences	Organized by	Year
1.	Workshop on Integrated Farming System	PDFSR, Modipuram	2010-13
1.	Workshop on "Review and Refinement of Fertilizer recommendation for major crops of Jharkhand at BAU, Ranchi held on 23 Nov.2002	PPIC & BAU	2002
2.	Second International Agronomy Congress on "Balancing Food and Environment Security-A Continuing Challenge" held at New Delhi from Nov.26-30,2002	ISA, New Delhi	2002
3.	International conference on "Managing natural Resources for sustainable Agricultural production In 21 st century" held at New Delhi from 14-18 Feb,2000	ISA, New Delhi	2000
4.	4 th Agricultural Science congress held at Bikaner from 21-24 Feb.1999 .	Rajasthan Agricultural University, Bikaner.	1999
5.	First international Agronomy Congress on "Agronomy Environment and Food Security for 21 st century "held at New Delhi from 23-27 Nov.1998	ISA, New Delhi	1998
6.	National Seminar on Agricultural Energy held at Ranchi from 27-28 Oct.1994	BAU, Ranchi	1994
7.	XIII National Symposium on "Integrated Input Management for Efficient Crop Production" Held at Coimbatore from 22-25 Feb,1994	ISA, New Delhi	1994
8.	Workshop of All India Co-ordinated Agronomic Research Project held at Hissar	Directorate of Cropping System, ICAR	1990
9.	Workshop on Kharif oilseeds organized by	Directorate of oilseeds, ICAR	1983-89
10.	National Symposium on "Crop management to meet the new challenges "at Hissar from 14-16 March,1987	ISA, New Delhi	1981

Awards/ distinction received, if any

- i.) National Merit Scholarship during Intermediate Science
- ii.) Bursery Scholarship during B,Sc.Ag. & AH
- iii.) Merit Scholarship during B.Sc. & AH (Final year)
- iv.) ICAR Junior Fellowship during M.Sc.
- v.) IARI Senior Fellowship during Ph.D.
- vi.) Recipient of Vice-Chancellor's Bronze Medal for being the third best graduating student of Faculty of Agriculture G.B.Pant Univ. of Agril. & Tech., Pantnagar for the year 1976-77.

Participation in Refresher courses/summer institutes, if any

Sl.No.	Course	Organized by	Year
1.	Advanced training course in " Water Management held at WTC, IARI New Delhi (2-9 January, 1984), CSSRI, Karnal (10-12 January, 1984) And HAU, Hissar(13-19 January, 1984).	ICAR	1984
2.	Workshop on "Rice Production Technology "held at Hyderabad from 15-17 Oct,1992	DRR (ICAR)	1992
3.	Summer Institute on " Crops and Cropping systems Management in High rainfall areas for sustainable Agriculture " held at Assam Agricultural University, Jorhat from 17 June to 6 July, 1996	AAU, Jorhat (ICAR)	1996
4.	Course on "Information Technology" under NATP held at BAU, Ranchi from 12-16 March, 2001	MANAGE, Hyderabad	2001

Publications:

Types of publication	Total Number
Research paper referred journals	52
National symposium	19
Review paper	3
Popular articles	6
Technical bulletins	6
Book	1
Practical manual	1

- Paper published in National Journals had International Demand (40 Scientists) from 11 countries (Canada, Cuba, West Germany, USA, Czechoslovakia, Iran, Nepal, Bangladesh, Switzerland, Italy, and Spain) and received appreciations.

Teaching Achievements

Teaching : Taught different UG, PG and PhD courses since 1982 to continued.

: Developed practical manual for study of problem soils

Student guided : 6 (M. Sc. Ag) as major advisor and several students of SSAC and Agronomy as co. advisor.

: 3 Ph D as major advisor(Sudhir, Shushama, Deeba)

Student	Degree	Year	Topic
Sushma Majhi	M. Sc. Ag.	2009	Integrated Weed Management in Direct Seeded Rice
Ms.Padmaja Pande	M. Sc. Ag.	2004	Production potential of maize/ Pigeonpea based intercropping system in Jharkhand
Suman Kumar Sadhu	M. Sc. Ag.	1994	Agro-techniques to mitigate the unavailability of irrigation at CRI in wheat
Radha Kant Thakur	M. Sc. Ag.	1989	Assessment of new wheat varieties for inter adaptability under varying irrigation supply conditions
Gopalji Sahay	M. Sc. Ag.	1988	Studies on crop sequences and their effect on soil fertility.
Priyanka Verma	M. Sc. Ag.	2011	Effect of integrated nutrient management on the productivity of lentil
Sudhir Kumar	Ph D	2015	Efficacy of seaweed sap on the productivity and quality of rice
Shushama Majhi	Ph D	2017	Effect of long term fertilization on the productivity of maize-wheat cropping system
Deeba Hasan	Ph D	2019	Weed management in black gram by Imazethapyr and its effect on succeeding mustard

Developmental activities:

- Modified UG, PG and Ph.D. courses as per recommendation of Dean's committee report in the capacity of Faculty member, Department of Agronomy.
- Developed infra structures of, water management lab to facilitated post graduate teaching and research, Department of Agronomy.

Extension activities:

- Disseminated knowledge of wheat & wheat based cropping systems and water management of crops among farming community through AIR, Doordarshan, News Papers, Bulletins and farmer's fair.
- Disseminated knowledge of water management of crops and cropping system by delivering lectures to farmers and extension workers/ officers in training programme organized by university and other agencies.
- Conducted FLDs on different crops such as Niger, Wheat and mustard which led to increase the area, production and productivity.
- Disseminating knowledge about water management of crops for scaling up of water productivity in the State of Jharkhand.

Raghava Thakur

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Research publications :

Water Management:

1. Shivani, Verma U N and Kumar S, Pal S K and **Thakur R**. 2003. Growth analysis of wheat cultivars under different seeding dates and irrigation levels in Jharkhand. *Indian Journal of Agronomy* 48 (1) : 282 – 6
2. Verma U N, Pal S K, Upasani R R, Singh M K and **Thakur R**. 2002. Effect of seeding time and irrigation on wheat cultivars. Paper published in Second International Agronomy Congress on Balancing Food and Environmental Security - A continuing challenge held at New Delhi from Nov. 26-30, 2002 . Extended summaries Vol. 2 p 869-70
3. Pal S K, Verma U N, **Thakur R**, Upasani R R and Singh M K.2002. Effect of time and frequency of irrigation on growth and yield of late sown wheat. Paper published in Second International Agronomy Congress on Balancing Food and Environmental Security - A continuing challenge held at New Delhi from Nov. 26-30, 2002 . Extended summaries Vol. 2 p 1287-8
4. Pal S K, Upasani R R, Singh M K, Verma U N and **Thakur R**. 2002. Grain growth and yield of late sown wheat under different irrigation schedules. *Journal of Research BAU*,14(2) : 187-92
5. Pal S K, **Thakur R**, Verma U N, Singh M K and Upasani R R. 2001. Water requirement of late sown wheat under limited water availability in Jharkhand Plateau. *Indian Journal of Agronomy* 46(3) : 468-74
6. Shivani, Verma U N, Pal S K, **Thakur R** and Kumar S. 2001. Production potential and water use efficiency of wheat cultivars under different dates of seeding and irrigation levels. *Indian Journal of Agronomy* 46(4) : 659-64
7. Pal S K, **Thakur R**, Verma U N, Singh M K and Upasani R R. 2000. Water requirement of late sown wheat under different soil moisture regime. Paper presented in " International Conference on Managing Natural Resources for Sustainable Agricultural Production in the 21st Century" held at New Delhi from 14-18 February 2000. Extended Summaries vol. 3 p 1162-63
8. **Thakur R**, Pal S K, Singh M K, Verma U N and Upasani R R. 2000. Response of late sown wheat (*Triticum aestivum*) to irrigation schedules. *Indian Journal of Agronomy*. 43(3): 586-9.
9. Pal S K, Verma U N, **Thakur R**, Singh M K and Upasani R R. 2000. Drymatter partitioning of latesown wheat under different irrigation schedule. *Indian Journal of Agricultural Sciences*. 70(12): 831-4.
10. **Thakur R**, Singh M K, Pal S K and Verma U N. 2000. Tillering pattern and productivity of wheat (*Triticum aestivum*) under different irrigation, seed rate and fertilizer. *Indian Journal of Agricultural Sciences*. 70(10):686-8
11. **Thakur R**, Pal S K, Singh M K, Verma U N and Upasani R R. 1999. Irrigation strategy for Sustainable production of late sown wheat on alfisol of Bihar plateau. Paper presented in the 4th Agricultural Science Congress organised by Rajsthan agricultural University, Bikaner and ICAR held at Jaipur from 21-24 February 1999. P 78
12. **Thakur R**, Verma U N, Singh M K and Pal S K. 1999. Energetics of wheat (*Triticum aestivum*) production under different irrigation, seed rate and fertilizer. *Indian Journal of Agricultural Sciences* 69(9): 624-6
13. Gupta P, Pal S K, **Thakur R**, Verma U N and Singh M K. 1998. Irrigation scheduling of late sown wheat. Paper presented in the First International Agronomy Congress on " Agronomy, Environment and Food Security for 21st century" organised by Indian Society of Agronomy, ICAR, held at New Delhi from 23-27 November 1998. P.201-2
14. Sadhu S K,**Thakur R**, Verma U N, Pal S K and Singh M K. 1998. Effect of irrigation, seeding time and fertilizer on energetics and productivity of wheat in Bihar plateau. Paper presented in the First International Agronomy Congress on " Agronomy, Environment and Food Security for 21st Century" organised by Indian Society of Agronomy, ICAR, held at New Delhi from 23-27 November 1998.p.236-7
15. **Thakur R**, Pal S K, Verma U N and Singh M K. 1998. Growth and yield of wheat (*Triticum aestivum*) under different levels of irrigation, seed rate and fertilizer. *Journal of Research BAU* 10 (2): 113-15.
16. Pal S K, Singh M K, **Thakur R** and Verma U N. 1996. Contribution of water, heat and fertilizer to wheat yield under different irrigation, seeding time and fertilizer. *Indian Journal of Agricultural Sciences* 66(3): 42-4
17. Pal S K, Verma U N, Singh M K and **Thakur R**. 1996. Heat unit requirement for phenological development of wheat under different levels of irrigation, seeding date and fertilizer. *Indian Journal of Agricultural Sciences* 66 (6):328-32
18. Pal S K, Kaur J, **Thakur R**, Verma U N and Singh M K. 1996. Effect of irrigation, seeding date and fertilizer on growth and yield of wheat. *Indian Journal of Agronomy* 41 (3): 386-9.
19. Pal S K, **Thakur R**, Verma U N and Singh M K. 1996-Water requirement of wheat as affected by different levels of irrigation, seeding date and fertilizer. *Indian Journal of Agricultural Sciences* 66 (6): 328-32.

20. Thakur R K, **Thakur R**, Verma U N and Singh M K. 1994. Water use of different wheat varieties for inter adaptability under limited irrigation. Paper presented at the XIII National Symposium on Integrated Input Management for efficient Crop Production, held at Tamil Nadu Agricultural University, Coimbatore, Organised by Indian society of Agronomy, from 22-25 February, 1994.
21. **Thakur R**, Singh M K, Verma U N, Pal S K, and Sadhu S K. 1994. Energetics of wheat cultivation at varying irrigation, seed rate and fertilizer. Paper presented at National Seminar on Agricultural Energy, held at BAU, Ranchi, organised by ISAE, Bihar Chapter, from Oct. 27-28,1994.
22. **Thakur R**, Singh M K, Pal S K, Verma U N and Upasani R R. 2000. Suitability of winter crops under limited irrigation in Bihar plateau. Paper presented in " International Conference on Managing Natural Resources for Sustainable Agricultural Production in the 21st Century" held at New Delhi from 14-18 February, 2000 Extended summaries vol. 3 p 1182-83

Rice:

23. Pal S K, Upasani R R, **Thakur R**, Singh M K and Verma U N. 2004. Performance of upland rice cultivars under different level of nitrogen. Paper presented in the National Conference on increasing rice production under water limited environment held at BAU, Ranchi, 3-4 December 2004. Abs. p.75
24. Singh M K, **Thakur R**, Pal S K, Upasani R R and Verma U N. 2004. Productivity of scented rice cultivars as influenced by planting time and nitrogen level in Jharkhand. Paper presented in the National Conference on increasing rice production under water limited environment held at BAU, Ranchi, 3-4 December,2004.Abs. p.80
25. **Thakur R**, Upasani R R, Pal S K, Singh M K and Verma U N. 2004. Effect of planting time and methods on growth and yield of rice genotypes. Paper presented in the National Conference on increasing rice production under water limited environment held at BAU, Ranchi, 3-4 December, 2004. Abs. p.82
26. Upasani R R, Pal S K, **Thakur R**, Verma U N. 2004. Effect of planting time and nitrogen on productivity of scented rice cultivars in Jharkhand. Paper presented in the National Conference on increasing rice production under water limited environment held at BAU, Ranchi, 3-4 December, 2004. Abs. p.82
27. Pal S K, **Thakur R**, Singh M K, Verma U N, and Upasani R R. 2001. Production potential of scented rice genotypes under different time and nitrogen in Chotanagpur plateau. Journal of Research BAU 13(2):153-58.
28. Singh M K, **Thakur R**, Verma U N, Upasani R R, and Pal S K. 2000. Effect of planting time and nitrogen on production potential of basmati rice cultivars in Bihar plateau. Indian Journal of Agronomy 45(2):300-03.
29. Pal S K, Singh K M, **Thakur R**, Verma U N, and Singh M K. 1999. Growth and yield of rice(*Oryza sativa* L.) cultivars under different method and time of planting in Bihar plateau. Journal of Research BAU 11(1):19-22.
30. Singh M K, **Thakur R**, Verma U N, Upasani R R and Pal S K. 1999. Production strategy of sustainable profitability of scented rice. Paper presented in the 4th agricultural Science Congress organised by Rajasthan Agricultural University, Bikaner and ICAR, held at Jaipur from 21-24 February 1999. p 57
31. Pal S K, **Thakur R**, Singh M K, Verma U N and Upasani R R. 1999. Effect of planting time and nitrogen on productivity and profitability of scented rice genotypes. Paper presented in the 4th agricultural Science Congress organised by Rajasthan Agricultural University, Bikaner and ICAR, held at Jaipur from 21-24 February 1999.p62
32. Singh K M, Pal S K, Verma U N, **Thakur R** and Singh M K. 1997. Effect of time and methods of planting on performance of rice cultivars under medium land of Bihar plateau. Indian Journal of Agronomy 43(3): 443-45

Wheat:

33. Verma U N, Upasani R R, Pal S K, Singh M K and **Thakur R**. 2003. Nutrient energy requirement of late sown wheat. Journal of Research BAU15(1):1-7
34. Verma U N, **Thakur R**, Pal S K, Singh M K and Singh S P. 2000.Nutrient management of late planted wheat on alfisol of Bihar plateau. *Indian Journal of Agronomy*. 45(1): 118-23
35. Verma U N, Pal S K, **Thakur R**, Singh M K and Upasani R R. 2000. Nutrient balance and productivity of wheat under different plant density and fertilizer on alfisol of Bihar plateau. *Journal of Research BAU*. 12(1):21-4.
36. Verma U N, **Thakur R**, Pal S K, Singh M K and Upasani R R. 2000. Energetics of late sown wheat under different seeding time and nutrient level. Paper presented in " International Conference on Managing Natural Resources for Sustainable Agricultural Production in the 21st Century" held at New Delhi from 14-18 February 2000. Extended Summaries vol. 3 p 1184-86
37. Verma U N, Pal S K, Singh M K, **Thakur R** and Upasani R R. 2000. Nutrient utilization of late sown wheat (*Triticum aestivum*) on acid soil (Haplustalf) of Bihar plateau. *Indian Journal of Agricultural Sciences*. 70(2): 93-6.
38. Verma U N, Pal S K, **Thakur R**, Singh M K and Upasani R R. 1999. Productivity of wheat under varying plant density and

fertilizer in plateau region of Bihar. Paper presented in the 4th Indian Science Congress organised by Rajasthan Agricultural University, Bikaner and ICAR, held at Jaipur from 21-24 February 1999,p75

39. Verma U N, Pal S K, **Thakur R** and Singh M K. 1999. Surface seeding of wheat after rice: A non-traditional technique. *Indian Wheat Newsletter* 5(2); 7
40. Singh S P, Verma U N, **Thakur R**, Pal S K and Singh M K. 1998. Fertilizer management in late sown wheat under alfisol of Chotanagpur plateau. Paper presented in the First International Agronomy Congress on " Agronomy, Environment and Food Security for 21st century" organised by Indian Society of Agronomy, ICAR, held at New Delhi from 23-27 November 1998. P.237-8
41. Verma U N, Pal S K, Singh M K and **Thakur R**. 1997. Fertilizer requirement of late sown wheat under Bihar plateau conditions. *Indian Journal of Agricultural Sciences* 67 (5): 204-7
42. Verma U N and **Thakur R** K. 1994. Effect of different inputs on the productivity of wheat under zero and conventional tillage. Paper presented at the XIII National Symposium on Integrated Input Management for efficient Crop Production, held at Tamil Nadu Agricultural University, Coimbatore, and Organised by Indian society of agronomy, from 22-25 February 1994.

Oilseed:

43. **Thakur R** and Srivastava V C. 1989. Effect of nitrogen in paira(Utera) cropped linseed. *Indian Journal of Agronomy* 34(4): 509-10.
44. **Thakur R**, Trivedi H B P and Srivastava V C.1988. Effect of date of sowing and row spacing on yield and yield attributing characters of Niger. Paper presented in Symposium on Increasing Oilseed Production in Eastern India held at BAU, Ranchi from 12-14 May, 1988.

Cropping Systems:

45. Singh U K, **Thakur R**, Pal S K, Singh M K and Upasani R R.2010. Production potential and energetic of pigeonpea + groundnut intercropping system. *Journal of Research BAU*
46. Barla,S., Upasani, R R, **Thakur R**, Singh M.K. Pal S.K. and Verma U N.2006. Effect of integrated nutrient management on productivity and energetics of rice wheat cropping system. *Journal of Research BAU* 18(2): 215-22.
47. Barla,S., Upasani R.R., **Thakur R**, Singh M.K. and Verma U.2006. Effect of integrated nutrient management on rice and its residual effect on succeeding wheat. In extended summaries pp 251-2 golden jubilee national symposium on conservation agriculture and environment held on 26-28 October 2006 BHU organized by ISA(ICAR) and BHU Varanasi 2006.
48. Singh U K, **Thakur R**, Verma U N, Pal S K, Singh M K and Upasani R R. 2005. Production potential of ground nut + pigeon pea intercropping system in farmer's field. *Journal of Research BAU* 17 (2): 191-93.
49. Singh M K, Verma U N, Pal S K and **Thakur R**. 1999. Efficacy of slow release N-fertilizer to rice and their residual effect on wheat. *Indian Journal of Agronomy* 44(2): 216-8.
50. Singh M K, Pal S K, **Thakur R** and Verma U N. 1998. Integrated nutrient energy management for sustainability in maize-wheat cropping system. *Indian Journal of Agricultural Sciences* 68(12) 784 -7.
51. Singh M K,Pal S K, **Thakur R** and Verma U N. 1997. Energy input-output relationship of cropping system. *Indian Journal of Agricultural Sciences* 67(6): 262-4.
52. Verma U N, **Thakur R**, Pal S K and Singh M K. 1997. Fertilizer management in wheat +lentil intercropping system. *BAU Research Journal* 9 (1): 39-41.
53. Verma U N, Pal S K, Singh M K and **Thakur R**. 1997. Productivity, energetics and competition function of wheat + mustard intercropping under varying fertilizer level. *Indian Journal of Agronomy* 42(2): 201-4.
54. Singh M K, Pal S K, **Thakur R** and Verma U N. 1996. Integrated nutrient energy management in maize-wheat cropping system. *Journal of Farming system Research and Development*. 1(1-2) : 31-40.
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