

**AGRICULTURE RESEARCH SUB STATION,  
(SKN Agriculture University, Jobner)  
KUMHER**

**1. Name of the unit:** Agriculture Research Sub Station, Kumher (Bharatpur)

**2. Location of the Unit**


Agricultural Research Sub Station, Kumher (Bharatpur) is representing Rajasthan Agroclimatic Zone III b i.e. Flood Prone Eastern Plain zone and working under A.R.S.Navgaon (Alwar). It is situated near Bharatpur- Alwar road 12 km. away from Bharatpur.

**Research Mandate:**

Lead functions: Crop and soil management under water logged and tank bed situation.

Verification functions: Mustard, Chick Pea, Wheat, Pearl millet, Kharif Pulses and fodder sorghum, Improvement of fruits (Ber, Aonla, Guava, Lemon and Papaya) and spices crops. Nutrient management in Saline soils

**Professor & Officer Incharge Profile**

	<b>Dr.Udai Bhan Singh</b> Professor & Officer Incharge
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Dr. Udai Bhan Singh, Professor (Horticulture) and Officer Incharge Agriculture Research Sub Station, Kumher (Bharatpur). He did his B.Sc. (Ag) from Dayanand College, Ajmer and M.Sc. (Ag) and Ph.D. in Horticulture from Rajasthan College of Agriculture, Udaipur. He started his career as Assistant Professor (Horticulture) at KVK, Bhilwara in the year 1996. He served as Assistant Professor (1996-2008), Associate Professor (2008-2011) and Professor (2011 onward). He is Officer Incharge at Agriculture Research Sub Station, Kumher (Bharatpur) from June, 2011 and Dean College of Agriculture from Sep, 2019.

Dr.Udai Bhan Singh in a renowned scientist, teacher and extension worker. He published more than 50 research papers in various prestigious journals and his 58 research recommendation were included in package of practices for Zone III b, i.e. Flood Prone Eastern Plane of Rajasthan State, He published 6 books and more than 100 popular articles.

Dr. Singh is distinguished scientist and expert, he always spare his time for farmers to advice them to adopt high technology in farming. Because of his efforts and research interventions in spices, especially fennel cultivation got popularized in Zone III b of Rajasthan. Because of his research recommendations, Ber cultivation has become a profitable business to the farmers. He is

master trainer of zone IIIb and furnishing high technology of horticulture to extension personnel of Department of Agriculture every month.

He is a good teacher and motivator, many students have cracked JRF/SRF examinations under his guidance.




He is working hard at ARSS, Kumher farm and producing 800-1000 quintals quality seed of mustard, wheat, barley, gram, lentil & spices and generating 20-25 lakh per annum net income through seed sale.

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### Staff Information

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### 3. Completed and ongoing Projects/ Schemes in detail

Projects completed:

a. Action research for refinement of package of practices for productivity enhancement of crops in different agro-ecological situations under RKVY.

- b. Developing Technologies for stress agriculture under climate change scenario in Rajasthan under RKVY.
- c. Strengthening of seed under RKVY.
- d. Multi-site evaluation of Transgenic Mustard Hybrid (DMH-11) based on barnase/ barstar system conducted at ARSS, Kumher
- e. Farmers Participatory Research to control viral diseases in tomato and Bhindi financed by Depptt. of Agriculture.

#### 4. Achievements, Recommendations and Findings:

##### 1993-2000

##### 1. Survey of salt affected soils and quality of irrigation water:

Soil salinity and poor quality of irrigation water have been found to be two most important constraints affecting the optimum production of crops. For assessing type of salt affected soils and quality of irrigation water 819 representative soil samples and 181 irrigation water samples have been analysed, 66.1% soil samples were found to be salt affected which were classified into following categories:

Saline- 43.5%; Saline sodic- 9.8 % and Sodic soils- 12.8%. This study is useful in salt affected soils. Gypsum requirement was worked out for saline sodic and sodic soils.

80.2% irrigation water was of poor quality which were classified as follow:-

Saline- 49.2%; Saline Sodic- 26.7% and Sodic 4.3%. 8.3% of irrigation water had high RSC ( > 5 me/l) values.

Suitable technology for managing poor quality irrigation water is being worked out.

**Soil Fertility:** Judicious use of fertilizers based on soil testing is one of the most important factor governing productivity of soils. Analysis of 819 soil samples for available N,P and K revealed that 85.8% soils were low in available N whereas 14.2% medium in it. Available P was low in 19.0%, medium in 39.7% and high in 41.3%. Available K<sub>2</sub>O was high in 84.5% of the samples whereas 15.5% contained medium range.

**Available Micronutrient:** 117 representative soil samples were analyzed for DTPA extractable 10.2% samples were deficient (< 0.60 ppm) in available zinc, 38.4% marginal (0.60-1.20 ppm) and remaining 51.8% sufficient in it. Deficiency has been further confirmed by the soil test crop response studies with wheat as a test crop as reported in the section on nutrient management in saline soils.

##### 2. Verification of most suitable varieties of crops for the zone IIIb.

S.No.	Crop	Varieties
(i)	Mustard	RH 819, BIO 902, RH 30, Pusa Bold, RN 393, Laxmi
(ii)	Wheat	Raj 1482, CPAN 3004, Raj 3765, Raj 3777, Lok 1
(iii)	Barley	RD 2503, RD 2552, RD 2035
(iv)	Gram	RSG 44, KPG 59, RSG 888, CSJD 884
(v)	Lentil	K 75, Sehore 74-7, L 4076
(vi)	Clusterbean	RGC 936, RGC 986, RGC 1003

3. For mustard crop grown under unirrigated heavy texture soils application of 40 Kg N and 40 Kg S ha<sup>-1</sup> (through gypsum) was found optimum.
4. For mustard crop 45 cm. spacing between row to row has been found optimum under tank bed, heavy texture soils.
5. The spray of Thio urea @ 0.1% at 60 DAS increases the seed yield of mustard by 10 to 12% over control. In this way an additional return of about Rs.3024 ha<sup>-1</sup> can be fetched.
6. The application of Zinc Sulphate @ 20 Kg ha<sup>-1</sup> significantly increases the grain yield of lentil.
7. Mixed cropping of lentil + mustard (12:2 or 6:1 rows) was found superior over lentil alone or over farmers practice (seed mixture).
8. Research conducted to find out the response of sulphur under tank bed micro farming situation revealed that increasing levels of sulphur, significantly increased the grain yield of cluster bean upto 40 kg S/ ha<sup>-1</sup>, beyond which no further response was observed.
9. Wheat (Raj 1482) irrigated with saline sodic water (EC : 10.4 dsm<sup>-1</sup> and SAR : 10.6 ) responded significantly to N, P and Zn. Combined application of 120, 60 and 40 Kg/ ha of N, P<sub>2</sub>O<sub>5</sub> and ZnSO<sub>4</sub>, respectively increase the grained yield of wheat by 14.0 % over control (90Kg N + 40Kg P<sub>2</sub>O<sub>5</sub> ). It suggests that under saline conditions N, P and Zn requirement is higher as compared to non saline conditions.
10. The optimum seed rate for Gram semi bold varieties was found 80 Kg ha<sup>-1</sup> and for small seeded varieties was found 60 Kg ha<sup>-1</sup>.

**2000-01**

**1. Response of Mustard to foliar application of agrochemicals**

Treatment	Seed Yield kg/ha				% increase over control	Additional Net return over control (Rs/ha)
	1998-99	1999-2000	2000-2001	Mean		
<b>AGROCHEMICALS</b>						
1. Control (No Spray)	1875	585	1493	1318	-	-
2. Water Spray	1941	660	1514	1372	4.09	521
3. Thio Urea (0.05%) Spray	-	-	1618	-	-	-
4. Thio Urea (0.1%) Spray	2266	861	1724	1617	22.6	3078
5. 40 Kg S ha <sup>-1</sup> basal	-	-	1596	-	-	-
6. 40 Kg S ha <sup>-1</sup> + TU(0.05%) Spray	-	-	1757	-	-	-
7. 40 Kg S ha <sup>-1</sup> Tu(0.1%) Spray	-	-	1850	-	-	-
8. Sulphuric acid (0.1%) Spray	2149	764	1608	1507	14.3	1923

9. Urea (1%) Spray	2207	782	168	1556	18.0	2632
10. Urea (2%) Spray	-	-	1690	-	-	-
11. ZnSo4 (0.5%) Spray	-	793	1685	-	-	-
12. Boric Acid (0.2%)	-	779	1670	-	-	-
S.Em±	82.5	27.4	34.2	-	-	-
CD at 5%	240	79.7	100.2	-	-	-
C.V. %	11.0	9.0	4.0	-	-	-

On the basis of three years results, it is concluded that spray of thio urea @ 0.1% at 45 to 60 DAS increased the seed yield of mustard by 20-22% over control

## 2. Studies on determining optimum seed rates for selected lentil cultivars.

Treatments	Grain Yield kgha-1			ATC Malikpur	% increased or decreased	% additional increase in lentil grain/ Kg Seed rate
	1999- 2000	2000-01	Mean			
<b>Variety</b>						
K-75	706	1094	900	440	17.6	
Sehore 74-7	586	943	765	365	-	
SEm ±	19	36	-	-	-	-
C.D. at 5%	54	108	-	-	-	-
<b>Seed Rate (Kgha<sup>-1</sup>)</b>						
20	560	833	696		-21	-
30	645	1029	837	4.03	-5	14.1
40	661	1054	858	3.25	-3	2.1
50	677	1093	885	2.43	+0.02	2.7
60	687	1080	883		0.2	
SEm±	29	58				
CD at 5%	82	171				

C.V.%	12.9	13.8				
Interaction	N.S.	N.S.				

On the basis of two years data it is concluded that the optimum seed rate of lentil under tank bed micro farming situation is 30 kg ha<sup>-1</sup>.

## 2001-02

### 1.Role of thiourea in improving productivity of wheat under tank bed situation.

Treatment	Yield (Kg/ha-1)			% Increase
	2000-01	2001-02	Mean	
Control	3714	4133	3923	-
Seed Soaking in water 10-12 Hrs.	3776	4217	3996	2.0
Seed Soaking in TU 250 PPM	3890	4275	4083	4.5
Seed Soaking in TU 500 PPM	3989	4360	4175	6.4
SEm±	58	37		
CD at 5%	201	128		
Control	3654	4084	3869	-
500 ppm TU spray at tillering	3825	4255	4040	4.4
500 ppm TU spray at flowering	3908	4303	4106	6.1
500 ppm TU spray at Tillering and flowering	3982	4341	4162	7.6
SEm±	55	48		
CD at 5%	162	139		

Wheat crop respond significant and commendable to seed soaking and foliar spray at tillering each by 500 ppm solution of Thio urea.

### 2. Studies on determining optimum seed rates for selected gram cultivars.

Treatment	Yield (Kgha-1)			% Increase/ Decrease
	2000-01	2001-02	Mean	
Grain Varieties				

RSG-44	1432	842	1137	7.8
KPG-59	1298	813	1055	-
CD at 5%	94	NS	-	
Seed Rates (Kg/ha-1)				
50	1169	757	963	20.5
60	1388	843	1115	4.1
70	1437	852	1145	1.39
80	1466	857	1161	-
CD at 5%	133	53		
CV %	9.0	6.0		
Interaction	NS	NS		

Chickpea RSG-44 cultivar is better under tank bed farming situation and seed rate all ready recommended as per D.R. 70 Kg/ha seed rate is confirmed.

**3. Adoptability of spices** – It was found that Fenugreek, coriander and fennel crops were suitable for cultivation to the Zone. Fenugreek, Var. RMt-1 with average yield of 25 q per ha was economically suitable for cultivation in Zone IIIb. Likewise, fennel Var-RF-125 (20 q/ha) and coriander RCr 41(15 q/ha) were also suitable for cultivation. Looking to the economics of the species, the Fenugreek, crop was found most economic by providing Rs.40000 per ha, net profit followed by fennel Rs.35000 per ha and crop coriander Rs.30000 per ha net profit.

**2002-03**

**1. Response of pea cultivars for applied phosphorus**

Treatment Combination	Green Pod Yield (q/ha)			Mean Yield	C.B. Ratio
	2000-01	2001-02	2002-03		
Azad P-1 + 30 Kg P205/ha	88.22	60.36	95.32	81.30	1:3.13
Azad P-1 + 40 Kg P205/ha	103.11	72.36	107.69	94.38	1:3.79
Azad P-1 + 50 Kg P205/ha	96.84	69.25	103.37	89.82	1:3.49
Erkel + 30 Kg	50.42	36.09	82.69	56.40	1:3.13

P205/ha					
Erkel + 40 Kg P205/ha	56.37	38.37	86.42	60.38	1:3.42
Erkel + 50 Kg P205/ha	48.74	34.94	83.76	55.82	1:2.90
E-6 + 30 Kg P205/ha	48.06	33.88	78.95	53.63	1:2.99
E-6 + 40 Kg P205/ha	55.17	38.44	84.25	59.28	1:3.35
E-6 + 50 Kg P205/ha	53.76	36.72	77.38	55.95	1:3.20
S.Em±	1.43	0.61	NS		
C.D. at 5%	4.41	1.88			

The highest green pod pea yield (94.38 q/ha) was obtained by Azad P-1 variety and 40 Kg P2O5 ha-1 with 1:3.79 cost, benefit ratio (Rs. 30379 net return). Early variety Erkel with 40 Kg P2O5 ha-1 gave 60.38 q/ha green pod yield with net return Rs. 23958 /ha (cost benefit ratio 1:3.42).

## 2. Response of mustard cultivars to different levels of Sulphur

Cultivars	Sulphur Kg/ha						
	0	20	30	40	50	Av.	Rank
Vardan	1524	1857	2142	2190	1904	1924	II
Jagannath	1476	1714	1904	1761	1428	1657	
Rohini	1477	1619	2142	2047	1761	1809	III
RH 819	1286	1524	1666	1761	1809	1609	
Bio-902	1714	2238	2095	2142	2142	2066	I
CS-52	1428	1714	1857	1857	1809	1733	V
Vaibhav	1429	1666	1809	1667	1666	1648	
TM-2	1000	1042	1238	1333	1476	1238	
RH-30	1523	1761	1904	1857	1858	1781	IV
Kranti	1095	1285	1476	1477	1428	1352	



Basanti	1381	1523	1666	1714	1619	1581	
YST-151	809	952	1095	1238	904	100	
RH-1359	1238	1380	1571	1572	1523	1457	
PBR-97	1076	1170	1333	1238	1285	1219	
RN-393	1428	1714	1857	1666	1761	1685	
Av. Kg/ha	1324	1552	1717	1702	1625	1583	
CD at 5% (Kg/ha)	Cultivars	-	473				
	Sulphur	-	97				
	Cul x S	-	NS				

The highest seed yield (2066 kg/ha) was fetched with the cultivars Bio-902 followed by Vardan (1924 kg/ha), Rohini (1809 kg/ha), RH-30 (1781 kg/ha), CS-22 (1733 kg/ha), RN-393 (1685 kg/ha), Jagannath (1657 kg/ha), Vaibhav (1648 kg/ha) and RH-819 (1609 kg/ha). Application of sulphur enhanced the seed yield significantly at 30 Kg/ha and above over control. The interaction was not significant.

2003-04

### 1. Direct and residual responses of pearl millet-wheat sequence to applied zinc

S. No.	Treatment	Seed yield in Kg per ha.				
		2000	2001	2002	2003	Average
1.	Control	1410	810	200	650	767
2.	Zn @ 25 Kg/ha D	1660	1160	235	825	970
3.	Zn @ 25 Kg/ha R1	1585	1000	240	900	931
4.	Zn @ 25 Kg/ha R2	1480	870	205	695	812
5.	Zn @ 25 Kg/ha R3	-	840	200	675	571
6.	Zn @ 40 Kg/ha D	1690	1150	265	828	983
7.	Zn @ 40 Kg/ha R1	1645	1020	285	908	964
8.	Zn @ 40 Kg/ha R2	1570	920	200	733	855
9.	Zn @ 40 Kg/ha R3	-	870	200	266	578

S.Em±	72.40	53	19	24	65
C.D. at 5%	215	158	57	72	186

Zinc applied to pearl millet directly and to the preceding wheat crop improved seed yield significantly over control and zinc applied in 2<sup>nd</sup> and 3<sup>rd</sup> preceding crop seasons. However zinc applied @ 40 Kg/ha and 25 Kg/ha did not show any significant difference in seed yield of pearl millet.

## 2. Study to mitigate adverse effect of crust formation due to post sowing rains on productivity of pearl millet

S. No.	Treatment	Seed yield in Kg per ha.			
		2000	2002	2003	Pool average
1.	Bajra broadcasting	1535	416	339	896
2.	Bajra + Cowpea (Line sowing)	2390	533	362	1095
3.	Bajra + Guar (Line sowing)	2555	400	504	1153
4.	Bajra + FYM @ 1.0 ton/ha seed mixed	2665	383	412	153
5.	Bajra + FYM @ 2.0 ton/ha seed mixed	2675	483	430	1196
6.	Bajra Line sowing	2620	433	392	1148
7.	Bajra + FYM @ 5.0 ton/ha over furrow	2970	583	544	1365
8.	Hoeing with khurpa	2845	516	404	1255
9.	Bajra + Zal sakhti @ 5.0 Kg/ha seed mixed	2370	483	437	1096
10.	Bajra + Zal sakhti @ 10.0 Kg/ha seed mixed	2520	679	495	1231
	S.Em±	155	57	28	125
	C.D. at 5%	449	165	83	357

Experiment conducted to work out the agrotechniques to mitigate the adverse effect of crust formation due to post sowing rains revealed a significant improvement in seed yield due to application of FYM @ 5 tons/ha over furrow and gave 53%, 40%, 60% and 52% higher yield than farmers practice (Broad casting method) in kharif 2000, 2002, 2003 and pooled average, respectively. Application of starch polymer @ 10 Kg/ha (seed mixed) gave better results during kh. 2002 (drought seasons).

## 3. Management of shoot and fruit borer in brinjal through bioagents

The results of the study revealed that three sprays of recommended insecticides resulted in lowest fruit damage 31.56 and 31.27% on number and weight basis with the highest yield of 49.33 q/ha followed by six releases of *T. chilonis* @ 0.5 lac/ ha at weekly interval with 35.53 and 37.69% fruit damage on number and weight basis respectively resulting 43.99 q/ha yield.

#### 4. Role of thio- urea in improving productivity of lentil

Treatment	Grain Yield Kg/ha				% increase over water Spray	Net Additional return over control (kg/ha)
	2001-02	2002-03	2003-04	Average		
Control (Absolute)	461	1151	1013	875	-	-
Water Spray at pre flowering (60 DAS)	463	1173	1075	904	3.31	285
500 PPM TU Spray at Pre flowering(60 DAS)	537	1373	1268	1059	21.0	2420
1000 PPM TU Spray at pre flowering (60DAS)	560	1429	1310	1100	25.71	2845
0.1% H <sub>2</sub> SO <sub>4</sub> spray at pre flowering (60 DAS)	533	1349	1199	1027	17.27	2080
1% Urea spray at pre flowering (60 DAS)	477	1296	1151	975	11.42	1320
500 PPM TU Spray at Pre flowering(75 DAS)	512	1312	512	1031	17.82	2000
1000 PPM TU Spray at pre flowering	558	1404	1363	1108	26.620	2955

(75DAS)						
0.1% H <sub>2</sub> SO <sub>4</sub> spray at pre flowering (75 DAS)	516	1327	1272	1038	18.63	2245
1% Urea spray at pre flowering (75 DAS)	476	1265	1113	951	8.68	960
CD at 5%	71	132	95			

The result showed that 1000 ppm Thiourea spray at 50% flowering (75 DAS) produced the maximum seed yield with mean yield of 1108 kg ha<sup>-1</sup>. It is quite evident from the table that spray of Thiourea found significantly superior over control & all other agrochemicals, but there was no significant effect of spray stage and dose too, but the highest net additional return of Rs. 2955 ha<sup>-1</sup> fetched with the 1000ppm of TU at 50% flowering (75 DAS) closely followed by 1000 ppm spray of TU at pre flowering (60 DAS) by giving that additional return of Rs.2845 ha<sup>-1</sup>.

#### 5. To test the adaptability of promising mustard varieties

S.No.	Variety	Yield (Kg ha <sup>-1</sup> )	Rank
1.	Mahon-8	886	
2	RB-9901	980	
3	RGN-13	1046	
4	CS-614-4-1	953	
5	Aravali	1098	
6	Varuna	1123	V
7	RH-819	1163	IV
8	BIO-902	1306	I
9	RL-1359	1180	III
10	RH-30	1243	II

Variety BIO-902 obtained highest yield (1306 kg ha<sup>-1</sup>) followed by RH-30, RL-1359, RH-819 and Varuna respectively.

#### 6. To test the adaptability of mustard strain RN-505

S.No.	Variety	Yield (Kg ha <sup>-1</sup> )	Rank
1.	RN 505	1270	I
2	RLM-619	1187	III
3	Vardan	1060	
4	Varuna	1158	IV
5	Kranti	1063	V
6	RH-30	1203	II

Out of 6 entries RN-505 obtained highest yield 1270 kg ha<sup>-1</sup> followed by RH-30, RLM-610, Varuna & Kranti respectively.

#### 7. Foliar nutrition studies in chickpea under rainfed conditions

Treatments	Grain yield Kg ha <sup>-1</sup>				% Increase	Additional return over control Rs. ha <sup>-1</sup>
	2001-02	2002-03	2003-04	Mean		
<b>A. SPRAY</b>						
Absolute control	1250	1190	921	1120	-	-
Water spray	1473	1301	970	1235	10.2	1460
Urea spray @ 2%	1510	1406	1022	1312	17.1	2438
Urea spray @ 3%	1515	1480	1052	1349	20.2	2928
DAP spray @ 2%	1699	1575	1100	1459	30.0	4430
KCl spray @ 2%	1690	1530	1082	1434	28.0	4176
SEm <sub>±</sub>	71	43	17			
C.D. at 5%	209	119	52			
<b>B.</b>						

<b>BASAL</b>						
With NPKS	1625	1505	1059	1396	11.6	1390
Without NPKS	1408	1355	990	1251	-	-
SEm±	42	24	9			
C.D. at 5%	121	72	26			
Interaction	NS	NS	NS			

The highest grain yield of Chickpea was recorded with 2% DAP spray and basal application of NPKS. As far as the effect of Agrochemicals individual effect of 2% DAP spray found superior followed by 2% spray of KCl and recorded 30% & 28% increase in grain yield over control.

#### 8. Response of methi to applied nitrogen and phosphorus

S.No.	Treatment combination	Yield (q/ha)			
		2001-02	2002-03	2003-04	Mean
1.	0 N <sub>2</sub> + 0 P <sub>2</sub> O <sub>5</sub> /ha	11.55	11.30	11.08	11.31
2.	0 N <sub>2</sub> + 20 P <sub>2</sub> O <sub>5</sub> /ha	12.67	14.83	11.93	13.14
3.	0 N <sub>2</sub> + 40 P <sub>2</sub> O <sub>5</sub> /ha	12.88	14.20	12.18	13.08
4.	0 N <sub>2</sub> + 60 P <sub>2</sub> O <sub>5</sub> /ha	12.58	13.76	12.36	13.00
5.	20 N <sub>2</sub> + 0 P <sub>2</sub> O <sub>5</sub> /ha	12.44	12.63	12.03	12.36
6.	20 N <sub>2</sub> + 20 P <sub>2</sub> O <sub>5</sub> /ha	14.00	15.73	13.64	14.45
7.	20 N <sub>2</sub> + 40 P <sub>2</sub> O <sub>5</sub> /ha	14.88	18.20	14.58	15.88
8.	20 N <sub>2</sub> + 60 P <sub>2</sub> O <sub>5</sub> /ha	14.89	12.63	14.89	14.13
9.	40 N <sub>2</sub> + 0 P <sub>2</sub> O <sub>5</sub> /ha	12.88	14.86	13.40	13.71
10.	40 N <sub>2</sub> + 20 P <sub>2</sub> O <sub>5</sub> /ha	14.67	16.63	14.55	15.28
11.	40 N <sub>2</sub> + 40 P <sub>2</sub> O <sub>5</sub> /ha	19.78	19.30	19.29	19.45
12.	40 N <sub>2</sub> + 60 P <sub>2</sub> O <sub>5</sub> /ha	18.89	17.30	18.23	18.14
13.	60 N <sub>2</sub> + 0 P <sub>2</sub> O <sub>5</sub> /ha	16.89	17.06	16.18	16.71
14.	60 N <sub>2</sub> + 20 P <sub>2</sub> O <sub>5</sub> /ha	16.89	18.63	15.55	17.00

15.	60 N <sub>2</sub> + 40 P <sub>2</sub> O <sub>5</sub> /ha	18.44	17.10	17.44	17.66
16.	60 N <sub>2</sub> + 60 P <sub>2</sub> O <sub>5</sub> /ha	18.44	16.63	17.59	17.55
	S.Em <sub>±</sub>	1.09	0.68	0.87	
	CD at 5%	3.14	2.04	2.51	

The highest mean yield of methi (19.45 Q/ha) was obtained at 40 N<sub>2</sub> + 40 P<sub>2</sub>O<sub>5</sub>/ha followed by 40 N<sub>2</sub> + 60 P<sub>2</sub>O<sub>5</sub>/ha (18.14 q/ha) which were significantly higher than all the other treatment combinations. Combination of 40 N<sub>2</sub> + 40 P<sub>2</sub>O<sub>5</sub>/ha was found most economic.

## 2004-05

### 1. Integrated phosphorus management in lentil

S. No.	Treatment	Grain Yield Kg/ha				% increase over water spray
		2002-03	2003-04	2004-05	Average	
1	Control (P <sub>2</sub> O <sub>5</sub> ) & 15.6 Kg N <sub>2</sub> ha <sup>-1</sup>	918	957	1027	967	-
2	20 Kg. P <sub>2</sub> O <sub>5</sub> ha <sup>-1</sup> through DAP (7.8 Kg N <sub>2</sub> ha <sup>-1</sup> )	1066	1103	1191	1120	15.80
3	20 Kg . P <sub>2</sub> O <sub>5</sub> ha <sup>-1</sup> through Rock Phosphate (15.6 Kg N <sub>2</sub> ha <sup>-1</sup> )	1007	1122	1160	1096	13.34
4	PSB (15.6 Kg N <sub>2</sub> ha <sup>-1</sup> )	992	1013	1103	1036	7.10
5	PSF (15.6 Kg N <sub>2</sub> ha <sup>-1</sup> )	978	1004	1043	1008	4.23
6	20 Kg. P <sub>2</sub> O <sub>5</sub> ha <sup>-1</sup> through DAP (7.8 Kg N <sub>2</sub> ha <sup>-1</sup> )+ PSB	1111	1141	1252	1168	20.78
7	20 Kg. P <sub>2</sub> O <sub>5</sub> ha <sup>-1</sup> through DAP (7.8 Kg N <sub>2</sub> ha <sup>-1</sup> )+ PSF	1112	1163	1236	1170	20.99

8	20 Kg . P <sub>2</sub> O <sub>5</sub> ha <sup>-1</sup> through Rock Phosphate (15.6 Kg N <sub>2</sub> ha <sup>-1</sup> )+ PSB	1067	1087	1185	1113	15.09
9	20 Kg . P <sub>2</sub> O <sub>5</sub> ha <sup>-1</sup> through Rock Phosphate (15.6 Kg N <sub>2</sub> ha <sup>-1</sup> )+ PSF	1022	1039	1138	1066	10.23
10	40 Kg. P <sub>2</sub> O <sub>5</sub> ha <sup>-1</sup> through DAP	1185	1228	1327	1247	28.95
11	40 Kg P <sub>2</sub> O <sub>5</sub> ha <sup>-1</sup> through Rock Phosphate (15.6 Kg N <sub>2</sub> ha <sup>-1</sup> )	1126	1153	1262	1180	22.02
12	40 Kg. P <sub>2</sub> O <sub>5</sub> ha <sup>-1</sup> through DAP + PSB	1333	1360	1385	1359	40.53
13	40 Kg. P <sub>2</sub> O <sub>5</sub> ha <sup>-1</sup> through DAP + PSF	1318	1333	1359	1337	38.26
14	T <sub>14</sub> - 40 Kg P <sub>2</sub> O <sub>5</sub> ha <sup>-1</sup> through Rock Phosphate (15.6 Kg N <sub>2</sub> ha <sup>-1</sup> )+ PSB	1070	1071	1292	1144	18.30
15	40 Kg P <sub>2</sub> O <sub>5</sub> ha <sup>-1</sup> through Rock Phosphate (15.6 Kg N <sub>2</sub> ha <sup>-1</sup> )+ PSF	1155	1206	1267	1209	25.02
	CD at 5%	192	142	124		

Highest lentil grain yield was recorded with the treatment 40 P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup> through DAP+ PSB closely followed by 40 P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup> through DAP + PSF. Among the sources of phosphorus DAP found superior over Rock phosphate but there was no significant difference among them, whereas PSB, found superior over PSF. The increase in grain yield was 40.53%, 38.26% and 28.95% by 40 Kg. P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup> through DAP, 40 Kg. P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup> through DAP + PSF and 40 Kg. P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup> through DAP over control. The combined effect of DAP with PSB at 40 P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup> showed maximum positive effect.



**2. Effect of foliar spray of sulphhydryl compounds on carbon partitioning productivity and water use efficiency on mustard under water limited environment.**

Treatments	Seed Yield kg/ha			% increase over control
	2003-04	2004-05	Average	
Control	1537	1231	13.84	
10 ppm DTT Spray	1612	1305	1459	5.42
100 ppm TGA Spray	1737	1368	1553	12.21
500 ppm TU Spray	1836	1460	1648	19.08
50ppm DTNB Spray	1537	1337	1457	5.27
50ppm DTNB Spray + 10PPM DTT Spray	1469	1377	1423	2.81
50ppm DTNB Spray + 100 ppm TGA Spray	1775	1469	1622	17.20
50ppm DTNB Spray + 500 ppm TU Spray	1875	1508	1692	22.85
Water Spray	1587	1286	1437	3.83
CD at 5%	202	181	-	-

Maximum mean seed yield (1692 Kg/ha) of mustard was fetched with 50ppm DTNP Spray + 500 PPM TU spray closely followed by 500ppm TU spray. These two treatments were significantly superior over control, water spray and alone spray of DTT, TGA, DTNB.

**3. Response of Rabi Onion to Nitrogen and Potash**

S. No.	Treatment	Yield in Qt/jha				% Increase
		2002-03	2003-04	2004-05	Av.	
1	30 kg N <sub>2</sub> + 80 Kg K <sub>2</sub> O/ha	135.41	140.90	182.28	152.86	-
2	30 kg N <sub>2</sub> + 100 Kg K <sub>2</sub> O/ha	144.43	142.62	175.59	154.18	0.8
3	30 kg N <sub>2</sub> +	196.95	166.67	180.96	181.52	18.7

	120 Kg K <sub>2</sub> O/ha					
4	30 kg N <sub>2</sub> + 140 Kg K <sub>2</sub> O/ha	164.88	157.56	182.79	168.41	10.1
5	60 kg N <sub>2</sub> + 80 Kg K <sub>2</sub> O/ha	173.06	160.96	192.93	175.65	14.9
6	60 kg N <sub>2</sub> + 100 Kg K <sub>2</sub> O/ha	177.64	165.72	198.79	180.71	18.2
7	60 kg N <sub>2</sub> + 120 Kg K <sub>2</sub> O/ha	205.11	188.96	199.33	197.80	29.4
8	60 kg N <sub>2</sub> + 140 Kg K <sub>2</sub> O/ha	187.11	169.47	197.36	184.64	20.8
9	90 kg N <sub>2</sub> + 80 Kg K <sub>2</sub> O/ha	179.24	167.72	198.40	181.78	18.9
10	90 kg N <sub>2</sub> + 100 Kg K <sub>2</sub> O/ha	198.08	186.55	211.76	198.79	30.1
11	90 kg N <sub>2</sub> + 120 Kg K <sub>2</sub> O/ha	231.29	205.86	216.95	218.03	42.6
12	90 kg N <sub>2</sub> + 140 Kg K <sub>2</sub> O/ha	196.30	165.40	208.55	190.08	24.3
13	120 kg N <sub>2</sub> + 80 Kg K <sub>2</sub> O/ha	187.35	158.69	192.44	179.49	17.4
14	120 kg N <sub>2</sub> + 100 Kg K <sub>2</sub> O/ha	195.26	162.97	194.37	184.20	20.5
15	120 kg N <sub>2</sub> +	201.36	168.68	204.58	191.54	25.3

	120 Kg K <sub>2</sub> O/ha					
16	120 kg N <sub>2</sub> + 140 Kg K <sub>2</sub> O/ha	193.49	166.61	203.59	187.86	22.9
	S.Em±	2.81	1.28	5.38		
	C.D. at 5%	8.18	3.69	15.52		

Highest mean yield of Onion (218.03 q/ha) was obtained at combination of 90 kg N<sub>2</sub> + 120 Kg K<sub>2</sub>O/ ha.

#### 4. Response of fennel crop to irrigation and applied phosphorus

S.No.	Treatments	Yield q/ha			
		2002-03	2003-04	2004-05	Mean
<b>A.</b>	<b>Irrigation levels</b>				
(i)	One Irrigation	13.95	09.26	10.00	11.07
(ii)	Two Irrigation	21.07	12.47	15.30	16.28
(iii)	Three Irrigation	27.30	19.60	20.0	22.30
(iv)	Four Irrigation	24.22	18.40	18.94	20.52
	S.Em±	0.20	0.18	0.04	
	CD at 5%	0.62	0.52	0.11	
<b>B</b>	<b>Phosphorus levels</b>				
(i)	30 Kg/ha	16.21	13.92	15.26	15.13
(ii)	40 Kg/ha	16.44	15.22	16.32	15.99
(iii)	50 Kg/ha	17.52	15.50	16.49	16.50
(iv)	60 Kg/ha	16.38	15.07	16.06	15.83
	S.Em±	NS	NS	NS	
	CD at 5%				
<b>C</b>	Interaction	NS	NS	NS	

It was found that fennel crop gave maximum yield (22.30 q/ha) at three irrigation (50,100,150 DAS) and 50 Kg P<sub>2</sub>O<sub>5</sub>/ha as basal dose.

**2005-06****1. Weed management in Pearlmillet with special reference to SANTHI**

S. No.	Treatments	Dose (g/ha)	Grain yield (kg/ha)		Mean
			2004	2005	
1.	Weedy	-	1807	1623	1715
2.	Hand Weeding at 25 DAS	-	2283	1767	2025
3.	Atrazine fb HW at 25 DAS	500	2328	1824	2076
4.	Oxyfluorfen fb HW at 25 DAS	200	2408	2168	2288
5.	Alchlor fb HW at 25 DAS	1000	2235	1854	2095
6.	Metolachlor fb HW at 25 DAS	1000	2346	2008	2177
	LSD (P= 0.05)		113	107	

Oxyfluorfen at 0.2 Kg/ha followed by one hand weeding at 25 DAS effectively controlled the Trianthema (SANTHI) population producing maximum seed yield (2288 Kg/ha) followed by Metolachlor fb HW at 25 DAS (2177 Kg/ha).

**2. Seed Priming, row spacing and foliar nutrition studies in chickpea under rainfed conditions**

Treatments	Grain yield (kg/ha)				% Increase
	2003-04	2004-05	2005-06	Average	
<b>Seed Priming</b>					
(i) No Seed soaking	917	1062	1814	1264	-
(ii) Soaking of seed in water for 8 hours	962	1092	2080	1378	9.01
CD at 5%	31	NS	67	-	
<b>Row Spacing (cm.)</b>					
(i) 30	956	1099	1963	1339	2.76
(ii) 45	924	1053	1931	1303	-
CD at 5%	31	44.00	NS	-	
<b>Foliar Nutrition</b>					
(i) Water Spray	901	1036	1800	1246	



		06		n	-	-	n	-	-	n	06	07	n	06	07	n
					06	07		06	07							
1.	T <sub>1</sub> - Varuna	1441	565.0	1003	125	120	123	185	155	170	40.26	38.08	39.17	18.55	20.74	19.65
2.	T <sub>2</sub> - DMH-1	1710	1098.3	<b>1404</b>	127	118	123	205	175	190	41.54	38.72	40.13	20.24	21.48	20.86
3.	T <sub>3</sub> - Kranti	1851	940.0	1396	128	120	124	203	178	191	42.58	38.89	40.74	19.63	21.38	20.51
4.	T <sub>4</sub> - DMH-11	1817	922.6	1370	131	118	125	220	180	200	39.26	38.89	39.08	20.08	21.53	20.81
5.	T <sub>5</sub> - Maya	1879	1002.6	<b>1441</b>	127	119	123	201	173	187	39.90	36.73	38.32	19.01	21.65	20.33
	C.D. at 5%	106	118.5													
	C.V. %		6.94													

On the basis of two years data it is revealed that Maya gave maximum seed yield (1441 Kg/ha) followed by DMH-1(1404 Kg/ha), Kranti (1396 Kg) and DMH-11(1370 Kg) but it was at par of these four varieties.

### 3. Management of leaf curl in tomato

Nursery treatment	Field Treatment												
	Control				Phorate 10G				Methyl demeton (25 EC)				Overall mean
	2004	2005	2006	Mean	2004	2005	2006	Mean	2004	2005	2006	Mean	
Control	166.67	150.33	156.50	158.16	181.00	160.33	168.66	169.99	179.00	158.33	166.66	167.99	165.38
Agrone	181.	160.	173.	171.	216.	180.	190.	195.	210.	176.	189.	192.	186.3

t	00	67	33	66	00	00	00	33	00	67	33	00	3
Phorate followed by methyl demeton	192.67	165.33	175.67	177.89	219.00	194.67	205.33	206.33	218.00	192.00	201.00	203.66	195.96
Mean	180.11	158.77	168.50		205.33	178.33	187.99		202.33	175.66	185.66		

	Nursery treatment			Field Treatment			Interaction		
	2004	2005	2006	2004	2005	2006	2004	2005	2006
SEM $\pm$	2.95	3.18	2.63	1.89	2.41	1.94	3.29	NS	NS
C.D. at 5%	8.17	9.61	7.85	5.33	7.25	5.80	7.16		

Maximum mean production of tomato was obtained at nursery treated with phorate 10G @ 5g/sqm followed by methyl demeton 25 EC(195.96 q/ha) followed by nursery bed covered with agronet (186.33 q/ha) which were significantly higher than control without treatment at nursery level in all the three years. If we observed at field treatments, the higher yield of tomatoes was obtained at phorate 10G @ 15 Kg/ha applied at 10 and 40 DAT (205.33, 178.33 and 187.99 Q/ha in 2004, 2005 and 2006, respectively, followed by spray of methyl demeton 25 EC @ 1.0 lit/ha at 10,25, 40 and 55 DAT ( 202.33, 175.66 and 185.66 q/ha in the 3 years which were significantly higher than control.

The significantly higher yield was obtained at phorate 10G followed by methyl demeton 25 EC at nursery level and phorate 10 G at standing crop (206.33 Q/ha) followed by phorate 10G followed by methyl demeton 25 EC at nursery level and methyl demeton 25 EC at field level (203.66 Q/ha) followed by nursery covered with agronet and phorate 10G applied in standing crop (195.33 Q/ha). The lowest mean yield (158316 Q/ha) was obtained at control without treatment.

#### 4. Response of methi crop to cutting and nitrogen.

S. No	Treatment combination	Grain yield of Methi (q/ha)				B:C ratio	Net Return /ha
		2004-05	2005-06	2006-07	Mean		
T <sub>0</sub>	No cutting	20.46	21.10	21.03	20.86	1:4.63	49080
T <sub>1</sub>	One cutting at 30 DAS	19.62	20.13	20.93	20.22	1:4.56	48160

T <sub>2</sub>	One cutting at 30 DAS + 10 Kg N <sub>2</sub> /ha at cutting	20.07	20.80	21.00	20.62	1:4.63	49310
T <sub>3</sub>	One cutting at 45 DAS	20.21	21.33	20.90	20.81	1:4.84	51930
T <sub>4</sub>	One cutting at 45 DAS + 10 Kg N <sub>2</sub> /ha at cutting	21.06	23.50	22.23	22.26	1:5.14	56250
T <sub>5</sub>	One cutting at 60 DAS	18.74	19.13	19.43	19.10	1:4.46	46800
T <sub>6</sub>	One cutting at 60 DAS + 10 Kg N <sub>2</sub> /ha at cutting	19.54	20.13	20.50	20.05	1:4.66	49600
T <sub>7</sub>	I cutting at 30 DAS + II cutting at 60 DAS + 10 Kg N <sub>2</sub> /ha at I cutting	16.99	18.26	18.06	17.77	1:4.26	44260
T <sub>8</sub>	I cutting at 30 DAS + II cutting at 60 DAS + 10 Kg N <sub>2</sub> /ha at each cutting	17.37	19.06	18.33	18.25	1:4.35	45650
T <sub>9</sub>	I cutting at 45 DAS + II cutting at 75 DAS + 10 Kg N <sub>2</sub> /ha at I cutting	13.36	16.23	14.50	14.69	1:3.58	35021
T <sub>10</sub>	I cutting at 45 DAS + II cutting at 75 DAS + 10 Kg N <sub>2</sub> /ha at each cutting	14.17	14.43	15.53	14.71	1:3.57	35030
	S.Em +	0.73	0.93	1.25			
	C.D at 5%	2.14	2.75	3.69			
	C.V.	4.96	8.28	11.23			

Highest mean yield of methi grain (22.26 q/ha) was obtained at one cutting at 45 DAS and 10 Kg nitrogen as top dressing at the time of cutting. This yield is significantly higher than the treatment combination with two cutting, however non significant to no cutting and one cutting at 30 DAS in all the three consecutive years i.e. 2004-05, 2005-06 and 2006-07. The mean minimum yield was obtained at two cutting at 45 DAS and 75 DAS (14.69/ha). In irrigated heavy textured tank bed micro farming situation of zone III b, the fenugreek crop shows luxurious vegetative growth causes lodging the crop resulting in reduction in yield. However pruning imparts harmful effect to the overall growth of plant but in these conditions, one pruning at 45 DAS checks the overgrowth of the crop and top dressing of nitrogen @10 Kg /ha at the time of pruning help in recouping the vegetative growth , hence gave maximum production at this treatment. On the other hand two pruning proved hazardous to growth of plant, consequently drastic reduction in yield occurred.

## 2008-09

### 1. Assessment of various nursery raising techniques in tomato.

S.	Treatment	Fruit yield (q/ha.)	Mean	Total	Cost of	Net	B:C
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No.		2005-06	2006-07	2008-09		income	cultivation	return	ratio
	Nursery raising by broadcasting	238	272	260	256.67	179669	57000	122669	1:2.15
	Nursery raising by thick line sowing	279	280	250	248.00	173600	57000	116600	1:2.05
	Nursery raising by thin line sowing	253	241	262	273.67	191569	57000	134569	1:2.36
	Nursery raising by 50 g plastic cup	250	206	230	228.67	160069	70000	90069	1:1.29
	Nursery raising by 100 g plastic cup	301	300	276	292.33	204631	70000	134631	1:1.92
	Nursery raising by 250 g polythene bags	338	353	330	340.33	238231	70000	168231	1:2.40
	SEm $\pm$	5.1	6.1	12.63					
	CD at 5%	15.79	19.15	39.79					
	C.V.	6.15	7.04	8.16					

Tomato seedlings raised in polythene bags of 250 g capacity produced significantly high mean fruit yield (340.33q /ha), over all the other treatments giving highest net return Rs. 168231.00 per ha.( B:C ratio 1: 2.40). It is about 32.5% more fruit yield over raised seed bed (256.67 q/ha). Nursery raised in lines and 100g cups also proved better over broadcasting method. In traditional method of nursery raising seedlings are grown densely, where proper nutrition, sunlight and space is not available to plant growth, hence weak, non-uniform and unhealthy seedlings takes place, whereas 250g polythene bags seedlings get proper sunlight, nutrition and space for proper growth of the seedlings. Consequently, healthy plants comes out and there is no transplanting shock occur during transplanting, if seedlings are grown individually in polythene bags, which is unavoidable in the seedlings grown in seedbed. It also reflects in fruit yield of tomato, which is more in those plants grown in polythene bags.

**2009-10****1. Response of fennel crop to sowing time and method of sowing.**

S. No.	Treatment combination	Fennel yield (q/ha)				Gross income	Cost of cultivation	Net return	C:B ratio
		2007-08	2008-09	2009-10	Mean				
1.	15 Aug 45x30 cm	22.40	24.23	18.70	21.78	87120	23673	63447	1:3.68
2.	15 Aug 45x45 cm	20.70	20.00	17.43	19.38	77520	22833	54687	1:3.40
3.	15 Aug Broad	16.33	15.03	13.40	14.92	59680	21272	38408	1:2.81
4.	30 Aug 45x30 cm	21.27	24.33	18.27	21.29	85160	23501	61659	1:3.62
5.	30 Aug 45x45 cm	17.97	20.97	17.13	18.69	74760	22591	52169	1:3.31
6.	30 Aug Broad	15.97	15.07	13.17	14.74	58960	21209	37751	1:2.78
7.	15 Sept 45x30 cm	18.33	22.20	17.23	19.25	77000	22787	54213	1:3.38
8.	15 Sept 45x45 cm	17.57	19.97	16.00	17.85	71400	22297	49103	1:3.20
9.	15 Sept Broad	14.40	14.00	12.30	13.57	54280	20800	33480	1:2.61
10.	30 Sept 45x30 cm	16.47	19.90	17.43	17.93	71720	22325	49395	1:3.21
11.	30 Sept 45x45 cm	15.33	18.37	13.37	15.69	62760	21541	41219	1:2.91
12.	30 Sept Broad	10.07	12.03	11.27	11.12	44480	19942	24538	1:2.23
	S.Em $\pm$	0.68	1.33	0.59					
	C.D at 5%	NS	NS	NS					

15 August sowing and 45 x 30 cm plant spacing of fennel produced high mean fruit yield (21.78 q/ha.) with highest net return Rs. 63447 and C:B ratio 1:3.68 closely followed by 30 August sowing and 45 x 30 cm spacing (21.29 q/ha.) with net return Rs. 61659 and C:B ratio 1:3.62. Hence sowing of fennel in the month of August at spacing of 45 x 30 cm by seed-drill at conserve moisture was better than at spacing of 45 x 45 cm and broadcasting method of sowing.

**2. Response of cabbage to method of sowing and irrigation.**

S. No.	Treatment combination	Cabbage head yield (q/ha)				Gross income	Cost of cultivation	Net return	C:B ratio
		2007-08	2008-09	2009-10	Mean				

1.	One irrigation x Nursery raising	50.0	59.0	104.67	71.56	28624	17550	11074	1:1.63
2.	One irrigation x Direct sowing	55.0	62.0	101.67	72.89	29156	12550	16606	1:2.32
3.	Two irrigation x Nursery raising	75.0	85.0	110.67	90.22	36088	19250	16838	1:1.87
4.	Two irrigation x Direct sowing	90.0	89.0	125.33	101.44	40576	14250	26326	1:2.85
5.	Three irrigation x Nursery raising	150.0	190.0	206.00	181.56	72624	20950	51674	1:3.47
6.	Three irrigation x Direct sowing	225.0	232.0	233.00	230.00	92000	15950	76050	1:5.77
7.	Four irrigation x Nursery raising	200.0	250.0	221.33	223.78	89512	22650	66862	1:3.95
8.	Four irrigation x Direct sowing	230.0	265.0	243.00	246.00	98400	17650	80750	1:5.58
9.	Five irrigation x Nursery raising	250.0	305.0	285.67	280.22	112088	24350	87738	1:4.60
10.	Five irrigation x Direct sowing	240.0	260.0	256.00	252.00	100800	19350	81450	1:5.21
	S.Em $\pm$	5.71	8.70	7.74					
	C.D at 5%	16.85	25.66	22.84					
	C.V.%	9.50	8.38	7.14					

The highest mean yield of cabbage (280.22 q/ha) with net return Rs. 87738/- and C:B ratio 1:4.60 was obtained at nursery raising and five irrigations, but if water availability is low, i.e. only three or four irrigations are available direct sowing by seed drill is beneficial. Three irrigation with direct sowing revealed highest C:B ratio (1:5.77) in comparison to five irrigation and nursery raised crop (1:4.60).

### 3. Studies of pruning system in Ber.

S. No.	Treatment combination	Yield (Kg/plant)			
		2007-08	2008-09	2009-10	Mean
1.	Gola x April pruning x CR	136.66	73.67	104.67	105.00
2.	Gola x April pruning x HR	150.00	100.00	128.67	126.22
3.	Gola x May pruning x CR	136.33	105.67	121.33	121.11
4.	Gola x May pruning x HR	170.33	116.00	150.33	145.55
5.	Seo x April pruning x CR	110.00	56.00	80.33	82.11
6.	Seo x April pruning x HR	119.66	66.00	94.33	93.33
7.	Seo x May pruning x CR	119.66	66.67	95.33	93.89
8.	Seo x May pruning x HR	136.33	84.00	105.33	108.55
9.	Umran x April pruning x CR	99.33	47.00	75.33	73.89
10.	Umran x April pruning x HR	105.00	60.00	84.67	83.22
11.	Umran x May pruning x CR	110.00	66.67	89.67	88.78
12.	Umran x May pruning x HR	120.00	72.67	103.33	98.67
	S.Em + for S x V x T	3.52	8.58	8.10	
	C.D. at 5 %	NS	NS	NS	

Where,

CR = Complete removal

HR = Half removal

The maximum mean yield per plant was recorded in Gola variety, first fortnight of May pruning and half removal of secondary branches (145.55 Kg/ plant) Hence pruning of ber at dormancy stage (May pruning) and minimum removal of branches (half removal of secondary branches) gave maximum yield.

#### **Research Recommendations included in PoP under RKVY during 2008-2012**

Crop wise varietal ranking according to agro-ecological situation in zone III b

Crop	AES	Ranking of the varieties as per productivity
1. Wheat	IV	Raj 3765, PBW 343, Raj 3077, Lok 1, Raj 4037, Raj 1482
	V	Raj 3077, PBW 343, Raj 3765, Raj 4037, PBW 502, Raj 1482, Lok 1
	VI	Raj 3765, Raj 3077, PBW 343, PBW 502, Lok 1, Raj 4037, Raj 1482

	VIII	Raj 3765, Raj 3077, Lok 1, PBW 502, PBW 343, Raj 4037, Raj 1482
2. Barley	IV	RD 2592, RD 2035, RD 2503, RD 2552, RD 2052
	V	RD 2035, RD 2592, RD 2503, RD 2552, RD 2052
	VI	RD 2592, RD 2035, RD 2503, RD 2052, RD 2552
	VIII	RD 2592, RD 2552, RD 2035, RD 2503,
3. Mustard	I	Arawali, Laxmi, Bio 902, Rohini
	II	Arawali, Laxmi, Bio 902, Rohini
	IV	Rohini, Laxmi, Arawali, Bio 902
	V	Laxmi, Rohini, Bio 902, Arawali
	VIII	Rohini, Bio 902, Laxmi, Arawali,
4. Gram	V	RSG 973, RSG 945, RSG 963, RSG 896
5. Bajra	I	JKBH 26, ICMH 356
	III	JKBH 26, ICMH 356
	IV	JKBH 26, ICMH 356
	V	JKBH 26, ICMH 356
6. Guar	III	RGC 1003, RGC 986, RGC 1031, RGC 1017
	IV	RGC 1003, RGC 1031, RGC 986, RGC 1017
	V	RGC 1031, RGC 986, RGC 1003, RGC 1017
7. Til	III	RT 127, RT 125, RT 46
	IV	RT 127, RT 125, RT 46
	V	RT 127, RT 125, RT 46

8. Use of 35 Kg Potash per hectare in wheat crop as basal dose increased grain yield significantly. It also increases tolerance against drought and diseases. It improves grain quality of wheat.

9. Use of 40 Kg Potash per hectare in mustard crop as basal dose increased seed yield & oil percentage significantly.

10. Two foliar spray of thio urea @ 0.05 % at tillering & flowering stage increased 20% grain yield in wheat. It also mitigate the effect of terminal heat stress.
11. Foliar spray of thio urea @ 0.1 % at flowering stage increased 12% seed yield in mustard.
12. 25 Kg Zinc sulphate per hectare as basal dose in wheat and barley crop increased grain yield in zinc deficient soils. Foliar spray of Zinc @ 0.2 % also found beneficial in increasing the yield in these crops.
13. 10 tonnes FYM, 90 Kg N, 35 Kg P<sub>2</sub>O<sub>5</sub> and 35 Kg K<sub>2</sub>O per hectare with 600 g each PSB & azotobactor culture was best combination to get maximum grain yield in wheat in zone III b.
14. 10 tonnes FYM, 60 Kg N, 20 Kg P<sub>2</sub>O<sub>5</sub> per hectare with 600 g each PSB & azotobactor culture was best combination to get maximum grain yield in barley.
15. Departmental recommendation of fertilizers for bajra, guar & til was found appropriate for all the AES in zone IIIb.

### **2012-13**

- (i) Application of 25 Kg S+ 6 Kg FeO+ 10 Kg ZnO as basal dose was recommended in fenugreek to get maximum seed yield (18.30 q/ha) with highest net return Rs. 24551 and C:B ratio 1:1.50 in deficient soils of tank bed irrigated heavy textured soil conditions .
- (ii) Application of 20 Kg S + 4 Kg FeO+ 8 Kg ZnO was recommended in coriander to get maximum seed yield (14.99 q/ha) with highest net return Rs. 41924 and C:B ratio 1:1.87 in deficient soils of tank bed irrigated heavy textured soil conditions .
- (iii) Application of 10 Kg FYM + 100 g Zn SO<sub>4</sub> per plant promoted maximum mean vegetative growth of ber plant, i.e. plant height (34.11 cm), stem girth (1.38 cm), number of branches per plant (10.00), number of leaves per plant (101.78) and canopy area per plant (42.33 cm) in deficient soils of tank bed irrigated heavy textured soil conditions .
- (iv) Mustard variety NRCHB 101 proved highest yielder (2788 Kg/ha) during 2012-13 in tank bed situation.

### **2013-14**

- (i) Foliar spray of Metsulfuron Methyl @ 4g a.i/ha. after 30 DAS in barley crop was found equally effective as hand weeding to control weeds.
- (ii) Foliar spray of Metsulfuron Methyl @ 4g a.i/ha. after 30 DAS in wheat crop was found equally effective as hand weeding to control weeds.
- (iii) Mustard variety CS 56 proved most suitable under saline conditions of zone IIIB.

### **2014-15**

The maximum mean grain yield of wheat was received in

- (i) Treatment with seed priming + foliar spray with 100 ppm ascorbic acid and Thiourea 500 ppm proved equally effective to mitigate heat stress in wheat & barley crop in tank bed irrigated heavy textured soil conditions .

(ii) Post emergence spray of Atrazine @500 g a.i. is found suitable weedicide to control weeds in bajra crop.

(iii) Post emergence spray of Imazethapyr 35% + Imazimox 35% WG @ 70 g/ha. checked weed growth in guar crop and did not impart harmful effects on crop growth, hence gave significantly higher grain yield.

(iv) Post emergence spray of Imazethapyr 35% + Imazimox 35% WG @ 70 g/ha. checked weed growth in moong crop and did not impart harmful effects on crop growth, hence gave significantly higher grain yield.

(v) Mustard varieties RRN 573 & Giriraj (DRMRIJ 31) included in PoP.

### **2015-16**

(i) Four line lentil & one line fennel as intercropping technology found most profitable in rainfed area of tank bed heavy textured soil condition of zone IIIb.

(ii) Four line lentil & one line coriander as intercropping technology found most profitable in rainfed area of tank bed heavy textured soil condition of zone IIIb.

(iii) Mustard varieties NPJ 112 and Pusa Mustard 26 included in PoP.

(iv) In iron deficient soil add 15 Kg FeSO<sub>4</sub> as basal dose for barley crop.

(v) Wheat variety Raj 4120 confirmed and included in Pop.

### **2016-17**

Two sprays (at vegetative and flowering stage) of 0.5% Thiourea is suitable to mitigate heat stress in gram and barley crops.

### **2017-18**

Til variety RT-346 and RT-351 included in PoP

Fipronil granules @ 75 gm. a.i./ ha (25 kg/ ha) included in PoP against termite control in Guar

Imidachloropid 17.8 SL 30 g a.i. (0.33gm/lit of water) against sucking pest in clusterbean included in PoP.

### **2018-19**

- Disc ploughing & application of Paraquat @ 1.25 Kg a.i./ ha during summer month (May) for continuously three years effectively control Jawasa weed in fellow land.

- Maximum mean grain yield in barley (41.32 q./ha) was obtained with treatment Foliar spray of 500 ppm Thiourea at tillering stage + ear emergence stage closely followed by treatment Foliar spray of 100 ppm Ascorbic acid at tillering stage + ear emergence stage. The lowest yield was received at absolute control (34.94 qtl/ha).

- Maximum mean grain yield in gram (11.56 q./ha) was obtained with treatment Foliar spray of 500 ppm TU at flowering stage + grain formation stage followed by Foliar & ear emergence spray of 100 ppm AA and TGA i.e. 10.82 q/ha.

- Maximum mean grain yield in Potato ( 152.29 q./ha) was obtained with Spraying of Metribuzine 70% @ 0.5kg/ ha. at pre emergence stage closely followed by hand weeding (148.85 qt./ ha.) which were significantly higher than all the other treatments.

## 2019-20

- Maximum mean fruit yield (97.54qt/ha) of round melon was received at the treatment 25kg zinc sulphate, 15kg copper sulphate & 10kg Ferrous sulphate/ha, which was significantly higher than no treatment (Control)

### 5. Facilities available in the department/ unit

i) land – 51.10 ha

(ii) Cultivated Land – 47.45 ha

iii) Office building –

iv) Seed godown – 3

v) Threshing floor – 3

vi) Water reservoir pakka – 1

Kachcha – 1

vii) Seed grader – 2

viii) Tractor – 2

ix) Farm implements- Harrow, cultivator, seed drill, Tractor Traully, leveler , etc.

### 6. Number of books/Technical bulletins/ Practical manuals published by the Department/ Unit – 41

Technical report published every year for both kharif & rabi season – 2

#### Book Published by Dr. Udai Bhan Singh

S. No.	Book title	Author	Published by	Year
1.	उद्यानिकी फसलें	Dr.Udai Bhan Singh & Dr.Dharma Pal Singh	Deptt of Horticulture, Bharatpur	2014
2	उद्यानिकी फसलें	Dr.Udai Bhan Singh	ATMA Bharatpur	2018
3	बागवानी फसलों की	Dr.Udai Bhan Singh	ATMA Bharatpur	2019



	वैज्ञानिक खेती			
4	आम की वैज्ञानिक खेती	Dr.Udai Bhan Singh	ATMA Bharatpur	2019
5	पादप नाशक जीव प्रबन्धन	Dr.R.N.Sharma, Dr.Udai Bhan Singh & Dr.J.K.Gupta	College of Agriculture Bharatpur	2021
6	प्रतिक्षण पुस्तिका – पेस्टीसाइड मैनेजमेंट सर्टिफिकेट कोर्स	Dr.R.N.Sharma, Dr.Udai Bhan Singh & Dr.J.K.Gupta	College of Agriculture Bharatpur	2022

## 9. Any other Relevant Information

### a. Extension activities

- i.) Master trainer of horticulture in monthly workshop of Department of Agriculture
- ii.) Expert lectures are delivered in various farmers trainings
- iii.) Radio talks through AIR, Mathura
- iv.) Press release in main Newspapers
- v.) Article/ research papers published in magazine-

## LIST OF POPULAR ARTICLES BY DR. UDAI BHAN SINGH

S. No.	Date	Title	Name of Magazine / Newspaper
1	जुलाई-सितम्बर, 2001	प्राचीन परम्परा है गृहवाटिका	फल-फूल।
2	अप्रैल 2000	आंवला का मुरब्बा – औषधीय गुणों का खजाना	कृषि लोक
3	नवम्बर-दिसम्बर 1997	आलू की वैज्ञानिक खेती	कृषि लोक
4	मई 1997	भूत के अस्तित्व का रहस्य	लोक जीवन
5	2000	गूटी में लिनोलिन पेस्ट की उपयोगिता	अपना पत्र वार्षिक विशेषांक
6	25 अगस्त 1998	कैसे रहे नीरोग – बेलों पर लगे फल व सब्जियाँ	राजस्थान पत्रिका रविवारीय
7	4 अगस्त 1997	पोष्टिकता से भरपूर फल एवं सब्जियों के छिलके	लोक जीवन

8	14 अगस्त 1997	कम भाव मिलना सब्जी उत्पादन की मुख्य समस्या	लोक जीवन
9	28 मई 1997	तबाही भूकम्प से नहीं हमारे तथाकथित विकास से होती है	लोक जीवन
10	मई 1997	फल वृक्षों हेतु गढ़दे तैयार करें	अपना पत्र
11	अप्रैल 1997	कुष्माण्ड कुल की सब्जियों के प्रमुख कीट व रोग तथा उनकी रोकथाम	लोक जीवन
12	मई 1997	फल वृक्षों हेतु गढ़दे तैयार करें	कृषि विकास
13	जून 1997	नये बगीचे से आय प्राप्त करें	कृषि विकास
14	मई 1997	संतरे का स्कवैश (पानक) तैयार करें	कृषि विकास
15	नवम्बर 1998	जीरे की खेती	अपना पत्र
16	फरवरी 2003	विभिन्न मसाला फसलों की उन्नत उद्यानिकी विधियां	उन्नत बागवानी
17	फरवरी 2003	विभिन्न फलों की प्रमुख उद्यानिकी विधियां	उन्नत बागवानी
18	नवम्बर 2008	विभिन्न सब्जियों की प्रमुख उन्नत उद्यानिकी विधियां	उन्नत बागवानी
19	2012	भरतपुर में भाष्क बागवानी की संभावनायें	केवीके कुम्हेर फोल्डर
20	फरवरी 2013	अच्छा रोजगार बन सकती है औषधीय खेती	फार्म फूड
21	2004	कृषि अनुसंधान उपकेन्द्र कुम्हेर भरतपुर – परिचय एवं गतिविधियां	फोल्डर
22	2010	राष्ट्रीय कृषि विकास योजना – फसल उत्पादन की उन्नत तकनीकों का सूक्ष्म पारिस्थितिकियों में कृषक सहभागिता अनुसंधान	फोल्डर
23	2012	सब्जी उत्पादन में उच्च तकनीक	कृषि विभाग फोल्डर
24	अक्टूबर 2020	आलू की वैज्ञानिक खेती	फोल्डर आत्मा, भरतपुर
25	जुलाई 2021	कपास में लगने वाली बीमारियों की रोकथाम	चोखी खेती

26	जुलाई 2021	पान उत्पादन की सम्भावना और वैज्ञानिक खेती	जोबनेर कृषि
27	सितम्बर 2021	फलदार पौधों में कीट प्रबंधन	अभिनव कृषि
28	September 21	Nutritional Intervention to Muddle through COVID-19 Pandemic	Agriculture & Food: E-Newsletter.,3 (9)
29	September 21	Intensify Productivity in Non-Availability of Quality Seeds	AGRICULTURE & FOOD: e-NEWSLETTER ISSN: 2581 - 8317 .Volume 3 - Issue 9
30	September 21	Role of Rootstocks in Fruit Production	VigyanVarta 2(8): 34-37
31	ebZ 2022	vke dh O;kolkf;d mRd'V fdLeksa dh fo'ks'krk;sa	jk'V'h; fgUnh ekfld if=dk d'f'k igy ekg
32	October 21	Time to Clean India's Food Laced with Toxic Pesticide Residues	Agriculture & Food E-NewsLetter Volume 3 - Issue 10
33	June 2022	lfCt;ksa esa flapkbZ izca/ku	QksYMj vkRek] Hkjriqj

POPULAR ARTICLES PUBLISHED BY DR. UDAI BHAN SINGH & DR. PHOOL SINGH

S.NO	Name of Authors	Title	Name of magazine	Month
01	डॉ फूल सिंह एवं डॉ उदयभान सिंह	आलू की उन्नत किस्में व बीज उपचार	मसिक चोखी खेती ;ज्ञान् टपांदमतद्ध	अगस्त, 2018 पेज नं 6
02	डॉ फूल सिंह एवं डॉ उदयभान सिंह	उन्नत मटर बोये	मसिक चोखी खेती ;ज्ञान् टपांदमतद्ध	सितम्बर, 2018 पेज नं 7
03	डॉ उदयभान सिंह एवं डॉ फूल सिंह	सब्जियों की भण्डारण क्षमता बढ़ाने हेतु तुड़ाई तकनीकी	मसिक चोखी खेती ;ज्ञान् टपांदमतद्ध	दिसम्बर, 2018
04	डॉ फूल सिंह एवं डॉ उदयभान सिंह	फव्वारा व बूंद-बूंद सिंचाई पद्धति से पानी की बचत	मसिक चोखी खेती ;ज्ञान् टपांदमतद्ध	मार्च, 2019
05	डॉ उदयभान सिंह एवं डॉ फूल सिंह	गुणकारी फल फालसा	मसिक चोखी खेती ;ज्ञान् टपांदमतद्ध	मई, 2019 पेज नं 4

### LIST OF BOOK CHAPTER BY DR. UDAI BHAN SINGH

S. No.	Name of chapter	Name of Book	Year
1	High density planting technique in orchards	Smarika on High Density Planting Techniques	2011
2	Improved Production Techniques to enhance the post harvest life of vegetables	Smarika on Post harvest management in vegetable crops	2012
3	Techniques during picking of vegetables to enhance post harvest shelf life of vegetable crops	Smarika on Post harvest management in vegetable crops	2012
4	Quality standards of vegetables & Factors affecting them	Smarika on Post harvest management in vegetable crops	2012
5	Improved cultivation techniques of fennel	Farm & Food New Delhi	2013
6	Improved seed production technique in wheat	Seed production techniques in Agriculture crops	2014
7	Improved seed production techniques of gram & Mustard	Seed production techniques in Agriculture crops	2014

### SEMINAR/WORKSHOP ATTENDED BY DR. UDAI BHAN SINGH

S. No.	Date	Title of Conference / Institution	Title/Subject of presentation (if made)
1	25 to 26 Apr, 2000	Workshop on "Post Harvest Technology for Seeds Spice Crops & Production Technology of Commercial Medicinal & Aromatic Crops"/Directorate of Extension Education, Agricultural University, Udaipur	
2	Sept, 2000 to Continue	12 ,d fnolh; ekfld dk;Z"kkkyk ¼4izfr ekg½@la;qDr funs"kd ¼4frygu½]	Attended & Delivered a lecture as master trainer (Horticulture) for

		d'f'k laHkkx] Hkjriqj	zone IIIB
3	07 to 08 Jan, 2006	National Seminar of Awareness Technology transfer in Bee keeping/National Bee Board, New Delhi & Human & Lupin Foundation Bharatpur	
4	06 to 07 Dec, 2006	National Workshop on Aqua Culture in Water logged area & small water bodies upto 10 hectares/Department of fisheries Government of India, Lupin Foundation Bharatpur & Sponsored by Ministry of Agriculture Govt. of India	
5	14 to 15 Feb, 2011	'सब्जी फसलों की जैविक खेती' विशय पर राष्ट्रीय कृषि विकास योजनान्तर्गत 2 दिवसीय जिला स्तरीय सेमीनार/कार्यालय सहायक निदेशक उद्यान, भरतपुर	सेलेने पी कुल की सब्जियों की जैविक खेती
6	16 to 17 Mar, 2011	राष्ट्रीय कृषि विकास योजनान्तर्गत "सघन उद्यान रोपण तकनीक" विशय पर 2 दिवसीय राज्य स्तरीय सेमीनार/जिला हॉर्टीकल्चर डवलपमेंट सोसायटी, भरतपुर, कार्यालय सहायक निदेशक उद्यान, भरतपुर	फलों की सघन खेती
7	3 to 5 Oct, 2011	तीन दिवसीय कृषि एवं पशुपालन सेमीनार/ तकनीकी सेमीनार उप समिति, श्री जसवंत प्रदर्शनी एवं पशु मेला भरतपुर	उच्च तकनीकी बागवानी
8	28 Aug, 2011	एक दिवसीय उद्यानिकी कार्यशाला/उपनिदेशक कृषि (विस्तार) जिला परिषद धौलपुर	आम की वैज्ञानिक खेती
9	28 to 29 Feb, 2012	राष्ट्रीय कृषि विकास योजनान्तर्गत "सब्जी फसलों का फसलोत्तर प्रबंधन" विशय पर 2 दिवसीय राज्य स्तरीय सेमीनार/ जिला हॉर्टीकल्चर डवलपमेंट सोसायटी, भरतपुर, कार्यालय सहायक निदेशक उद्यान, भरतपुर	1. सब्जियों में फसलोत्तर भण्डारण क्षमता हेतु उन्नत उत्पादन तकनीक 2. सब्जियों में गुणवत्ता के मापदण्ड एवं उनको प्रभावित करने वाले कारक
10	24 to 25 Jan, 2013	राष्ट्रीय कृषि विकास योजनान्तर्गत "बीजीय मसाला फसलों की उच्च उत्पादन तकनीक" विशय पर 2 दिवसीय	सौंफ एवं मैथी की उच्च उत्पादन तकनीकी

		राज्य स्तरीय सेमीनार/ जिला होर्टीकल्चर डवलपमेंट सोसायटी, भरतपुर, कार्यालय सहायक निदेशक उद्यान, भरतपुर	
11	3 to 5 Jan. 2013	National Symposium on agriculture production and protection in context of climate change/Birsa Agricultural University Kanke, Ranchi	Combining ability analysis for yield and its components across environments in bread wheat
12	2 to 3 Feb, 2013	National Seminar on Spices/Panchayat Bhawan Jaipur	Effect of sowing time and sowing methods on seed yield of fennel
13	1 to 2 Mar, 2015	District Level Seminar/Department of Horticulture Bharatpur	High tech & organized Horticulture
14	13 Mar, 2015	District Level Seminar/National Horticulture Mission Dholpur	“Prospectus of Kinnow cultivation in Dholpur district
15	19 to 20 Mar, 2015	District Level Seminar/Department of Horticulture, Sawai Madhopur	Protective Horticulture
16	29 to 30 Sept, 2015	District Level Seminar/Department of Horticulture, Dholpur	Organic Cultivation of Horticultural crops

SUMMER AND WINTER SCHOOL/REFRESHER COURSE ATTENDED BY DR. UDAI BHAN SINGH

S. No.	Title of the Course	Duration	Organising Institute
1	Advanced in vegetable production	21 days (9-01-2002 to 5-2-2002)	Academy of Agricultural Research and Education Management, CCS Haryana Agricultural University, Hisar
2	Advances in improvement of vegetable crops	21 days (28.03.2006 to 17-4-2006)	Centre of Advanced Studies in Horticulture(Vegetables),Dept, of Vegetable Crops, Dr. Y.S. Parmar University of Horticulture and Forestry, Naun, Solan (HP)
3	Orientation Training Programme	15 days (30-07-1998 to 13-8-1998)	Academic Staff College, Rajasthan Agriculture University, Bikaner
4	Integrated Vermiculture	3 days (25-4-1997 to 27-4-1997)	K.V.K. Jhalawar, RAU, Bikaner
5	Production Technology of	8 days (29-2-2000 to	Indian Institute of Horticulture

	Grapes Mango, Banana & Papaya	7-3-2000)	Research, Hessaraghatta, Banalore
6	जल संघग्रहण विकास जिला प्रशिक्षक दलों का प्रशिक्षण (ट्रेनिंग ऑफ ट्रेनर्स)	11 दिन (17.6.2002 से 27.6.2002 तक)	इन्दिरा गांधी पंचायती राज एवं ग्रामीण विकास संस्थान, जवाहर लाल नेहरु मार्ग, जयपुर
7	Arid Horticulture	8 days (13-2-2001 to 20-2-2001)	Directorate of Extension Educaiton, RAU, Bikaner
8	Management of Post Harverst Diseases of Fruit	13 days (9-8-1999 to 21-8-1999)	Academic Staff College, RAU, Bikaner

### B. Seed Production

Year	Crop	Area (ha)	Total Prod. (qt.)
2010-11	Guar BS	7.30	15.60
	Dhencha	2.0	6.20
	Mustard TFL	19.65	269.25
	Lentil TFL	14.90	213.70
	Barley BS	7.85	316.89
	Wheat	0.75	21.62
	Fenugreek BS	0.75	15.50
	Fenugreek	0.15	1.01
	Fennel BS	2.0	27.0
	Coriander BS	1.0	7.70
	Coriander	0.15	0.84
		56.80	895.88
2011-12	Barley BS	5.35	198.50
	Fennel BS	2.0	21.50

	Fenugreek BS	1.55	13.25
	Coriander BS	1.70	12.65
	Mustard TFL	18.75	236.4
	Lentil TFL	21.20	346.80
	Barley TFL	0.75	35.50
	General Production		66.01
	Grand Total		930.61
2012-13	Mustard	13.25	97.67
	Lentil TFL	21.60	298.50
	Barley	8.65	396.00
	Fennel TFL	1.0	16.61
	Coriander TFL	1.20	8.25
	Barseem	1.75	4.82
	General Production		29.73
	Grand Total	55.35	851.58

Seed production programme during 2013-14

Kharif 2013						
S.No.	Crop	Variety	Type of seed	Area (ha.)	Prodn. (q.)	Remark
1	Bajra	RHB 173	F <sub>1</sub> Hybrid	3.90	23.29	Sent to RSSC Bharatpur
		Mix (male)			7.40	



	Kharif. Total				30.69	
Rabi 13-14						
S.No.	Crop	Variety	Type of seed	Area (ha.)	Prodn (q.)	
1	Mustard	Rohini	TFL	9.05	101.60	
2		Laxmi	TFL	3.80	31.45	
3		Bio 902	TFL	3.40	33.73	
4		NRCHB 506	F <sub>1</sub> Hybrid	1.00	6.64	Sent to DRMR Bharatpur
5		NRCHB 101	TFL	0.50	3.77	
6		NRCIJ 31	Breeder	0.15	1.60	Sent to DRMR Bharatpur
7		NRCYS 05-02	Breeder	0.05	0.31	
8		MJA 5	Breeder		0.27	
		Mix &Exptl.			2.09	
	<b>Mustard Total</b>			<b>17.95</b>	<b>181.46</b>	
8	Gram	GNG 1581	Certified	6.0	69.78	Sent to RSSC Bharatpur
9		RSG 991	Breeder	1.0	9.94	
	<b>Gram Total</b>			<b>7.0</b>	<b>79.72</b>	
10	Lentil	K 75	TFL	15.70	268.97	
		Mix			10.90	
		Exptl.			2.25	
	<b>Lentil total</b>			<b>1.0</b>	<b>282.12</b>	
11	Barley	RD 2592	Certified	7.85	305.50	Sent to RSSC Bharatpur

		Mix		0.25	7.62	
		Exptl.			3.25	
	<b>Barley Total</b>				<b>316.37</b>	
	Wheat	PBW 550	Certified	1.0	38.70	
		General		1.0	37.21	
		Exptl.			3.80	
	<b>Wheat total</b>			<b>2.0</b>	<b>79.71</b>	
12	Coriander	RCr 435	TFL	1.0	11.73	
		Exptl.			0.03	
	Coriander Total				11.76	
13	Fenugreek	RMt 1	TFL	1.0	8.59	
	<b>Rabi Total</b>			<b>52.75</b>	<b>959.73</b>	

#### Seed production recorded at ARSS Kumher during 2014-15

S.No.	Crop	Variety	Type of seed	Area (ha.)	Production (q.)
	<b>Kharif 2014</b>				
1	Bajra	RHB 173	Hybrid	4.0	4.70
2	Bajra	Male	Mix		5.30
3	Guar	RGC 936	B/S	2.0	7.75
4	Dhaincha	Local		0.25	1.15
	<b>Rabi 2014-15</b>				
5	Mustard	Rohini	TFL	5.75	38.40

6		NRCHB 101	TFL	0.25	1.88
7		NRCIJ 31	Breeder	0.20	0.95
8		NRCDR 02	Breeder	0.20	0.28
9		RRN 573	Breeder	0.20	0.37
10	Gram	GNG 1581	RSSC	3.40	23.54
11		RSG 963	Breeder	4.30	24.10
12		RSG 896	Breeder	1.50	2.70
13		RSG 991	Breeder	2.00	10.40
14	Lentil	K 75	TFL	19.60	31.06
15	Barley	RD 2552	Breeder	1.00	40.68
16		RD 2552	RSSC	3.05	114.24
17		RD 2592	TFL	4.65	141.18
18		Mix			0.45
19		Exp produce			2.20
20	Wheat	Raj 4120	Breeder	2.0	69.48
21		Exp produce		0.50	6.37
	G.Total			54.85	527.18

**Seed production recorded at ARSS Kumher during 2015-16**

S.No.	Crop	Variety	Type of seed	Area (ha.)	Production (q.)
	<b>Kharif 2015</b>				
1	Guar	RGC 1033	B/S	2.75	26.40
2	Guar		General	1.80	8.70
3	Dhaincha	Local		4.00	7.50
		Kharif total			42.60
	<b>Rabi 2015-16</b>				
4	Mustard	Rohini	TFL	4.40	38.26
5		DRMRIJ 31	TFL	3.00	34.83
6		DRMR 150-35	TFL	0.80	6.51
		Mustard total			79.60
7	Gram	RSG 974	B/S	17.50	97.48
8		RSG 895	B/S	2.50	16.50
		Gram total			113.98
9	Lentil	K 75	TFL	5.65	0.82
10		Exptl mix			0.12
11	Barley	RD 2786	B/S	1.90	59.71
12		RD 2552	B/S	3.00	71.54
		Barley total			131.25
13	Wheat	Raj 4037	B/S	4.70	117.37
14		Raj 4120	B/S	2.45	52.31
15		Mix			5.60
		Wheat total			175.28
16	Coriander	RCr 728	B/S	0.50	0.80
17	Field pea	Exptl mix			0.16
	G.Total			54.95	544.61

**Seed production recorded at ARSS Kumher during 2016-17**

S.No.	Crop	Variety	Type of seed	Area (ha.)	Prod <sup>n</sup> (q.)
<b>Kharif 2016</b>					
1	Guar	RGC 1066	B/S	2.00	7.16
2	Guar	RGC 1033	TFL	4.00	18.20
<b>Rabi 2016-17</b>					
3	Mustard	DRMRIJ 31	TFL	2.00	24.35
4	Gram	RSG 974	B/S	8.30	39.97
5	Lentil	IPL 316	B/S	2.00	1.56
6	Barley	RD 2786	B/S	5.75	133.80
7	Wheat	Raj 4238	B/S	3.75	90.38
8	Wheat	Raj 4120	TFL	3.65	71.04
			Total	31.45	386.46

**Seed production recorded at ARSS Kumher during 2017-18**

S.No.	Crop	Variety	Type of seed	Area (ha.)	Prod <sup>n</sup> (q.)
<b>Kharif 2017</b>					
1	Guar	RGC 1066	B/S	1.90	1.65
<b>Rabi 2017-18</b>					
1.	Mustard	DRMRIJ 31	TFL	13.20	213.96
2	Mustard	RRN573	TFL	5.55	55.69
3	Gram	RSG974	B/S	11.20	31.50
4	Barley	RD 2035	B/S	4.0	136.14
5	Barley	RD2786	TFL	0.50	11.65
<b>TOTAL</b>				<b>450.59</b>	<b>450.59</b>

**Seed production recorded at ARSS Kumher during 2018-19**

S.No	Crop	Variety	Status of seed	Total Production (Q)	Area (ha)	Productivity (Q/Ha)	Remark
01.	Mustard	DRMR IJ-31	TFL	233	16.75	13.91	Rainfed
02.	Gram	RSG-974	B/S	116	14.05	8.25	Rainfed & Salinity effect
03.	Lentil	Kota Massor-1	B/S	9.25	2.55	3.62	Rainfed & Salinity effect
04.	Wheat	Raj-4238	B/S	256.30	6.45	39.73	Highly saline Water
05.	Barley	RD-2035	B/S	151.80	4.10	37.02	Highly saline Water
06.	Coriander	R.Cr. -728	B/S	4.5	0.5	9.00	Rainfed
07.	Fennel	RF-125	B/S	10.0	1.0	10.0	Rainfed
Total =				780.00	45.04		

**Seed production recorded at ARSS Kumher during 2019-20**

S.No.	Crop	Name of the variety	Class of seed produced	Area sown (ha)	Quantity of production (Ungraded) (Q)	Quantity of production (Graded) (Q)
01.	Mustard	DRMR IJ-31	TFL	21.5	292	250
02.	Mustard	NRCDR-02	TFL	2.0	24	20
03.	Mustard	NRCHB-101	B/S	1.0	12	10
04.	Gram	RSG-974	B/S	8.5	95	85
05.	Lentil	RLG-5	B/S	3.0	51	45
06.	Wheat	Raj-4238	B/S	6.5	192	160
07.	Barley	RD-2035	B/S	1.90	55	48
08.	Coriander	R.Cr-728	B/S	1.0	4.60	4
09.	Fennel	RF-125	TFL	1.5	13	11

Total=	46.9	738.6	
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The seed production during Rabi 2020-21 is as follows.

<b>Rabi 2020-21</b>							
S.No	Crop	Variety	Status of Seed	Area	Production (Qt)	Productivity (Qt/ha)	Remark
01	Mustard	DRMR IJ-31	TFL	12.30	107.30	9.53	Low productivity due to poor germination as low moisture was available at the time of sowing.
02	Mustard	NRCHB-101	TFL	2.50	18.60	7.44	
03	Mustard	NRCHB-101	B/S	0.50	6.25	12.50	
04	Mustard	Mix	(Experiment)	0.50	7.50	15.00	
<b>Total =</b>					149.65		
05	Wheat	Raj-4238	B/S	4.50	108.30	24.06	Low productivity due to saline water.
06	Wheat	Raj-4238	RSSC Certified	3.20	96.38	30.25	
<b>Total =</b>					204.68		
07	Barley	RD-2035	TFL	3.20	90.30	28.21	
08	Barley	RD-2794	TFL	4.25	107.50	25.29	
09	Barley	Mix	Mix	-	1.85	(Experiment)	
<b>Total =</b>					199.65		
10	Lentil	RLG-5	B/S	0.50	7.80	15.60	
11	Gram	CSJ-515	B/S	7.70	110.95	14.40	

<b>Total =</b>					<b>Rabi</b>	672.73		
<b>Kharif 2020</b>								
01	Urd Bean	Pratap Urd-1	B/S	1.0	6.0	6.00	Low productivity due to low rainfall.	
02	Dhancha	Local	Local	4.0	35.5	8.25		
<b>Total =</b>					<b>Kharif</b>	41.5		
<b>Total =</b>					<b>Grand</b>	714.23		
<b>Carry Over Seed</b>								
01	Lentil	Kota Massor-1	B/S		8.35	(2018-19)		
02	Coriander	RCr-728	B/S		4.90	(2018-19)		
03	Fennel	RF-125	B/S		18kg	(2018-19)		
04	Mustard	DRMR IJ-31	TFL		3.20	(2019-20)		
05	Lentil	RLG-5	B/S		50.25	(2019-20)		
06	Gram	RSG-974	B/S		26.10	(2019-20)		
07	Coriander	RCr-728	B/S		4.05	(2019-20)		
<b>Total =</b>						97.03		
<b>Grand Total =</b>						811.26		



The seed production during Rabi 2021-22

S. No.	Crop	Name of variety	Class of seed	Area Sown (ha)	Quantity of Production (Ungraded) (Qt.)	Quantity of Production (Ungraded) (Qt.)
1.	Mustard	DRMR IJ-31	TFL	8.95	99.0	90
2.	Mustard	NRCHB-101	TFL	7.55	55.50	50
3.	Mustard	DRMR IJ-31	RSSC Program	3.40	22.80	20
4.	Gram	CSJ-515	TFL	6.70	57.0	54
5.	Gram	GNG-2144	RSSC Program	3.90	70.40	65
6.	Lentil	RLG-5	TFL	2.75	21.81	20
7.	Wheat	Raj-4238	B/S	7.20	183.29	170
8.	Barley	RD-2035	TFL	1.20	30.70	28
9.	Fennel	RF-125	TFL	2.0	10.35	
10.	Fennel	RF-290	TFL	2.75	14.88	-
11.	Mustard	Expt.	-	0.50	0.70	-
12.	Gram	Expt.	-		1.19	-
13.	Coriander	Expt/	-		0.36	
Total =					567.98	

Seed Production in Rabi 2023 ARSS Kumer

S. No.	Crop	Name of variety	Class of seed to be produced	Area Sown (ha)	Quantity of Production (Qt.)	Productivity
1.	Mustard	DRMR IJ-31	TFL	4.70	30.0	6.38

	Mustard	NRCHB-101	TFL	6.35	73.10	11.51
	Mustard	DRMR 1165-40	TFL	2.50	19.40	7.76
	Mustard	Radhika	TFL	2.60	14.0	5.38
	Mustard	Radhika	NSC Program	2.0	30.0	15.0
				18.5	166.50	9.17
2.	Gram	CSJ-515	TFL	3.0	44.30	14.7
	Gram	GNG-2144	TFL	4.0	48.18	12.04
				7.0	92.48	13.21
3.	Lentil	Kota Massor-1	B/S	2.0	28.30	14.15
	Lentil	Kota Massor-2	B/S	1.0	18.45	18.45
	Lentil	RLG-5	B/S	2.0	28.0	14.0
	Lentil	RLG-5	TFL	3.90	63.50	16.28
				8.90	138.25	15.53
4.	Wheat	Raj-4238	B/S	7.45	253.0	33.95
5.	Barley	RD-2035	TFL	1.0	32.0	32
	Barley	RD-2899	B/S	1.0	33.0	33
				2.0	65.0	32.5
6.	Fennel	RF-125	TFL	2.75	18.50	6.72
7.	Fenugreek	Expt.	-	-	0.25	
8.	Gram	Expt.	-	-	0.70	
9.	Black Wheat	Expt.	-	-	3.90	
Total =					738.58	

### Seed Production & Income Generation at ARSS Kumher

S.No.	Year	Total Production (Qt)	Gross Income (Rs)	Expenditure (Rs)	Net Income (Rs)
1.	2016-17	386.46	3778848	2547281	1231567
2.	2017-18	459.59	2094558	986813	1107745
3.	2018-19	780.00	1973324	1108588	864736
4.	2019-20	738.60	4996841	1469202	3527639
5.	2020-21	714.23	4625210	1403415	3221795

6.	2021-22	567.98	6516609	1891347	4625262
7.	2022-23	738.58	5036018	1635680	3400338









Press News of ARSS Kumher



राजस्थान पत्रिका  
भरतपुर, शुक्रवार, 10 फरवरी, 2023

बीजोत्पादन कार्यक्रम का किया निरीक्षण

पत्रिका न्यूज़ नेटवर्क patrika.com  
भरतपुर. कृषि अनुसंधान उपकेन्द्र कुम्हेर पर सरसों की राधिका किस्म के बीजोत्पादन कार्यक्रम का सक्षम समिति की ओर से गुरुवार को निरीक्षण किया गया।  
केन्द्र प्रभारी डॉ. उदयभान सिंह ने बताया कि निरीक्षण टीम में बीज प्रमाणीकरण अधिकारी राजेश फौजदार, प्रभारी बीज उत्पादन राष्ट्रीय बीज निगम मुकेश मीना, सहायक प्रोफेसर पादप प्रजनन एवं अनुवांशिकी कृषि महाविद्यालय

कुम्हेर जोगेन्द्र सिंह व फार्म मैनेजर रमाकान्त गुप्ता शामिल थे। टीम ने निरीक्षण के दौरान राधिका किस्म के अलावा अन्य किस्म के पौधों को उखाड़ने के निर्देश दिए, ताकि किसानों को शुद्ध बीज उपलब्ध हो सके। केन्द्र प्रभारी डॉ. उदयभान सिंह ने बताया कि जो किसान स्वयं बीज बनाना चाहते हैं, उन्हें अपने खेत से इच्छित किस्म के अलावा अन्य पौधों को उखाड़ देना चाहिए। यह कार्य विशेषज्ञ की देखरेख में कराने से शुद्ध बीजोत्पादन के अच्छे परिणाम आते हैं।

राजस्थान पत्रिका  
भरतपुर, मंगलवार, 14 फरवरी, 2023

विद्यार्थियों को दी चना के शुद्ध बीजोत्पादन की जानकारी



भरतपुर. छात्रों को बीजोत्पादन की जानकारी देते हुए।

भरतपुर. श्रमवीण उद्यमिता कृषि विकास योजनागत कृषि महाविद्यालय कुम्हेर के विद्यार्थियों को चना के शुद्ध बीजोत्पादन की जानकारी दी गयी।  
महाविद्यालय के डॉ. उदयभान सिंह ने बताया कि कृषि अनुसंधान उपकेन्द्र कुम्हेर के प्रमुख प्रयोग के दौरान चना की जीएनजी 2144 व सीएसजे 515 किस्मों की विभिन्न लक्षणों के आधार पर पहचान करायी गयी। कुम्हेर पर किस्म पहचान के लिए सरसों, चना, मधुर, मैथी, सौंभ आदि फसलों का क्रम केफेटरिय फली आते हैं जबकि दोनो किस्मों के फूल का रंग लाल ही होता है अतः शुद्ध बीजोत्पादन के लिए एफएल, दोहरा फूल अथवा लाल व सफेद रंग के फूल के आधार पर किस्म की पहचान कर भिन्न किस्म के पौधों को उखाड़ देना चाहिए। डॉ. रामनिवास शर्मा ने बताया कि चना फसल में स्वप्रमाण होता है। किसान स्वयं के खेत से भिन्न किस्मों के पौधे उखाड़कर शुद्ध बीजोत्पादन कर सकते हैं। कृषि महाविद्यालय चना की जीएनजी 2144 किस्म में दोहरे फूल वाली आती है जबकि सीएसजे 515 किस्म एकल फूल वाली आती है जबकि दोनो किस्मों की लगाया गया है।





## भुसावर में अगले सत्र से शुरू होगा कृषि विश्वविद्यालय : डॉ बलराज

कृषि विश्वविद्यालय कुल्पति ने कृषि विभाग के कृषि क्षेत्र के विकास के लिए भुसावर में अगले सत्र से शुरू होगा कृषि विश्वविद्यालय : डॉ बलराज



कृषि विश्वविद्यालय कुल्पति में कृषि विभाग के कृषि क्षेत्र के विकास के लिए भुसावर में अगले सत्र से शुरू होगा कृषि विश्वविद्यालय : डॉ बलराज

## भरतपुर समाचार

### हमारा समाचार

# कुलपति प्रोफेसर बलराज सिंह ने किया कृषि महाविद्यालय कुम्हेर का सघन दौरा

भरतपुर, 28 मई 2023। कुलपति प्रोफेसर बलराज सिंह ने कृषि महाविद्यालय कुम्हेर का सघन दौरा किया।



कुलपति प्रोफेसर बलराज सिंह ने कृषि महाविद्यालय कुम्हेर का सघन दौरा किया।

कुलपति प्रोफेसर बलराज सिंह ने कृषि महाविद्यालय कुम्हेर का सघन दौरा किया।

## कुलपति प्रो. बलराज सिंह ने कृषि महाविद्यालय का किया निरीक्षण

कुलपति प्रो. बलराज सिंह ने कृषि महाविद्यालय का किया निरीक्षण।

## जयपुर मिड-डे टाइम्स

जयपुर रविवार, 28 मई 2023

### कुलपति प्रोफेसर बलराज सिंह ने किया कृषि महाविद्यालय कुम्हेर का सघन दौरा

कुलपति प्रोफेसर बलराज सिंह ने कृषि महाविद्यालय कुम्हेर का सघन दौरा किया।



कुलपति प्रोफेसर बलराज सिंह ने कृषि महाविद्यालय कुम्हेर का सघन दौरा किया।

## कुलपति प्रोफेसर बलराज सिंह ने किया कृषि महाविद्यालय कुम्हेर का सघन दौरा

कुलपति प्रोफेसर बलराज सिंह ने कृषि महाविद्यालय कुम्हेर का सघन दौरा किया।



कुलपति प्रोफेसर बलराज सिंह ने कृषि महाविद्यालय कुम्हेर का सघन दौरा किया।

## ताओं गन्त

ताओं गन्त... कुलपति प्रोफेसर बलराज सिंह ने कृषि महाविद्यालय कुम्हेर का सघन दौरा किया।

## ना की स्वीकृति की मांग को श पाउने ने दिया मांग पत्र

ना की स्वीकृति की मांग को श पाउने ने दिया मांग पत्र।

## भुजीओं

भुजीओं... कुलपति प्रोफेसर बलराज सिंह ने कृषि महाविद्यालय कुम्हेर का सघन दौरा किया।

## को गिरफ्तार करने

को गिरफ्तार करने... कुलपति प्रोफेसर बलराज सिंह ने कृषि महाविद्यालय कुम्हेर का सघन दौरा किया।

## ‘सफल कृषि के लिए व्यवहारिक ज्ञान जरूरी’

भरतपुर, 22 जुलाई 2023। ‘सफल कृषि के लिए व्यवहारिक ज्ञान जरूरी’

## कृषि में सैद्धांतिक ज्ञान काफी नहीं, व्यवहारिक ज्ञान भी जरूरी : उदयभान

कृषि में सैद्धांतिक ज्ञान काफी नहीं, व्यवहारिक ज्ञान भी जरूरी : उदयभान

## मणि को ट

मणि को ट... कुलपति प्रोफेसर बलराज सिंह ने कृषि महाविद्यालय कुम्हेर का सघन दौरा किया।

