

## Impact and dissemination of HYV garlic (G-282)

SUBHASH KATARE AND M.K. SHRIVASTAV

A field trial conducted by K.V.K., Ratlam on Impact and dissemination of HYV Garlic G-282 in KVK operating area. It is observed that the farmers of Patidar, Dhakad and Aanjna community adopted the technology easily in comparison to other community farmers. Similarly adoption technology was more an educated farmer than uneducated farmers. Resource rich farmer take the risk an adopt new technology faster than the resource poor farmers. Loss in technology in G-1, G-2 and Ex- trainees have direct contact with KVK almost adopt all the components of technology and the adoption technology loss is minimum. All the groups have 100% adoptions in HYV seed but in other components, their was loss of technology between 16-50 %. While in case of it is transfer from Ex-trainee to G-II the loss in technology is maximum in case of spacing component *i.e.* 50.91 % followed by Seed treatment (34.54 %), Proper plant protection (34.54%), Seed rate (29.10%) balance fertilization (20.00 %) and Time of sowing (16.37%).

In India n Agriculture, multiplication ,distribution and availability of good quality seed is crucial to accelerated food production. Good seed is the basis of good crop. Only 10% of the quality seed of varieties recommended by the regional Agriculture Research Station (RARS) is being supplied by different agencies to farming community. Though traditionally seed never seen as an external Input. Technological developments and followed market changes made the farmer dependent on external source for seed. Garlic is one of the important crop of spices in Ratlam District and cultivated in 5425 ha. Area and production was 83360 M.T. in year 2005-2006. Hence great demand of seed .Small and marginal farmers who cannt afford to buy seeds from the market because they do not have the resources to procure them. Farmer are investing about 30-40% of the total cost of cultivation on seed alone. Purchasing seed on

credit it making debtor for all time. Hence the concept of Own Seed Development enable the procure their own seed for next season and reduce cost of cultivation. For this purpose Krishi Vigyan Kendra ,Jaora Dist. Ratlam initiate Impact and Dissemination of HYV Garlic-G-282 Since 2001-2002 in KVK operating area.

### METHODOLOGY

In the year 2001-02 under FLD Other than Oilseed and Pulses. programme crop Garlic Variety G-282 was taken to study the yield by use of optimum dose of N.P.K. fertilizer. The study was conducted at 10 farmers field in the villages *viz.*, Kalukheda, Panchewa, Riywan, Chiklana and Lasudiyathi. This variety G-282 seed was obtained from National Horticulture Board (NHB). The seed was multiplied at demonstrational and instructional farm of KVK. Out of 5 quintals seed 3 quintal seed was used for FLD programme and 2 quintal seed was used for further multiplication at KVK and farmers field.

Garlic G-282 being HYV and having big size of clove and bulb in comparative to local varieties. Hence this variety become popular among the farmers. Since than area and no. of farmers, adopting the technology are increasing every year. In starting it was grown by 10 FLD farmers (KVK ex trainee) in 5 Villages in area 0.1 hectare.

In the intial stage in all 10 farmers received training at KVK for Garlic cultivation under FLD Garlic programme and are practicing the technology. In order to study the gap in technology adoption the information was collected in the prescribed format ( information collection model) from the Ex - trainees and follow up farmers.

**Technology transfer:**

**Technology provide to the user:**

High yielding variety - G-282

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- (HYV)
- Seed treatment - By dipping method with Bavistin 3 gm /lt water
  - Seed rate - 3 quintal per hectare.
  - Spacing - 15x 7.5 cm.
  - Time of sowing - 10.2001
  - Balanced fertilization - N-125, P-60, K-100 kg./ha.
  - Proper plant protection - Metasystox @ 800 ml/ha. Dithan M-45 @ 1 kg/ha.

**Adoption of technology:**

It is observed that the farmers of Patidar, Dhakad and Aanjna community adopted the technology easily in comparison to other community farmers . Similarly adoption technology was more an educated farmer than uneducated farmers . Resource rich farmer take the risk an adopt new technology faster than the resource poor farmers, who decide to adopt the technology after watching the performance at resource rich farmers level. Further it was also notice that the technology which is easy to operate affective and in which input is made available to than is widely adopted.

**Impact of technology intervention:**

Garlic G-282 being HYV and having big size of clove and bulb in comparative to local varieties. Hence this variety become popular among the farmers. Since than area and no. of farmers, adopting the technology are increasing every year. In starting it was grown by 10 FLD farmers ( KVK ex trainee) in 5 Villages in area 0.1 hectare. Now at present this crop is growing in 12 hectare area by 55 farmers in 21 villages.

**Table 1 : Impact of technology intervention (Area production and average yield of G-282)**

Category	EX trainee	G-I	G-II
No. of farmers	10 (05)	27 (14)	55 (21)
Total area in hectare	1.0	5.2	12.0
Total production in q	71	340.20	732.0
Average production q/ha	71	65	63
Increase in yield over local check/ha.	16	10	08
Increase in yield %	29.09	18.18	14.54

Average yield of local check 55 Quintals per hectare

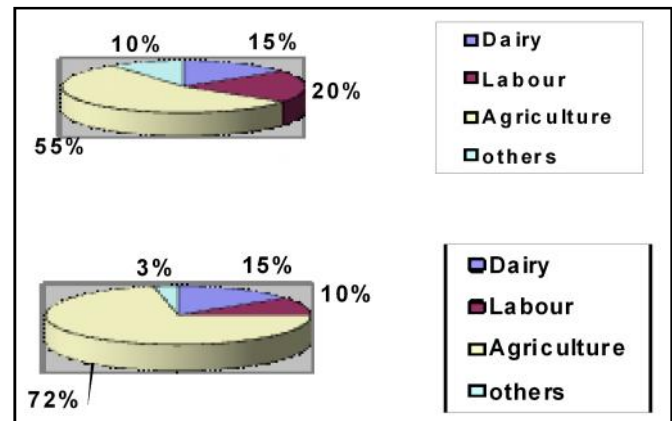
It was observed that increase in % yield in case of Ex-trainee 29 % , G-I 18.18 % and G-II 14.54 % in comparison to local varieties ( Amleta etc. ).andan average increase in income of Rs. 8000-10000 per hectare. But most of the farmer sold the crops as a seed and gain

higher income per hectare *ie.* Rs. 15000-20000 per hectare.

When the livelyhod analysis was done it was notice that overall income increase by 15-20% from agriculture in the village where study was conducted.

**Lively hood analysis:**

The impact was seen in the farm of overall improvement in household. Family based socio-economy development the various from farmer to farmer and family to family according to their needs :



**Fig. 1 : Lively hood analysis**

**Spent money on priority basis :**

- Increase in source of irrigation by joining tublwell with the dugwell.
- Establish additional enterprice. One hectare pomegranate orchard.
- Purchase of farm implements such as spray machine
- Addition in house hold goods, Telephone.

**Horizontal spread of the technology:**

The information collected from farmers of different groups suggest that their was loss in technology in G-1, G-2. Ex- trainees have direct contact with KVK almost adopt all the components of technology and the adoption technology loss is minimum . All the groups have 100% adoptions in HYV seed but in other components , their was loss of technology between 16-50 % . While in case of it is transfer from Ex-trainee to G-II the loss in technology is maximum in case of spacing component *ie.* 50.91 % followed by Seed treatment (34.54 %), proper plant protection (34.54%), Seed rate (29.10%) balance fertilization ( 20.00 %) and Time of sowing ( 16.37%). These figure are better in case of G-I as they are in direct contact with ex-trainees.

**Table 2 : Horizontal spread of the technology**

No. of farmers	10 ( 5 )		27 ( 14 )		55 ( 21 )	
Technology	Ex- trainees		G-I		G-II	
Seed HYV	10	100%	27	100%	55	100%
Seed treatment	10	100%	19	70.37 %	36	65.45%
Seed rate	10	100%	21	77.77%	39	70.90%
Spacing	10	100%	14	51.85 %	27	49.09%
Time of sowing	10	100%	23	85.18%	45	83.63 %
Balance fertilization	10	100%	22	81.48%	44	80.00%
Proper plant protection	10	100%	20	74.07%	36	65.45%

**Table 3 : Technology disseminated by ex-trainees to G-I**

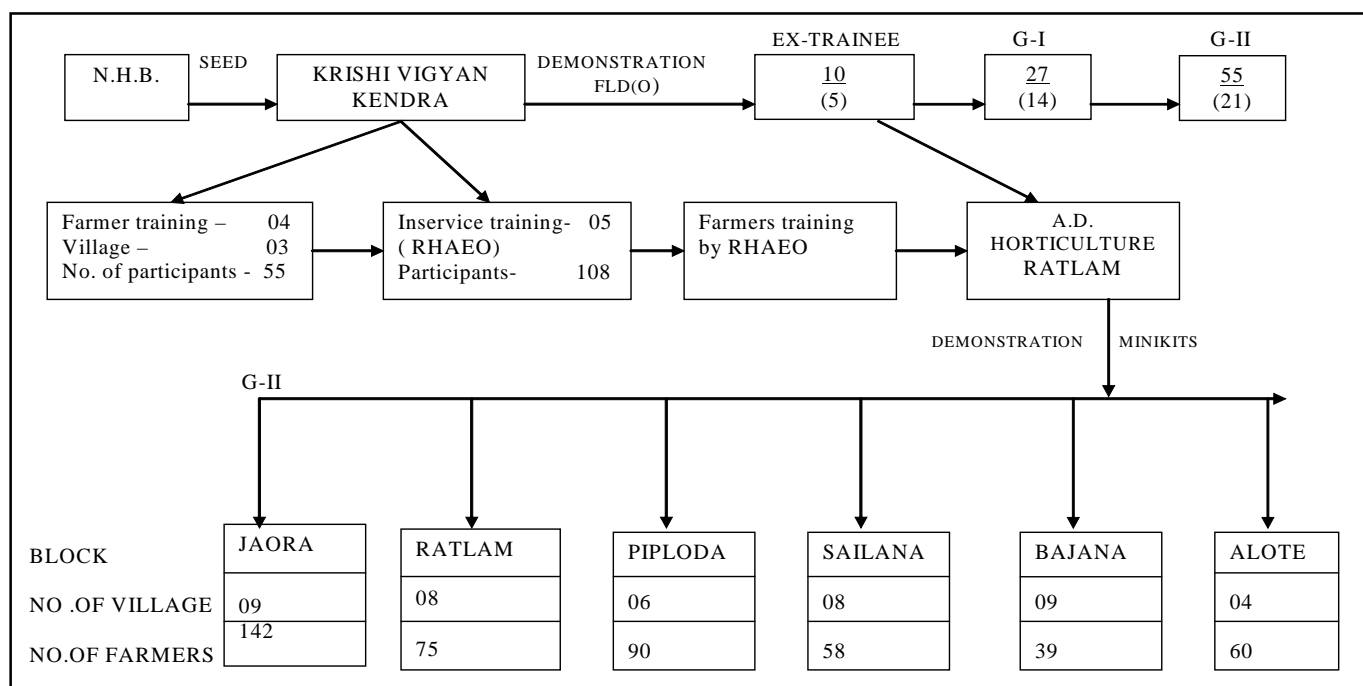
Sr. No.	Ex-trainee		G-I Farmers		Total
	Name of the village	No. of Farmers	Same village	Outside village	
1.	Kalukheda	02	03	04	07
2.	Riyawan	02	02	06	08
3.	Chiklana	01	01	01	02
4.	Pancheva	03	04	03	07
5.	Lasudiyathi	01	00	03	03
	Total	10	10	17	27

**Distance and direction and use of technology:**

The technology was given to the users 10 farmers of 5 villages around KVK Kalukheda having radius 8-10 km under F.L.D. programme. Further from this 10 farmers the production of G-282 Garlic was spread to direct contact farmers *i.e.* G-I in an around of this villages about radius 20-30 kms in 14 villages. Three direct contact farmers took the seed to the Ujjain district *i.e.* 110 kms as G-I farmers. The production from G-I farmers was further disseminated among 27 villages and 55 farmers having radius of more than 100kms. KVK along with ex-trainees provided G-282 seed to the A.D. (Horticulture), Ratlam district for distribution to 425 farmers of block Ratlam, Sailana, Bajana, Piploda, Jaora and Alote as minikit under integrated Garlic project.

**G-I:**

After watching the technology used by the 10 ex-trainees, 27 farmers adopted the technology. 10 farmers the same village and 17 farmers from out side 9 villages having radius from 5 to 110 km as few farmers took the seed to near by Ujjain district.



**Fig. 2 : Pathway (path-analysis) for spread of technology**

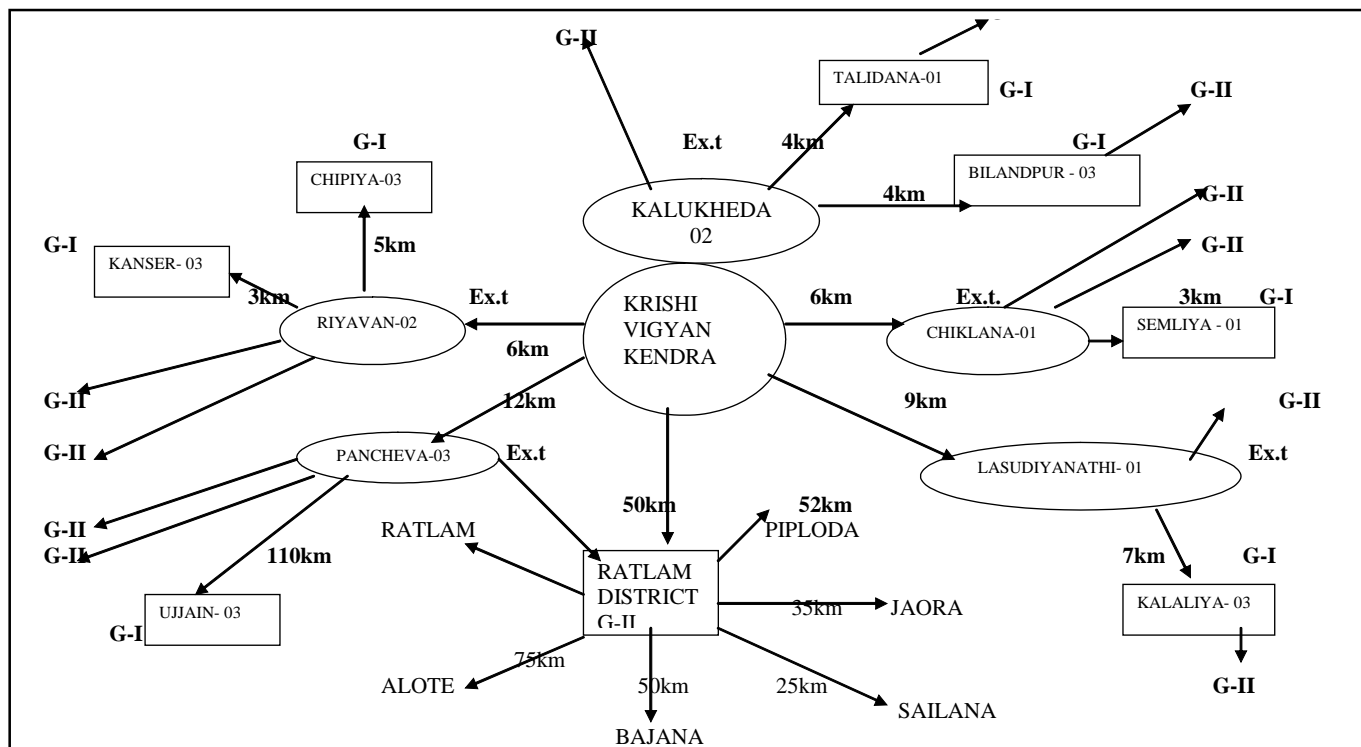


Fig. 3 : Horizontal spread of the technology

**Inservice training:**

For improve practices of Garlic cultivation, In-service training was organized 5 training in different blocks of Ratlam district. In which 108 R.H.A.E.O. participate. After taking training organize they organized farmers training at village level where the Garlic G-282 was distributed.

KVK obtained G-282 seed from N.H.B. and multiply at KVK farm. This seed was used under F.L.D. programme to ex-trainees. From Ex-trainees it was distributed to G-I and G-II farmers and to Horticulture department for distribution as minikits.

**G-2:**

About 55 farmer’s belongs to 21 villages of Piploda and Jaora blocks received seed of G-282 from G-1 farmers and adopted the technology. The average distance covered in dissemination of technology is around 60-80 km few contact farmers also took the seed of Garlic out side of Ratlam.

**Economic development:**

In order to study the economic gain by use of technology a lively hood analysis of Shri Ramesh Chandra Rathore who is one of the Garlic FLD farmer was done  
 Name of the farmer - Shri Ramesh Chandra Rathod

- Father’s name - Shri Laxmi Ram ji Rathod
- Postal address - Village and post – Pancheva, Block – Piploda District- Ratlam (MP) Phone no. 07414 286390
- Caste - Rathod
- Religion - Hindu
- Education - V<sup>th</sup> passed
- No. of family members - 2 + 2 = 4
- Holding size - 2 hactare ( irrigated land )
- Cropping system - Kharif Rabi Summer Soybean Wheat Vegetable Urid Gram Garlic
- Source of income - Before introduction of G-282 from Agriculture in cropping system.

By introduction of G-282 seed with full package in cropping system Shri Ramesh Chandra Rathod increased his total income from Rs. 98000.00 to Rs. 151600.00 i.e. difference of Rs. 53600.00.

Sr. No.	Crop	Variety	Area (ha)	Approximate yield (quintal)	Approximate income
01.	Garlic	Local (Amleta)	00.50	30.00	30000.00
02	Garlic	G-282	00.50	38.00	83600.00

<b>Economical development</b>					
Sr. No.	Crop	Variety	Area (sq/ha)	Approximate yield (quintal)	Approximate income
<i>Kharif</i>					
1.	Soybean	JS-335/71 05	1.50	30.00	30000.00
2.	Urid	-	0.50	02.00	2000.00
<i>Rabi</i>					
1.	Wheat	Lok-1/WH-147	01.00	40.00	24000.00
2.	Garlic	Local (Amleta)	00.50	30.00	30000.00
3.	Gram	Ujjain-21	00.50	06.00	6000.00
<i>Summer</i>					
1.	Vegetables okra/chilli	-	0.40	3000 kg.	6000.00
Total income					98000.00

**Difference in income:**

By selling Garlic (G-282) as seed @ Rs. 22.00/kg. Rs. 53600.00

Since last 2 years farmer is growing G-282 and selling as seed and getting higher income the additional excess money is being utilized by the farmer as follows :

- He establish Pomegranate orchard in 0.4 hectare and
- Develop irrigation facilities by connecting One well to the tubewell by under ground pipe line.

**Cost of cultivation-crop-garlic (G-282):**

*Field operation with planking:*

(4 ploughing)	@ Rs. 400/ha/pl	1600.00
Chack basin	@ Rs. 50/lb/day	500.00
system 10 labour		

*Soil treatment:*

PSB culture 2 kg/	@ Rs. 50/kg.	100.00
Trichoderma	@ Rs. 100/kg.	150.00
1.5 kg		
Lindane 0.65%	@ Rs. 10/kg.	250.00
DP 25 kg		

*Seed:*

600 kg.	@ Rs. 50/kg.	30000.00
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*Seed treatment (Dipping method):*

Bavistin 500 gm.	@ Rs. 600/kg.	300.00
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*Manuar's:*

FYM 25 tone	@ Rs.300/tone	7500.00
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*Fertilizer:*

Urea 271 kg	@ 484.Q.	1312.00
S.S.P. 375 kg	@ 288/Q.	1080.00
M.O.P. 166 kg	@ 446/Q.	740.00
Labour charge	@ Rs. 50/lb/day	200.00
4 labour		

*Sowing (planting):*

Labour charge	@ Rs. 50/lb/day	3500.00
70 labour		

Irrigation	@ Rs. 500/irri.	5000.00
no. 10	with labour	
<i>Weeding (3):</i>		
75 labour	@ Rs. 50/lb/day	3750.00
<i>Plant protection (three times spray):</i>		
Metasystox 3 litre	@ Rs. 400/ltr.	1200.00
Dithane M-45	@ Rs. 250/kg.	750.00
4.5 kg.		
Labour charge	@ Rs. 100/lb/day	600.00
6 labour		
<i>Harvesting (Digging Method):</i>		
30 labour	@ Rs. 50/lb/day	1500.00
<i>Grading:</i>		
10 labour	@ Rs. 50/lb/day	500.00
Supervision charge (5month)	@ Rs. 600/month	3000.00
Others		<u>8000.00</u>
Total :		61832.00
Bank interest		<u>6183.00</u>
Total input cost		<u>68015.00</u>
Production 71 q/ha. Gross income		156000.00
Net income = 156000.00 - 68015.00=		88185.00

**Table 4 : Farmer list of ex-trainees**

Sr. No.	Name of the farmer	Village	Hactare
1	Shri Ramesh chandra	Panchewa	0.1
2.	Shri Nanalal	Riyavan	0.1
3.	Shri Mataprasad	Kalukheda	0.1
4.	Shri Badrilal	Chiklana	0.1
5.	Shri Modilal	Kalukheda	0.1
6.	Shri Mangilal	Chiklana	0.1
7.	Shri Nathulal	Chiklana	0.1
8.	Shri Omprakash	Riyavan	0.1
9.	Shri Mukesh	Chiklana	0.1
10	Shri Mohanlal	Kanser	0.1

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Authors' affiliations

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