# Extent of Adoption of Recommended Kidney Bean Production Technology

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## ABSTRACT

*Pulses account for about one-fifth of acreage under food grains and about one-twelfth of their production. Their share in the total cropped area as well as in the value of output of principal crops is also about one-twelfth. The production trend of pulses clearly indicates that the area has either been stagnated or declined under pulses but the production level has increased by about 14 per cent with the productivity increased of 10 per cent. Among various pulses, Kidney bean is only grown in Rajasthan and Gujarat during the rainy season. [(Rao and Sharma, (1995)]. In Gujarat there are approximately total 6 to 7.5 lakh hectares area cultivated in Kharif pulses crops, among them 50 % area i.e 3.5 to 4 lakh hectares cultivated of pigeon pea, and 1 to 1.75 lakh hectares of green gram, 1 to 1.4 lakh hectare of urad, kidney bean cultivated only 30,000 to 50,000 hectares which is lower cultivation as compare to the main kharif pulses crops. [ Solanki, (2009)], In Gujarat kidney bean mostly cultivated in Kutch, Surendranagar, Banaskantha, Bhavnagar, Mahesana, Patan, Kheda, Rajkot districts. In Gujarat, 50 % area of Kidney bean cultivated. In the district of Banaskantha the area,production and productivity were 5100 ha and 3200 M.T. and 633 kg/ha recorded in the year 2010-11, respectively. Ex-post-facto research design was applied for this study. The multi-stage random sampling technique was used in the study. Considering the area and production of Kidney bean crop in North Gujarat Agro climatic Zone, Banaskantha district occupies the highest area (5100ha) and production (3200 MT) of Kidney bean, so it was purposively selected. Tharad and Vav talukas were selected as highest area under Kidney bean cultivation. Five villages from each taluka and approximately 20.00 per cent of the respondents were selected using proportionate random sampling technique for making a sample size of 120 respondents. To measure the extent of adoption of recommended productin technology of Kidney bean, teacher made test was developed. The farmers were asked to indicate the practices, they adopted in their field. Adoption of one technique was assigned one score and zero score was given for non-adoption. Majority of the respondents (63.33 per cent) had medium extent of adoption of recommended production technology of Kidney bean. No-cost and low cost inputs in the package of practices were obtained more mean score, means those were adopted more by the Kidney bean growers. Age, education, land holding, annual income, sources of information utilizations, scientific orientation and level of knowledge of Kidney bean growers had established positive and significant association with the extent of adoption of scientific production technology of Kidney bean.*

*Keywords:* Adoption, Kidney bean production technology

## INTRODUCTION

Pulses account for about one-fifth of acreage under food grains and about one-twelfth of their production. India grows the largest variety of pulses on the largest area in the world covering about 24 million hectares. [Rao and Sharma. (1995)]

Kidney bean (*Vigna aconitifolia L.*) is one of the important legumes widely grown in arid and semi arid parts of the country. It is a minor kharif pulse crop and considered as one of the most drought tolerant among grain legumes. Kidney bean is good source of protein (24%) and is high in dietary fibers. The lower productivity of this crop is attributed to several factors viz., growing under moisture

stress conditions, marginal lands with very low inputs and without pest disease management, non availability of high yielding varieties and late sowing.(Jakhar et. al 2012).

In India, major Kidney bean production states are Rajasthan, and Gujarat. Kidney bean is cultivated mainly as rainy crop. It is also frequently grown as a mixed crop along with cereals like  bajara, sorghum, maize, ragi  and sometimes  also  with cotton  and  sesame.

In Gujarat, Kidney bean cultivated  only 30,000 to 50,000 hectares which is lower cultivation as compare to the main  kharif  pulses crops. [ Solanki, (2009)]. In Gujarat kidney bean mostly cultivated in Kutch, Surendranagar, Banaskantha, Bhavnagar, Mahesana, Patan, Kheda, Rajkot districts. In Gujarat, 50 %  area of Kidney bean cultivated. i.e. 20-25 thousand hectares covers only in Kuchchh district. There is no ensurance of production due to uneven or less rain fall therefore kidney bean is one of the risky pulse crop. But, Kidney bean possess a specific position in regard to nutritional  value in human diet, Hence it is a most important pulse crop, although farmers are not inspired in any way to its cultivation.[ Solanki (2009)]. In Gujarat state production of Kidney bean were 13,500 metric tones and area 44100 ha with productivity of 306 Kg/ha in the year 2006-07, area and production of Kidney bean were respectively 47000 ha. and 28,900 metric tonnes with productivity of 581 Kg/ha in the year 2007-08. (Anonymous-2008-09). In the district of Banaskantha the area and production were 5900 ha. and 1000 metric tones, respectively in year 2008-09 with productivity of 170 kg/ha. While during the year 2010-11, the area, production and productivity were 5100 ha and 3200 M.T. and 633 kg/ha recorded, respectively.

In the district of Banaskantha there are 12 talukas among  them Tharad and Vav have highly cultivated area of Kidney bean. During the year 2009-10, the area of Kidney bean was 2800 ha and 2400 ha recorded in Tharad and Vav taluka, respectively.

**OBJECTIVES**

1   To find out the extent of adoption of recommended Kidney bean production technology among the Kidney bean growers.

2   To ascertain the association between selected Personal, Socio-economic, Communication and Psychological attributes  of Kidney bean growers and their extent of adoption  of  recommended  Kidney bean production technology.

**METHODOLGY**

The present study was conducted in the Banaskantha district of the North-Gujarat Agro climatic Zone of Gujarat state with the intension to measure extent of adoption the various aspects of recommended production technology of Kidney bean by the farmers. Ex-post-facto research design was applied for this study. The multi-stage random sampling technique was used in the study. Considering the area and production of Kidney bean crop in North Gujarat Agro climatic Zone, Banaskantha district occupies the highest area (5100ha) and production (3200 MT) of Kidney bean, with 633 kg/ha productivity,  so it was purposively selected. (Anonymous, 2010-11). Kidney bean is grown in almost all the parts of Banaskantha district, out of which Tharad and Vav talukas were purposively selected for the study as they occupy maximum area under Kidney bean crop than other talukas of the district. A comprehensive list of all the villages of selected talukas, where Kidney bean crop is grown was prepared by the investigater in consultation with the personnel of extension department. From the list, five villages from each taluka were selected randomly, thus total 10 villages were selected randomly. In such away, out of 330 Kidney bean growers, total 66 respondents from Tharad taluka and out of 270 Kidney bean growers, total 54 respondents from Vav taluka were selected, making a sample of 120 Kidney bean growers for getting the information.

To measure the extent of adoption of recommended production technology of Kidney bean, teacher made test was developed.The farmers were asked to indicate the practices, they adopted in their field. Adoption of one technique was assigned one score and zero score was given for non-adoption. Then, final score was calculated by simple addition of all the scores obtained. Using the procedure suggested by Sengupta (1967), the adoption quotient for each respondent was calculated to measure his adoption of improved production technology of Kidney bean. The formula for calculating adoption quotient is as under.

$$\text{Adoption quotient} = \frac{\text{Number of techniques used}}{\text{Number of production technology}} \times 100$$

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**RESULTS AND DISCUSSION**

**The extent of adoption of recommended technology of kidney bean growers.**

Adoption is a decision making mental process to continue use of an innovation. In this study it means acceptance of full use of recommended production technology by Kidney bean growers. The respondents were classified into three categories on the basis of + S.D. from the Mean (X). The classification in this respect is presented in Table1.

**Table 1 : Adoption level of kidney bean growers**

n= 120

| Sr. No. | Extent of adoption quotient | Number | Per cent |
|---|---|---|---|
| 1 | Low adoption quotient (Up to 61.81score) | 29 | 24.17 |
| 2 | Medium adoption quotient (between 61.82 to 88.61 score) | 76 | 63.33 |
| 3 | High adoption quotient (above 88.61score) | 15 | 12.50 |

It is clear from the Table 1 the majority of the respondents (63.33 per cent) had medium level of overall adoption quotient regarding recommended production technology of Kidney bean, followed by 24.17 per cent and 12.50 per cent of the respondents had low and high extent of overall adoption quotient , among the Kidney bean growers, respectively.

The probable reason might be that there is growing awareness about the advantage of the pulses crops production due to value addition and gaining popularity day by day among the farming community.

**Practice wise extent of adoption of kidney bean growers**

Table 2 state that among the different recommended Kidney bean production technologies 87.50 per cent mean score of selection of soil was obtained by the Kidney bean growers and ranked first. Preparation of land (67.50 per cent), inter cropping (60.83 per cent), gain yield (54.17 per cent), sowing method (47.50 per cent), sowing time and distance (46.67 per cent), method of harvesting (43.75 per cent), weeding(29.17 per cent), inter- culturing (28.33 per cent), seed rate (23.33 per cent), recommended varieties (21.94 per cent) and use of basal fertilizer(18.33 per cent) and ranked second to twelfth, respectively.

From the above discussion, it can be concluded that considering the no-cost and low cost inputs in the package of practices were obtained more mean score, means those were adopted more by the Kidney bean growers.

**Table 2 : Practice wise adoption of kidney bean growers about recommended production technology of kidney bean.**

n = 120

| Sr. No. | Recommended practices | Total maxi-mum score | Total obtai-ned score | obtai-ned mean score | Rank |
|---|---|---|---|---|---|
| 1 | Selection of Soil | 120 | 105 | 87.50 | I |
| 2 | Preparation of land | 240 | 162 | 67.50 | II |
| 3 | Recommended varieties | 360 | 79 | 21.94 | XI |
| 4 | Seed rate | 240 | 56 | 23.33 | X |
| 5 | Sowing method | 240 | 114 | 47.50 | V |
| 6 | Sowing time and distance | 480 | 224 | 46.67 | VI |
| 7 | Seed treatments | 1200 | 00 | 00 | |
| 8 | Intercropping | 360 | 219 | 60.83 | III |
| | Basal fertilizer | 480 | 88 | 18.33 | XII |
| 9 | Inter-culturing | 120 | 34 | 28.33 | IX |
| 10 | Weeding | 120 | 35 | 29.17 | VIII |
| 11 | Plant protection | 2400 | 00 | 00 | |
| 12 | Harvesting | 960 | 420 | 43.75 | VII |
| 13 | Yield / Productivity | 120 | **65** | **54.17** | IV |

**Association between the selected attributes of kidney bean growers and their extent of adoption**

The action of individual farmers is governed by personal, socio-economical, communicational and psychological variables with their level of knowledge and extent of adoption of recommended Kidney bean production technology were worked out by calculating coefficient correlation. The results in this regard are depicted as under in Table 3.

**Table 3 : Association between the attributes of kidney bean growers and their extent of adoption of recommended production technology of kidney bean.**

n = 120

| Sr. No. | Independent Variables | Correlation-Coefficient ('r' value) |
|---|---|---|
| 1 | Age | 0.1926* |
| 2 | Education | 0.2447** |
| 3 | Size of family | 0.0173 (NS) |
| 4 | Social participation | 0.1899* |
| 5 | Land holding | 0.3002** |
| 6 | Annual income | 0.2518** |
| 7 | Sources of information utilization | 0.1912* |
| 8 | Scientific orientation | 0.2041* |
| 9 | Level of knowledge | 0.6468** |

NS = non significant    Table value at 0.05 level= 0.174

Table value at 0.01 level= 0.230

* = significant at 0.05 level  ** = significant at 0.01 level

It is apparent from the data presented in the Table 3 that the age (0.1926*), social participation(0.1899*), sources of information utilization (0.1912*) and scientific orientation (0.2041*) of the Kidney bean growers had their positive and significant correlation with theirextent of the adoption of recommended production technology of Kidney bean. While the education (0.2447**), land holding(0.3002**) , annual income (0.2518*) and level of knowledge (0.6468**) of the Kidney bean growers had established positive and highly significant correlation with their extent of  the adoption of recommended production technology of  Kidney bean.

**CONCLUSION**

It could be concluded that just near to two-thirds of  the respondents (63.33 per cent) had medium extent of adoption of recommended production technology of Kidney bean. No-cost and low cost inputs in the package of practices were obtained more mean score, means those were  adopted more by the Kidney bean growers. The independent variables viz., age, education. Land holding, annual income, sources of information utilizations, scientific orientation and level of knowledge had establish positive & significant association with the extent of adoption of recommended production of technology of Kidney bean. The variable viz., size of family failed to establish any significant association with the extent of adoption of recommended production technology of Kidney bean.

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