

# ESTIMATION OF RANK BASED QUOTIENT (RBQ) FOR SWOT ON PRACTICING SOYBEAN PRODUCTION TECHNOLOGIES IN THE NORTHERN TELANGANA ZONE

**K. MADAN MOHAN REDDY AND M. JAGAN MOHAN REDDY**

Department of Agricultural Extension,

College of Agriculture, PJTSAU, Rajendranagar, Hyderabad - 30, Telangana, INDIA

e-mail: madhanmohanreddy26@gmail.com

## KEYWORDS

Soybean  
Production technologies  
Rank Based Quotient  
(RBQ)  
SWOT

## Received on :

05.11.2015

## Accepted on :

22.01.2016

**\*Corresponding  
author**

## ABSTRACT

The present study was conducted on soybean production to estimate the Rank Based Quotient (RBQ) for SWOT on practicing soybean production technologies in Adilabad, Nizamabad and Karimnagar districts of Northern Telangana zone of Telangana state. The major RBQ-strengths are less number of irrigations required during the crop period, JS335 is high yielding variety and fixation of the atmospheric nitrogen in to the soil by the soybean crop due to its leguminous nature. The major RBQ-weaknesses JS335 is a semi-dwarf variety and low seed viability, lack of suitable high yielding varieties to the zone other than JS335. Low incidence of pest and diseases in line sowing followed by low cost of plant protection, harvest indices are easy to understand and practice are top three RBQ-opportunities in practicing soybean production technologies. The major RBQ-threats are yield reduction in *rabi* season followed by more soil erosion in red soils due to heavy rains, lack of varieties suitable for *rabi* season.

## INTRODUCTION

The opportunity to increase soybean yields is at the fingertips of every soybean farmer in India. It begins with understanding the needs of the soybean, the environment it prefers, adopting the best agronomic practices and stacking technology to optimize yield. Improving soybean production on your farm requires a systematic approach. Make sure you account for the entire production system - from seed selection to soil preparation, to planting and weed and pest control, all the way through harvesting - all in one continuous loop of possible decisions you can make. You must strive to optimize all factors, not just eliminate limitations. Learn to exploit the plant itself. Soybean crop is widely grown in Northern Telangana Zone of Telangana state. Gradually year after year the area and production of the crop is being stretched into different districts of Northern Telangana Zone. So there is a need to know the Strengths, Weaknesses, Opportunities and Threats for Soybean production technologies in Northern Telangana Zone. Based on the SWOT we need to estimate the Rank Based Quotient (RBQ) of Soybean production technologies for the welfare of the farmers living in Northern Telangana Zone. Dalvi *et al.* (2004) found that majority (86.66%) of the respondents faced difficulty in getting improved and hybrid seeds in time followed by shortage of FYM under double cropping (85.83%), 88.33 percent perceived that there was a medium technological gap in use of seed and sowing, 58.33 percent of respondents grouped under medium in terms of

usage of fertilizers and 61.66 percent grouped under medium on usage of plant protection measures. Kumar (2004) revealed that the weaknesses in SRI Rice cultivation as perceived by the farmers practicing SRI method of rice cultivation includes more weed problems, more labour required for land leveling and transplanting, low lying area and water logging condition, non availability of rotary weeders, lack of technical support, non availability of sufficient organic manures, poor drainage, poor understanding of concept of SRI, less attention of farmers on cultivation, less possibility of second crop like black gram/green gram. Ajay Raghu Vamshi *et al.* (2010) indicated that majority (99.00%) of the respondents completely adopted all the recommended land preparation practices followed by use of recommended varieties (73.30%), spacing (70.80%), time of sowing (66.70%) and weed management (65.00%) in soybean crop. Todasam *et al.* (2010) were carried out a field survey to ascertain knowledge of the soybean growers about recommended technologies. The results were found that over half (55.34%) of soybean growers had medium level of knowledge about improved cultivation practices recommended for soybean crop. Lakpathi (2011) indicated that the opportunities felt by the maize seed producers were favorable climate conditions, existence of village tanks and bore wells (92.20%), FYM availability at cheaper and abundantly (87.50%), easy to understand and can be practiced by any one (82.30%), availability of marketing information about prices and demand (72.00%), large area for drying (55.70%), Ease of procuring plant protection chemicals around

the mandal (53.70%), south-west monsoon (42.50), for spacing no need of skilled labour (26.50%), supervision and guidance available from the department and private companies (15.80%). Prathyusha (2014) concluded that the majority (87.08%) of the respondents had given first rank to high cost of Bt cotton seed followed by fluctuations in market prices (85.99%), availability of Spurious seed (82.24%), highly dependent on private companies for seed (77.25%), defective government policies. Loan waving only for farmers having 1 to 2ha (62.32%), defective rehabilitation package (39.16%), lack of Bt cotton hybrids released by SAU (27.49%), less minimum support price (26.56%) and availability of illegal seeds sold by unlicensed companies (26.24%). The eruption of sporadic disturbances in soybean production in the zone could not stall the cultivation of crop by the farmers. It is the high time to diagnose and understand the ifs and buts and the intricacies involved in cultivation of soybean crop in the zone. This idea has propelled to take up the present study with objective of estimation of RBQ for SWOT on practicing soybean production technologies in Northern Telangana Zone.

## MATERIALS AND METHODS

Descriptive research design was adopted in the present investigation. Adilabad, Nizamabad and Karimnagar districts of Northern Telangana zone of Telangana state was purposively selected for the study as it has highest area under Soybean cultivation. The study was conducted in 24 villages selected from 12 mandals of 3 districts of Northern Telangana Zone of Telangana state, which included 5 respondents from each of the selected village, thus a sample of 120 respondents were selected for the study. Rank Based Quotient (RBQ) for SWOT on Practicing soybean production technologies was calculated for few strengths, weaknesses, opportunities and threats which were chosen based on highest percentage of respondents. The respondents were asked to rank these few chosen strengths, weaknesses, opportunities and threats. These were arranged in an ascending order based on calculated RBQ values.

## RESULTS AND DISCUSSION

### RBQ strengths

The Table 1 represents that the major strengths on practicing soybean production technologies perceived by the respondents based on RBQ calculated values are- requirement of less (2-3) number of irrigations (1<sup>st</sup> rank) followed by JS335 is a high yielding variety (2<sup>nd</sup> rank), Soybean fixes the atmospheric nitrogen into the soil (3<sup>rd</sup> rank), broadcast sowing facilitate high germination percentage (4<sup>th</sup> rank), and the least ranked strengths are easy weed control in red soils (9<sup>th</sup> rank) and easily establishing the crop in red sandy loam soils (10<sup>th</sup> rank). It is sensed from the Table1 that the major strengths on practicing soybean production technologies are less number of irrigations followed by JS335 a high yielding variety, fixation of atmospheric nitrogen into the soil by the soybean crop, high germination percentage in broadcasting sowing. Usually soybean is considered as a rainfed crop eventually it demands less irrigation water, compared to other varieties of soybean

**Table 1RBQ for Strengths on practicing soybean production technologies in Northern Telangana Zone (n = 120)**

S. No.	Strengths	Ranks										RBQ	Rank			
		I	II	III	IV	V	VI	VII	VIII	IX	X					
1	Requires less (2-3) number of irrigations	82	26	12											95.84	1
2	JS335 is high yielding variety	64	24	18	14										91.5	2
3	Soybean fixes the atmospheric nitrogen into the soil	51	31	23	15										89.84	3
4	High germination percentage in broadcast sowing	47	34	23	16										89.34	4
5	Machines facilitate in complete threshing and winnowing	28	39	33	20										86.25	5
6	Black cotton soils are highly suitable for intercropping (Soybean + Redgram or Soybean + Mango)	32	28	26	22	12									83.83	6
7	Black cotton soils are fertile and helps to conserve soil moisture		52	28	24	16									79.67	7
8	Farmers had the experience in judging the maturity of pods		37	29	23	19					12				75	8
9	Easy weed control in red soils			43	27	24					16				66.41	9
10	Red sandy loam soils help to easily establish the crop			35	29	23					19	14			64.34	10

**Table 2: RBQ for Weaknesses on practicing soybean production technologies in Northern Telangana Zone**

S. No.	Weaknesses	Ranks										RBQ	Rank	
		I	II	III	IV	V	VI	VII	VIII	IX	X			
1	Semi dwarf variety (JS-335) and low seed viability	63	24	19	14								91.34	1
2	Lack of suitable high yielding varieties to the zone other than JS335	51	32	23	14								90	2
3	Practicing recommended spacing is time consuming process in line sowing	32	37	24	27								86.17	3
4	More weed problem in black cotton soils		24	41	36	19							75.84	4
5	Poor fertility status of red soils		22	43	34	21							75.50	5
6	Intra competition is more in broadcasting and hence lanky growth			31	48	25	16						67.84	6
7	No scientific storage mechanism			31	39	33	17						67	7
8	Lack of INM mechanism			31	37	29	23						66.34	8
9	Lack of IPM mechanism				42	35	28	15					58.67	9
10	Often more seed is used due to lack of awareness on optimum spacing							26	39	31	24		35.58	10

(n = 120)

**Table 3: RBQ for Opportunities on practicing soybean production technologies in Northern Telangana Zone**

S. No.	Opportunities	Ranks										RBQ	Rank	
		I	II	III	IV	V	VI	VII	VIII	IX	X			
1	Low incidence of pest and diseases in line sowing	57	26	20	17								90.25	1
2	Low cost of plant protection	24	44	33	19								86.08	2
3	Harvest indices are easy to understand and practice		48	31	27	14							79.41	3
4	Under less rainfall conditions 2-3 irrigations are given with the help of open wells and bore wells which are predominant in the zone			41	36	24	19						78.25	4
5	Less missing of the pods on plant with manual harvesting		31	44	24	21							77.08	5
6	Clean and quality produce is obtained with predominant in the zone				27	39	31	23					65.84	6
7	Abundant sunshine for drying				22	29	42	27					63.84	7
8	Less seed rate due to possibility of wide spacing						40	38	26	16			48.50	8
9	Chance to establish drip irrigation						37	39	26	18			47.90	9

(n = 120)

**Table 4: RBQ for Threats on practicing soybean production technologies in Northern Telangana Zone**

S. No.	Threats	Ranks										RBQ	Rank	
		I	II	III	IV	V	VI	VII	VIII	IX	X			
1	Yield reduction in Rabi season	49	37	21	13								90.17	1
2	More soil erosion in red soils due to heavy rains	26	48	28	18								86.84	2
3	Lack of varieties suitable for Rabi season	28	39	29	24								85.91	3
4	Poor seed germination under line sowing	26	35	31	28								84.91	4
5	Lack of suitable bio fertilizers		46	31	29	14							79.08	5
6	Forced to give the produce on agreed price		36	33	28	23							76.84	6
7	Less availability of direct sulphur fertilizers			37	39	25	19						67.84	7
8	Relying only on chemical control measures to control pest and diseases				28	36	31	25					55.58	8

(n = 120)

crop like Co1, Co2, Davis and KHsb2, the variety JS335 gives an average yield of 10-12 q/acre and is highly suitable for Northern Telangana Zone of Andhra Pradesh state, where as the yield of other varieties ranges between 6-8 q/acre in the zone. Soybean crop has a capacity to fix the atmospheric nitrogen into the soil due to its leguminous character of having rhizobium nodules on the roots of the crop, there by enhances the soil fertility. High germination percentage is observed in broadcast sowing as the seed is placed at shallow depth compared to line sowing where in the seed usually placed

deeply reducing seed germination.

#### RBQ weaknesses

It is understood from the Table 2 that the prominent weaknesses on practicing soybean production technologies as perceived by the respondents based on RBQ calculated values are- JS335 is a semi dwarf variety (1<sup>st</sup> rank) and low seed viability followed by lack of suitable high yielding varieties other than JS335 (2<sup>nd</sup> rank), line sowing is a time consuming process (3<sup>rd</sup> rank), more weed problem in black cotton soils(4<sup>th</sup>

rank) and the least ranked weaknesses are lack of IPM (9<sup>th</sup> rank) and usage of more seed rate (10<sup>th</sup> rank).

The major weaknesses on practicing soybean production technologies as observed from the Table 2 are JS335 is a semi dwarf variety and low seed viability, lack of suitable yielding varieties in the zone other than JS335, time consuming process in line sowing and more weed problem in black cotton soils, the farmers face the problems of in comfortable body ergonomics in posture while harvesting the pods from the variety JS335 due to its semi dwarf character, the seed of the soybean crop is highly sensitive to minimum damage caused to the outer layer of the seed there by loses itself viability, the varieties other than JS335 don't have the potential to give yields more than the variety JS335 which is highly suitable to the zone. The sowing of soybean seed under line sowing had good benefits but following the spacing of 30 × 7.5 cm while sowing the seed especially in black cotton soils is a time consuming process. Weeds are the big menace in black cotton soils due to its fertility, retention of moisture and more bulk density.

#### RBQ opportunities

The opportunities on practicing soybean production technologies as per the Table 3 ranked by respondents based on RBQ values are- low incidence of pest and diseases in line sowing (1<sup>st</sup> rank) followed by low plant protection cost (2<sup>nd</sup> rank), understandable and practicable harvest indices (3<sup>rd</sup> rank), 2-3 irrigations are given under less rainfall conditions (4<sup>th</sup> rank) and the least ranked opportunities are less seed rate due to possibility of wide spacing (8<sup>th</sup> rank) and chance to establish drip irrigation (9<sup>th</sup> rank).

The opportunities on practicing soybean production technologies as highlighted in the table 3 are low spreading of pest and diseases in line sowing, less cost of plant protection, easy understand ability and practicability of harvest indices, giving 2-3 irrigations with the help of open/bore wells under less rainfall conditions. Definite spacing is followed in the line sowing of the soybean seed, the space between lines and rows allows the entry of sunrays and the crop canopy is completely exposed to the sun which arrests the spread of pest and diseases to other plants in the field. Usually soybean crop doesn't invite more pest and diseases which drives the farmers not resort to spray pesticides indiscriminately, this perhaps lead to low cost of plant protection, the harvest indices stipulated to judge the maturity of the pods are user friendly and easy to understand. These harvest indices are turning of pods into black/grey/golden colour, occasionally the zone receives less amount of rainfall, under these circumstances the farmer resort to give 2-3 irrigations with the help of open/bore wells as these sources of irrigation are predominant in the zone.

#### RBQ threats

From the Table 4 it was mentioned that the important threats on practicing soybean production technologies perceived by soybean growers based on the RBQ values are- crop yield reduction in *rabi* season (1<sup>st</sup> rank), more soil erosion in red soils due to heavy rains (2<sup>nd</sup> rank), lack of suitable varieties for *rabi* season (3<sup>rd</sup> rank), Poor seed germination under line sowing (4<sup>th</sup> rank) and the least ranked threats are less availability of direct sulphur fertilizers (7<sup>th</sup> rank) and relying only on chemical control of pest and diseases (8<sup>th</sup> rank).

The Table 4 indicate that the prominent threats expressed by the respondents on practicing soybean production technologies are reduction in yield in *rabi* season followed by soil erosion due to heavy rains in red soils, lack of suitable varieties for *rabi* season and poor seed germination in line sowing. The reason for poor yields in *rabi* season could be attributed to non-adaptability of the varieties to the season. Red soils are susceptible for soil erosion due to their loose structure and texture this can be minimized by adopting the soil and water conservation techniques. The non-adoption of these techniques also might have pruned these sandy soils to soil erosion. The soybean varieties presently grown during *rabi* are not suitable for the season, there by low yields are realized from these varieties. There is every need to breed the varieties of soybean crop which are highly suitable to *rabi* season of Northern Telangana Zone of Andhra Pradesh state. At present the same varieties grown under kharif season were also being cultivated in *rabi* season but their suitability to the *rabi* season is ill-fated. Soybean seed can't germinate if placed above optimum depth which reflects poor seed germination.

#### REFERENCES

- Ajay Raghu Vamshi, Patel, M. M. and Choudary, R. K. 2010. Adaption behavior of Soybean growers. *J. Oilseeds Research*. **27(2)**: 201-204.
- Dalvi, S. T., Mahajan, B. S., Wakle, P. K., Shinde, S. V., Sukase, K. A and Kadam, A. S. 2004. Constraints faced by farmers in adoption of improved cultivation of soybean in Marathwada region. *J soil and crops*. **14(1)**: 55-57.
- Kumar, P. D. V. R. 2004. System of Rice Intensification (SRI): An Appraisal analysis, *M. Sc. (Agri.) Thesis*, ANGRAU, Hyderabad.
- Lakpathi, C. H. 2011. SWOT analysis of maize seed production in karimnagar district of Andhra Pradesh. *M.Sc. (Ag.) Thesis*. Acharya N G Ranga Agricultural University, Hyderabad, India.
- Prathyusha, T. 2014. A study on swot analysis of bt cotton cultivation in karimnagar district of Andhra Pradesh. *M.Sc. (Ag.) Thesis*. Acharya N G Ranga Agricultural University, Hyderabad, India.
- Todasam, P. M., Kale, N. M and Mankar, D. M. 2010. Knowledge of farmers about recommended soybean cultivation technology. *Green Farming*. **1(1)**: 97-99.