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## Spread of soybean cultivar (DSb-21) in Dharwad district of Karnataka, India

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### Abstract

Soybean (*Glycine max* L.) is one of the oldest cultivated crops of the world. The start of commercial exploitation of soybean in India is nearly four decades old. In this period, the crop has shown unparallel growth in area and production. Soybean has established itself as a major rainy season crop in the rainfed ecosystems. Introduction of soybean has resulted in an enhancement in the cropping intensity and resultant increase in the profitability per unit land area. In India soybean will continue to remain a major rainfed oilseed crop. Soybean DSb-21 is an improved variety cultivated by farmers in Dharwad district. The study throws light on spread and comparison of the particular variety in the district. The study was conducted in Dharwad, Hubli and Kalaghatagi taluks of Dharwad district of Karnataka state during 2020-21 with a sample of 150 soybean farmers. A distinctive pattern of spread was noticed. There was about 8 per cent of land cultivated with DSb-21 during 2017-18 in Dharwad district mainly due to farmers preference to DSb-21 variety for its resistance to rust disease but gradually reduced to 2 per cent during 2020-21. The seed sales report from different production centers reported that due to heavy rainfall at the time of harvesting, seed germination was failed during seed testing, so procurement became less and production and marketing of DSb-21 variety was also less hence, seed sales with respect to area coverage under the particular variety gradually decreasing from year to year.

**Keywords:** Spread, soybean, comparison, procurement, germination, cultivar

### 1. Introduction

India has shown a tremendous growth after independence in agriculture sector. Green Revolution witnessed by our country in last sixties is a landmark which has not only resulted in self-sufficiency in food grain production but also surplus export of the produce to other countries. In addition "Yellow Revolution" which is the resultant of enhanced pace in development of Indian agriculture for last two and a half decades which has contributed remarkably due to newly introduced crops like soybean and sunflower.

Today area under soybean and its production is steadily increasing and has gained momentum in oil front. Soybean crop has a potential to fulfil the requirement and to act as substitute to different oilseeds and pulses to overcome shortage of edible oil and protein rich food. Hence soybean has become an important oilseed crop in the country by occupying first place in world edible oil production. In India, about 80 per cent edible oil is obtained from groundnut, rapeseed and mustard. However, the non-traditional seeds namely soybean and sunflower are emerging as a new source of oil, having vast yield potentials.

Soybean (*Glycine max*. L) is one of the oldest cultivated crops of the world. It has been projected to produce 385.5 million metric tons of soybeans i.e 22.6 million metric tons more than previous year. Brazil is the leading producer of soybean in the world. India ranked fifth both in terms of area (113.99 lakh hectare) and production (135.05 lakh tonnes) in the world. The area under the crop in Karnataka state during 2019-20 was 3.30 lakh hectares with the production of 2.57 lakh tonnes and productivity of 779 kg/ha. Due to its characteristics such as short duration, high yield potential, protein and oil content, fodder and building soil fertility by fixing atmospheric nitrogen in the soil, it is very familiar to the farming community. Soybean cultivar Dsb-21 released in 2013 and notified in the year 2015 by University of Agricultural Sciences, Dharwad which is very popular in southern zone of India known as tolerant to pod shattering and rust resistant, which is the one of the recently released improved variety gaining popularity in Northern Karnataka has been taken for the study.

The present study aims to assess the spread of DSb-21 cultivar of soybean in Dharwad district of Northern Karnataka.

## 2. Methodology

The study was an “ex-post-facto” research carried out in Dharwad district of Karnataka during 2020-2021. Out of eight taluks, three taluks namely Dharwad, Hubli and Kalaghatagi were purposively selected and from each taluk, two villages were selected based on the criteria of maximum area under soybean cultivation. In each selected village 25 soybean farmers were selected through Simple random sampling. Thus, 150 farmers constituted the sample for the study. A structured interview schedule was used to collect the primary data from soybean farmers by personal interview method. The spread of varieties was studied based on secondary data obtained from Karnataka State Department of Agriculture (KSDA), Karnataka State Seed Corporation (KSSC) and Raitha Samparka Kendra (RSK) of areas selected for the study.

## 3. Results and Discussion

### 3.1 Spread of DSb-21 cultivar of soybean.

Soybean rust, a disease of serious concern causing significant yield losses (ranging from 30-100 per cent) in southern parts of India has become a major constraint for expanding area under soybean. Most of the released varieties viz., JS 335, JS 93-05 and DSb-01 are highly susceptible to rust. Hence there is an urgent need to develop rust resistant variety. DSb-21 (JS 335 x EC 241778) is the first rust resistant variety in the country developed by UAS, Dharwad and released/notified during 2015. In addition to rust resistance, it gives higher yield (10-12%) more than popular variety JS 335.

The data from the National Seed Corporation Dharwad revealed that in 2017-18 the variety was very popular with seed sales of 282.25 quintals which eventually reduced to 27.90 quintals in 2020-21 due to heavy rainfall at the time of harvesting, seed germination was failed during seed testing, so procurement became less and production and marketing was also less.

The data obtained from Karnataka Oilseed Federation, Hubli revealed that from 2017 to 2021 there is a steady increase in seed sales from 35 quintals to 128 quintals, and also in area coverage from 100 hectares to over 330 hectares. This may be due to positive response from the farmers about the variety and demand for the DSb-21 seeds from the farmers in and around district.

The data obtained from Joint Directorate of Agriculture office, Dharwad revealed that the seed sales with respect to area coverage gradually decreasing from year to year due to the poor procurement and non-availability of the particular seed variety because the seeds as to be transported from Madhya Pradesh. Even though there is good demand from the farmers for DSb-21 seeds, there is acute shortage of seeds. The variety is becoming popular in southern states of India and recorded highest yield (5250kg/ha) in one of the largest scale demonstrations conducted in farmers field of Karnataka state. The variety is a boon to soybean growing farmers by preventing significant yield losses due to soybean rust and also suitable for organic farming.

The results have shown that the area under recommended variety (DSb-21) has decreased from year to year. In 2017-18 around 8 per cent to the total area under soybean cultivation in Dharwad district is having DSb-21 variety. Now in 2020-21 only about 2 per cent of the area is under DSb-21 to the total area under soybean cultivation in Dharwad district. The reason here is less production of seeds in production centers

due to lack of awareness about the new variety compared to prominent local varieties and low procurements in auctions by the agencies which leads to lack of fulfillment of required amount of seeds in turn effect the spread of the variety. The results are in line with the findings of Shiyani *et al.* (2002) [5].

### 3.2 Cost and Returns in cultivation of the variety

The results from the Table-3 showed the impact of variety on income and productivity of the farmers. It was clear that DSb-21 variety of soybean is relative advantageous over other popular existing varieties having special features like less shattering and highly resistant to rust. Farmers are facing minimum risk and getting better yield per unit area of production and also income of the growers increasing significantly.

### 3.3 Yield gap in the variety

The results obtained from the Table-4 represents the yield gap of improved cultivar (DSb-21) of soybean. The results concluded that the cultivar had potential yield of 25 q/ha, but the farmers obtained average yield of 21.25 q/ha. The yield gap of 3.75 was noticed, and about 15.00 per cent of the difference in yield was observed. The reason here may be there is low awareness among farmers on improved cultivar compared to other prominent local varieties. The other reason may be the farmers had limited knowledge of production technologies that are recommended.

### 3.4 Suggestions expressed by the soybean growers

It was shown in the Table-23 that, farmers expressed that there is an incidence of pest and disease may be due to low adoption of recommended package of practice by the farmers. Some of the farmers expressed that they have no problem of both pest and disease as it is quite common about small amount of crop loss from pest and disease attack. Nowadays many farmers are facing problem of bacterial blight disease as a major problem as they are not following seed treatment which can control it. The occurrence of rust is quite common in soybean crop. This may be due to congenial conditions for pest like high relative humidity, low temperature and may be due to improper field sanitation measures etc.

Only Some of the farmers are comfortable with the price of the seeds as they use their own saved seeds from the previous harvest, while some farmers usually buy the seeds from their friends or neighbours. But majority of them expressed that they are expecting better subsidy rate as the cost of seeds were on the higher side. The cost minimization with respect to the inputs like seeds can reduce the cost of cultivation.

Some of the farmers expressed that they have no problem with the access to the seeds as they are quite close to the seed distributing agencies and they have good contact with them. Some of the farmers use their own seeds of previous harvest has no problem with the seed availability. But of the farmers faced problem of non-availability of the seeds may be due to the crowd near seed distribution agencies, non-availability of the required variety and also demand for the particular seed variety of high yielding.

Farmers expressed that there is need for on-farm demonstrations and timely advisory services regarding improved varieties so that the farmers could get confidence and timely information to adopt the new varieties and recommended package of practices for soybean. Many studies indicate that some recommended practices like land

preparation, varieties, irrigation and weed control are well adopted while others like sowing time, sowing method, seed rate and fertilizers applications are not well adopted. As sources of information for recommended production technologies, majority of the farmers got information from fellow farmers followed by extension department and mass media. The role of mass media is more important in modern technological era but it is not being properly utilized.

Farmers frequently consider lack of market information as being their problem. However, while they are able to identify such problems as poor prices, lack of transportation and high post-harvest losses, they are often poorly equipped to identify potential solutions. Efficient market information provision

can be shown to have positive benefits for farmers, traders and policy makers. Up-to-date, or current, market information enables farmers to negotiate with traders from a position greater strength. Well analyzed historical market information enables to make planting decisions in line with urban consumer demand, including those related to new crops. Market information can be regarded as a public good, particularly where there are numerous small farmers who are unable to pay for information. The availability of timely and accurate information to all interested parties is therefore essential, whether it be provided by the government itself or by the private sector. The findings are in line with Singh (2016)<sup>[6]</sup> and Parmar (2017)<sup>[3]</sup>.

**Table 1:** Seed production of DSb-21 variety in Dharwad district

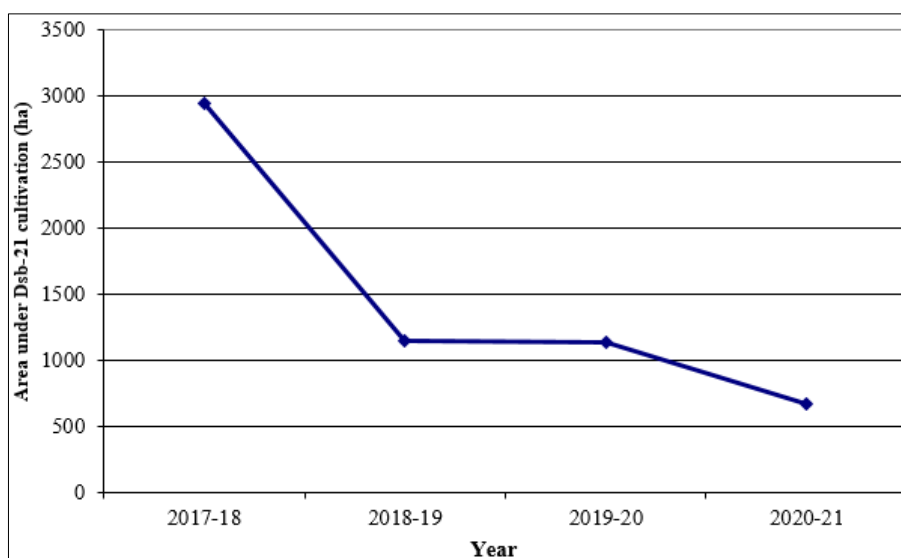
Names of the seed production centers	Qty. of DSb-21 seeds sold (in q) during				Total Qty. sold (q)	Area spread (ha)
	2017-18	2018-19	2019-20	2020-21		
Seed unit, UAS Dharwad	244.00	298.25	310.95	263.25	1116.45	1786.32
KOF, Hubli	35.00	70.50	150.25	128.00	383.75	614.00
NSC, Dharwad	282.25	84.50	70.00	27.90	464.65	743.44
Dept. of Agriculture Dharwad	0.00	337.75	219.65	0.00	557.04	891.26

**Source:** From different seed production centers, Dharwad

**Table 2:** Comparison of spread of soybean cultivar Dsb-21 in Dharwad district

Sl. No	Year	Area under soybean in Dharwad district (ha)	Qty. of DSb-21 seeds sold (q)	Area under Dsb-21 cultivation (ha)
1	2017-18	36,780	1,841.25	2946 (8.00%)
2	2018-19	37,220	718.50	1149.50 (3.08%)
3	2019-20	38,200	710.25	1136.40 (2.97%)
4	2020-21	37,185	418.90	670.24 (1.80%)

**Source:** Department of Agriculture, Dharwad



**Fig 2:** Comparison of spread of soybean cultivar Dsb-21 in Dharwad district

**Table 3:** Cost and Returns in the production of DSb-21 cultivar of soybean

Sl. No.	Particulars	Variety
1	Average Yield (q/ha)	21.00
2	Total cost (Rs/ha)	31,250
3	Gross returns (Rs/ha)	88,200
4	Net returns (Rs/ha)	56,950
5	B:C ratio	1.82

**Table 4:** Yield gap in DSb-21 cultivar of soybean

Sl. No	Variety	Potential yield (q/ha)	Average yield obtained by the farmers (q/ha)	Yield gap (q/ha)	% difference
1	DSb-21	25	21.25	3.75	15.00

**Table 5:** Suggestions expressed by the farmers (n=150)

Sl. No.	Suggestions	f	%
1	Develop disease/pest resistant high yielding variety (Rust, Rot, Yellow mosaic and Bacterial blight)	126	84.00
2	Access/Availability of improved variety seeds	110	73.33
3	Minimise the cost of inputs by providing subsidies to chemical fertilizers and plant protection chemicals	98	65.33
4	Awareness of recommended cultivation practices through awareness programmes/timely advisory services/demonstrations etc.	82	54.66
5	Provide adequate market information	77	51.33

\*Multiple responses are possible f- frequency

%- percentage

#### 4. Conclusion

The distinctive pattern of spread of DSb-21 variety of soybean calls for efforts by extension agencies to intervene and to maintain good relationship with the soybean farmers belonging to different categories and take necessary measures to motivate the farmers in adoption and avoid discontinuation of adoption of improved varieties. □ In order to accept and adopt the improved varieties/new farm innovations and recommended production technologies, proper encouragement, motivation and educational efforts are very necessary on the part of extension agency to create positive awareness and knowledge. Appropriate educational activities like demonstrations, trainings, field days and exhibitions etc. should be undertaken.

#### 5. References

1. Anonymous. Karnataka at a Glance. Directorate of Economics and Statistics; c1992.
2. Anonymous. Dharwad District at a Glance, District Statistical Office, Dharwad; c2019.
3. Parmar RK. Impact of frontline demonstration in adoption of chickpea production technology by the farmers of sehere district. *M.Sc. (Agri). Thesis*, Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior, Madhya Pradesh (India); c2017.
4. Sharma AN, Billore SD, Agarwal Srivastava SK. Soybean: Introduction, Improvement, and Utilization in India- Problems and Prospects. *Agric. Res.* 2013;2(4):293-300.
5. Shiyani RL, Joshi PK, Asokan M, Bantilan MCS. Adoption of improved chickpea varieties: KRIBHCO experience in Tribal region of Gujarat, India. *Agril. Econ.* 2002;27(1):33-39.
6. Singh R. Productivity enhancement of chickpea through improved production technologies on farmer's field. *Ind. J Agric. Sci.* 2016;86(10):1357-1360.