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Effects of Organics on the Growth of Soyabean 9560 in Three Successive Kharif Seasons

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Abstract:- Present piece of work is done to check the effects of Organics on the growth of Soyabean 9560 in kharif 2009, 2010 and 2011. For this different types of Organics have been selected namely organic compost and vermicompost also these were prepared so as to exclude the use of synthetic inputs on soil. Present work explores Organic farming of Soyabean. Organic farming is the form of agriculture that relies on techniques such as crop rotation, green manure, compost and biological pest control. Organic farming excludes or strictly limits the use of manufactured (synthetic) fertilizers, pesticides (which include herbicides, insecticides and fungicides), plant growth regulators such as hormones, livestock antibiotics, food additives, genetically modified organisms, human sewage sludge, and Nano materials. In the present work gradual increase in Protein, Fat and Fiber content of soyabean 9560 is observed by the combined use of organics, and it is also an eco-friendly greener approach for environmental protection.

Keywords:- Organic Farming, Sustainable farming, Organic compost and Vermicompost.

I. INTRODUCTION

Organic farming system in India is not new and is being followed from ancient time. It is a method of farming system which primarily aimed at cultivating the land and raising crops in such a way, as to keep the soil alive and in good health by use of organic wastes (crop, animal and farm wastes, aquatic wastes) and other biological materials along with beneficial microbes (bio-fertilizers) to release nutrients to crops for increased sustainable production in an eco-friendly pollution free environment.

"Organic agriculture is a unique production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity, and this is accomplished by using on-farm agronomic, biological and mechanical methods in exclusion of all synthetic off-farm inputs".

Organic farming is a method of farming system, which primarily aims at cultivating the land and raising crops in such a way, so as to keep the soil alive and in good health.

It is the use of organic wastes (crop, animal and farm wastes, aquatic wastes) and other biological materials, mostly produced along with beneficial microbes (bio-fertilizers) to release nutrients to crops, which connotes the organic' nature of organic farming or organic agriculture. In the Indian context it is also termed as 'Javik Krishi'. In the present work cultivation of soyabean 9560 is done through organic farming by the use of organic compost and vermicompost. For this following methodologies have been adopted.

II. MATERIALS AND METHODS

Following preparations have been involved:

Preparation of foliar spray like Panchgavya and Beejamrut is done by the use of natural products like milk, ghee, cow urine, banana etc. Organic compost has been prepared by the Pit method, by the controlled decomposition of organic waste such as remains of crops, field grassed, water hyacinth, sugarcane trash, rural waste or industrial waste of organic origin free of chemicals and toxic substances etc. through microbial activity.

Vermicompost or excreta of earthworms, which is rich in humus and nutrients is prepared in a brick tank. By feeding the earth worms with biomass, required quantities of vermicompost is prepared. During the preparation of vermicompost, an additional supplement vermiwash is also prepared, which can be used as a foliar spray during the growth period of soyabean plants. Vermiwash actsas an insect repellent.

Seed treatment: Soyabean 9560 seeds are dipped in a solution made by mixing cow urine and hing for about 15 minutes.

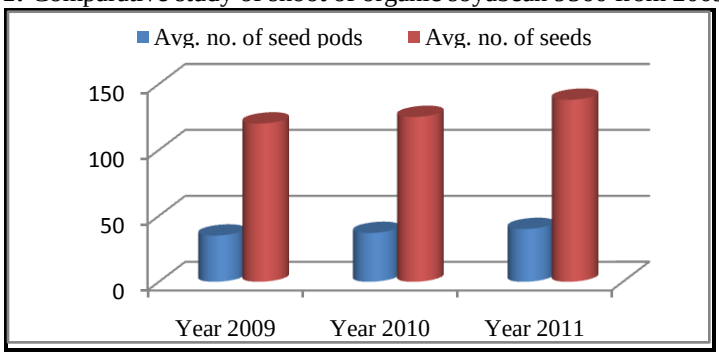
These treated seeds are then sown near about 8-6 inches deep in a soil in rows as per the required plan. Each row was made 1 feet apart. In kharif 2009 soyabean 9560 is treated with organic compost, in 2010 it is treated with vermicompost and in 2011 it is treated with combined organics. Before sowing of seeds organics were applied to the organic plot area year wise as per the plan. For proper study of Organics, results were compared with the seeds which are grown conventionally and also with the seeds which are grown normally without any external inputs.

Harvesting: After the complete growth, plants were harvested and then studied properly year wise. For chemical analysis soyabean 9560 seeds were taken to the lab and then Protein, Fat and Fiber content were tested. Physical and Chemical parameters were studied separately and properly. Following are the observations.

III. OBSERVATIONS

We have done Comparative Study of Shoot Analysis of Organic Soyabean 9560 in three successive years.

Table 1: Comparative study of shoot of organic soyabean 9560 from 2009-2011



Graph 1: Showing comparative analysis of seeds of organic soyabean 9560 from 2009-2011

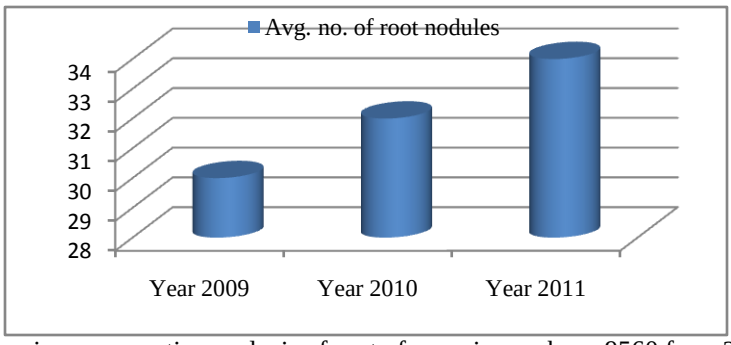
Above graph is showing comparative analysis of shoot system of **organic soyabean 9560** from 2009-11. It is observed from the current graph that there was a gradual increase in the average number of seed pods and number of seeds. Although the gap is not so big but the positive results were observed. It is clearly seen from the graph that the combined use of **Organic and Vermi-compost** is much fruitful for the cultivation of soyabean organically as compared to the individual use of one. ***Hence Organic and Vermi-compost along with foliar spray Beejamrut and Panchgavya are the legendary combination for the growth of soyabean 9560.***

Comparative Study of Shoot		
Specification	No. of seed pods	No. of seeds
Year 2009	35	120
Year 2010	37	125
Year 2011	40	138

We have done Comparative Study of Root Analysis of Organic Soyabean 9560 in Three Successive Seasons:

Comparative Study of Root	
Specification	**Avg. no. of root nodules**
Year 2009	30
Year 2010	32
Year 2011	34

Table 2: Comparative study of root system of organic soyabean 9560 from 2009-2011



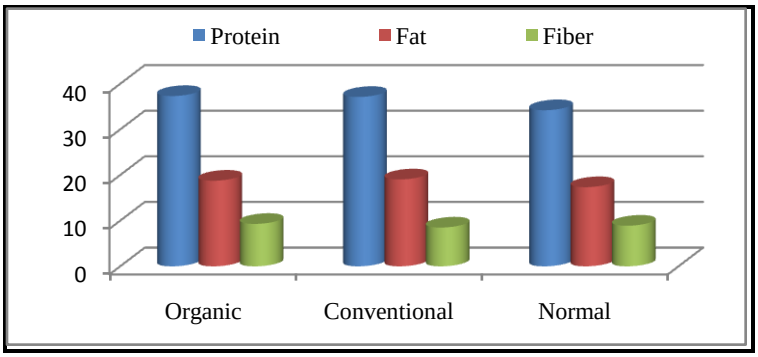
Graph 2: Showing comparative analysis of root of organic soyabean 9560 from 2009-2011

Above graph is showing comparative analysis of root system of organic soyabean 9560 from 2009-2011. It is again clear from the graph that there was a gradual increase in number of root nodules from 2009-2011. This may be because of the use of organic and vermicompost, because these manures are rich in nutrients and helps in better growth of plant as compared to pesticides. Also it was observed that the combined use of both that is organic as well as vermicompost is fruitful for the growth of root nodules as compared to the individual use of one. ***Hence Organic and Vermicompost along with foliar spray Beejamrut and Panchgavya are the legendary combination for the growth of soyabean 9560.***

We have also done Comparative Study of Protein, Fat and Fiber of Soyabean 9560 in 2009:

Chemical Analysis of Soyabean 9560 in 2009			
Specification	**Protein (grams)**	**Fat (grams)**	**Fiber (grams)**
Organic	37.33	18.77	9.3
Conventional	37.13	19.05	8.5
Normal	34.22	17.35	8.9

Table 3: Comparative study of Protein, Fat &Fiber of Soyabean 9560 in 2009



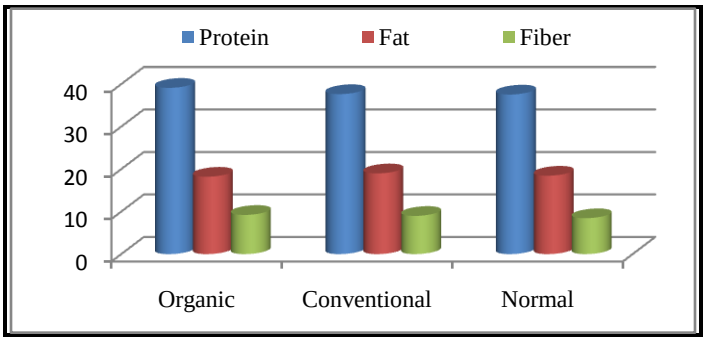
Graph 3: Showing **c**hemical analysis of soyabean 9560 in 2009

Above graph is showing variation in Protein, Fat and Fiber content of soyabean 9560 in 2009. Growth of the plant was checked with respect to three field trials namely Organic, Conventional and Normal farming. Results were very positive as it is seen here, growth is found to be better in case of **Organic farming**. Although the difference is very less but better growth was observed in case of Organic farming. All the three parameters have shown slight improvement as compared to the one which was obtained through Conventional farming.

Comparative Study of Protein, Fat and Fiber of Soyabean 9560 in 2010:

Chemical Analysis of Soyabean 9560 in 2010			
Specification	**Protein (grams)**	**Fat (grams)**	**Fiber (grams)**
Organic	39.12	18.21	9.22
Conventional	37.65	19.00	8.99
Normal	37.55	18.45	8.45

Table 4: Comparative study of Protein, Fat & Fiber of soyabean 9560 in 2010



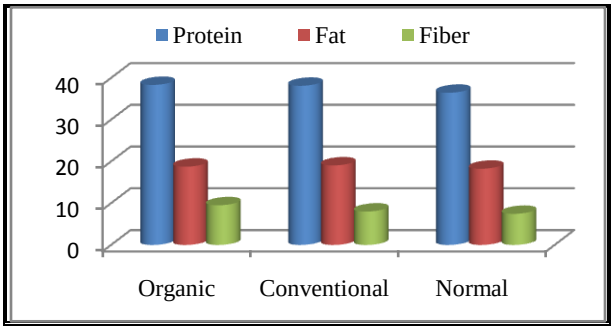
Graph 4: Showing chemical analysis of soyabean 9560 in 2010

Above graph is showing variation in Protein, Fat and Fiber content of soyabean 9560 in 2010. These are the respective results of second field trial, which was done by using **Vermicompost.** Results were good and it was clearly observed from the results that the organically grown soyabean 9560 is rich in Protein, Fat and Fiber.

Comparative Study of Protein, Fat and Fiber of Soyabean 9560 in 2011:

Chemical Analysis of Soyabean 9560 in 2011			
Specification	**Protein (grams)**	**Fat (grams)**	**Fiber (grams)**
Organic	38.33	18.75	9.50
Conventional	38.12	19.05	7.99
Normal	36.45	18.25	7.45

Table 5: Comparative study of Protein, Fat & Fiber of Soyabean 9560 in 2011



Graph 5: Showing chemical analysis of soyabean 9560 in 2011

Above chart is showing the variation in Protein, Fat and Fiber of soyabean 9560 in 2011. These are the results of third field trial which was done by using both **Organic and Vermicompost.** Again the results were found to be positive. There was an increase in Protein and Fiber content of soybean 9560 which was grown organically than the one which was grown conventionally.

IV. RESULTS AND DISCUSSION

Following are the points to be considered:

1. **Protein:**
   In 2009 by the use of **Organic compost** a good increase in protein content was observed (37.33 grams in soyabean 9560). *Also gradual increase in Protein content was noticed from 2010 in soyabean 9560 (39.12 gram) by the* use of **Vermicompost**. And in 2011 a comparable increase in Protein content was observed by the use of **Organic + Vermicompost**.
2. **Fiber:**
   In 2009 by the use of Organic compost amount of Fiber in soyabean 9560 was observed to be 9.3 grams. By the use of Vermicompost in 2010, a comparable amount of Fiber was obtained (soyabean 9560, 9.22 grams). A good increase in Fiber content was observed in 2011 by the combined use of organics that is **Organic + Vermicompost; (**Soyabean 9560, 9.50 grams).
3. **Fat:**
   In 2009 by the use of Organic Compost Fat content of Soyabean 9560 was reported to be 18.77 grams. In 2010 the Fat content of Soyabean 9560 was reported to be 18.21 grams by the use of Vermicompost, which was slightly less as compared to the fat content obtained by the use of Organic compost in 2009. In 2011 18.20 grams of Fat content was observed in Soyabean 9560 which was good as compared to the results of 2010.

From the above discussion it is clear that from 2009-2011 gradual increase in Protein, Fat and Fiber content was observed by the use of Organic compost, Vermicompost and Combined Organics.

Moreover results of conventional farming and Organic Farming are more or less same and comparable, hence organic farming is an eco-friendly way for sustainable growth of soil and plant.

Present work explores the fact that Organic and Vermicompost along with foliar spray Beejamrut and Panchgavya are the legendary combination for the growth of soyabean 9560.

REFERENCES

[1]. Adhya T.K. and A. Ghosh (2009), "*Organic Ricing in India*", Agricultural Year Book p.153.
[2]. Marwaha, B.C. and Jat, S.L. (2004). *"Statistics and scope of organic farming in India". Fertilizer News* 49(11): pp.41-48.
[3]. Prasad, R. (1996), *"Cropping systems and sustainability of agriculture".* Indian Farming 46: pp. 39-45.
[4]. Dr. Rajendra Prasad, Text book on Modern concept of Agriculture, *Organic Farming* (2007).
[5]. Prasad, R. (2005). *"Organic farming vis-à-vis modern agriculture".* Current Science 89: pp.252-254.
[6]. Preparation of Beejamrut, online available at www.agricultureinformation.com, accessed on January 2009.
[7]. Preparation of Panchagavya, online available at www.agricultureinformation.com, accessed on January 2009.
[8]. Organic Compost, available online at www.en.wikipedia.org, accessed on January 2009.
[9]. Vermicompost Production and Practices, available online at www.google.com, accessed on January 2009.
[10]. Vermiwash a Plant regulator, available online at www.google.com, accessed on January 2009.
[11]. Learned during training, " Training Programm on Organic Farming as Green Chemistry", A Joint Certification Programm of M.P. Council of Science and Technology & Indira Gandhi National open University (2011), Bhopal.
[12]. Determination of Nitrogen content & Crude Protein content by Kjeldahl's Method, **ISO 5983: 1997.**
[13]. Determination of Fat content by **IS/ISO 6492:1999**
[14]. Determination of Fibre content by IS : 10226 (Part I) – 1982, **ISO 5498 – 1981.**