



AMITY UNIVERSITY
— **UTTAR PRADESH** —

University Initiatives for food security and sustainable agriculture,
knowledge, skills, and technology to local farmers and food producers

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Demo 1: Project Report on “Validation of Value added Sal Seed cake as Organic Manure and Nitrification Inhibitor”

Demo- 1

FORMAT FOR PROGRESS REPORT ON ONGOING PROJECT

1. Title of the project:

“Validation of value added sal seed cake as organic manure and nitrification Inhibitor”

2. Code of Project (to be given by TRIFED)

Sanction letter No.: TFD/HO/R&D/2019-20/07/5669 dated 06.03.2020

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6. Duration of the Research project: Two years

7. Date of commencement of Project: May 2020 (Project could not be started in May 2020 due to pandemic and started in May 2021)

8. Date of completion of Project: May 2022 (To be completed in May 2023, but now to be completed in Dec. 2023 as no cost extension has been granted for 9 months (April to Dec. 2023).

9. Summary of Progress (during the period of report)

- After value addition, total N, P and K content of SSC was increased to about 21%, 53% and 23%, respectively.
- Addition of value-added SSC alone and in combination with NC inhibited the release of N from NH_4 to NO_3 indicating an effective nitrification inhibitor.
- Application of SSC alone or with NC or VC or inorganic fertilizers increased yields of both mustard and wheat crops and their total NPK content in grain and straw) and OC content of post-harvest soil samples over unfertilized control at all the locations. However, the yield and total NPK content was found at par when SSC applied alone or applied with VC or NC.
- Highest yields of mustard and wheat were recorded under treatment SSC + 100% RDF followed by SSC + 50% RDF. Higher wheat yield was observed at Kaithal site followed by Sonipat and Manesar.
- SSC can be promoted as organic manure but use of SSC as a component of INM is advisable as it would help in sustaining crop productivity and soil health on long-term basis.

10. Milestones with deliverables achieved during the reporting period.

Period of study	Deliverables achieved
6 Months	Staff recruited, procured sal seed cake, neem cake and vermicompost, prepared value added sal seed cake; selected sites and farmers field, collected of soil samples for determining initial physic-chemical properties.
6-12 Months	Field selected, layout of field trials and sowed wheat and mustard crops at three sites (Manesar, Sonipat and Kaithal) in rabi season during 1 st year. Crops harvested and yield data was recoded. Collected grain and straw samples of mustard and wheat and post-harvest soil samples for analysis. Write report of 1 st year data.
12-18 Months	Field selected to layout of field trials and sowed rice crop in <i>Kharif</i> season at Sonipat site during 2 nd year.
18-24 Months	Field selected, layout of field trials for wheat and mustard crops in rabi season at all the three locations selected. Field trials are continued and crops to be harvested in coming months. Collected grain and straw samples and post-harvest soil samples for analysis. Evaluation of field data and statistical analysis of data; writing of report. Final project report compilation.

11. Applied value of the project. Rs. 16.61 lakh

12. Objectives of the proposal:

- I. To develop and validate value added sal seed cake as potential organic manure source for enhancing yield of wheat, mustard and rice crops.
- II. To evaluate the efficiency of value added sal seed cake as nitrification inhibitor.

13. Insertion /modification of the objective/methodologies.

NIL

14. Progress made along milestone with deliverables achieved so far as per timeline given in MOU:

Tentative Chapter Plan

Sr. No.	Tentative Time	Chapter Name
1.	May to Oct. 2021	Introduction
2.	Nov.2021 to May 2022	Review of the literature & Materials and methods
3.	June to Dec. 2022	Results and discussion
4.	Jan. to Dec. 2023	Summary and conclusion

15. Details of the targets to be achieved in the next year:

Location	Test crop	No. of experiment
Manesar farm (Gurgaon) Amity Univ. Haryana,	Mustard (Oct. 2022) Wheat (Nov. 2022)	2
Jagsi village (Sonipat Distt).	Paddy (July 2022 & 2023), Wheat (Nov. 2022)	3
Kheri Sikander (Kaithal Distt.)	Mustard (Oct. 2022) Wheat (Nov. 2022)	2

16. If additional budget or staff is required for the remaining part of the research work, please give justification and details.

NOT APPLICABLE

Review paper published: 1

3

Antil, R.S. (2022). Potentiality of De-oiled sal cake in Agriculture as Organic Manures: Limitations and Future Strategies. Indian J. Fert. 18 (3): 652-659.

1. List of assets acquired during study.

NIL

2. Experimental data, formats & photographs if any .

Procurement of sal seed cake:

The sal seed cake (SSC) was procured from Kanker (North Baster Kanker District), Chhattisgarh (**Pic. 1**).



Pic. 1. Sal seed cake procured

Characterization of sal seed cake:

The colour of sal seed cake was brownish (**Pic. 1**) having a pH of 5.3 and it is sparingly soluble in water. The nutrient (N, P and K) contents of sal seed cake were determined are presented in **Table 1**. The total N, P and K content of sal seed cake was 2.16, 1.07 and 1.56%, respectively.



Pic. 1. Sal seed cake

Table 1. Nutrients contents of sal seed cake.

Sample name	Total nutrient content (%)		
	N	P	K
Sal seed cake	2.16±0.25	1.07±0.49	1.56±0.14

Preparation of value added sal seed cake:

The flow chart for preparation of value added sal seed cake is presented in **Fig. 1**. For preparation of value added sal seed cake, sal seed cake was soaked in a solution containing rock phosphate (2.0%), urea (0.5%) and kitchen wastewater (10%) for half an hour and then allowed to drain (**Pic. 3**). Kept overnight, then soaked sal seed cake was mixed with cow dung (2%), FYM (5%) and vermi compost (5%) and leguminous materials. The proportion of composting material was 3 parts of sal seed cake and 1 part of mixture of organic manures. Composted material was composted in a pit of size 1m x 1m x 1m. After filling up the pits, water was added to maintain the moisture to about 60%. After 1 week, inoculation of *Trichoderma viride* @ 500 gm mycelium / tone sal cake was done to decompose of cellulosic materials. Cover the pit with polythene sheet to conserve moisture and heat and protect from rainwater. Periodic turning of compost mixture was made once in 20 days. After 3 weeks, inoculation of *azotobacter chroococum* and PSB @ 500 ml/tone was done. The compost was ready within 1-1½ month. The cost of value addition of one tone sal deoiled cake was approximately Rs. 90 to 100. After value addition, total N, P and K content of value added sal seed cake (**Pic. 2**) was increased to about 21%, 53% and 23%, respectively (**Table 2**).



Pic 2. Sal seed cake and value added sal seed cake

Table 2. Nutrient content of sal seed cake before and after value addition.

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Sample name	Total nutrient content (%)		
	N	P	K
Sal seed cake	2.16±0.25	1.07±0.49	1.56±0.14

Value added sal seed cake	2.61±0.32	1.58±0.19	1.91±0.22
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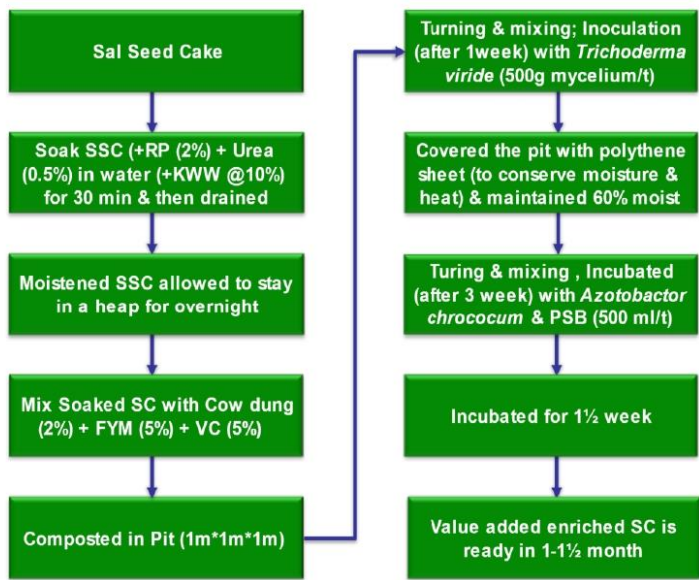


Fig. 1. Flow chart for preparation of value added sal cake manure



Pic. 3. Preparation of value added sal cake manure
Selection of sites/farmers:

Three sites were selected in Haryana. Details about sites/farmers selected (**Pic. 4**) are given below:

Distt.	Site selected	Test crop	Name of farmer	Work done
Gurgaon	Manesar farm (Amity University Haryana)	Mustard & Wheat	Sanjiv Rathee (Farm Manager)	Selected site & farmer; collected soil samples to determine initial soil properties.
Sonipat	Village Jagsi	Wheat	Dharam Singh	-do-
Kaithal	Village Kheri Sikandar	Mustard & Wheat	Rajesh Kumar	-do-



Manesar Farm (Gurgaon)
Farm manager



Jagsi (Sonipat)
Dharam Singh



Kheri Sikandar (Kaithal)
Rajesh Kumar

COLLECTION OF INITIAL SOIL SAMPLES



Manesar Farm (Gurgaon)



Jagsi (Sonipat)



Kheri Sikandar (Kaithal)

Pic. 4. Sites/farmers selected, and initial soil samples collected from different locations in Haryana

Collection of soil samples from different locations:

Bulk soil samples were collected from different locations. Soil samples were air dried, ground, and sieved (2 mm) for analysis. Soil samples were analyzed for texture, pH, EC, organic C and available N, P and K following standard procedures. The available N was estimated by distilling soil with alkaline 0.5% KMnO_4 in a macro-Kjeldhal apparatus (Subbiah and Asija 1956). Available P was extracted with 0.5M NaHCO_3 (pH 8.5) and estimated spectrophotometrically (Olsen et al. 1954). Available K was extracted with 1N NH_4OAc and estimated by flame emission spectroscopy. The initial physico-chemical properties of the soil are presented in **Table 4**.

Table 4. Initial physico-chemical properties of soil.

Location	Test crop	Texture	pH	EC (dS/m)	OC (%)	N (Kg/ha)	P (Kg/ha)	K (Kg/ha)
Manesar	Wheat	Loamy sand	8.52	0.16	0.15	122	09	140
-do-	Mustard	Loamy sand	8.54	0.17	0.17	126	08	143
Kheri Sikandar (Kaithal)	Wheat	Clay Loam	8.50	0.38	0.57	193	14	211
-do-	Mustard	Clay Loam	8.53	0.38	0.60	196	15	208
Jagsi (sonipat)	Wheat	Sandy Loam	8.50	0.48	0.42	148	11	171



Manesar Farm (Gurgaon)



Kheri Sikandar (Kaithal)



Kheri Sikandar (Kaithal)



Kheri Sikandar (Kaithal)



Jagsi (Sonipat)



Jagsi (Sonipat)



Kheri Sikandar (Kaithal)

Pic. 5. View of different on-going experiments at different locations

Results obtained:

Grain and stover yield of mustard:

The grain and stover yield of mustard varied from 15.81 to 32.92 and 24.62 to 45.84 q/ha, respectively. The lowest grain and stover yield of mustard were recorded in unfertilized control. Among different treatments, highest yield was obtained when sal seed cake was applied in combination with 100% RDF followed by sal seed cake applied with 50% RDF. However, yield was at par when SSC was applied alone or applied in combination with neem cake and vermi compost. The yield tended to be higher when SSC was applied in combination with neem cake or vermi compost compared to sal seed cake applied alone (**Table 5**). The B:C ratio calculated for mustard crop (Var. RH – 725) at Kheri Sikander (Kaithal District) ranged from 1.10 to 2.02. Highest B:C ratio was observed when sal seed cake was applied in combination with 100% RDF and lowest in unfertilized control.

Table 5. Effect of value added sal seed cake alone and in combination with neem cake, vermi compost and inorganic fertilizers on yield and economic (B:C ratio) of mustard crop (Var. RH – 725) at Kheri Sikander (Kaithal District).

Treatment	Yield (q/ha)		B:C ratio
	Grain	Stover	
Unfertilized control	15.81	24.62	1.10
Value added SSC (1 t/ha)	24.20	33.80	1.47
Value added SSC (0.7 t/ha + NC (0.3 t/ha)	25.34	34.65	1.53
Value added SSC (0.7 t/ha + VC (0.3 t/ha)	25.13	36.06	1.58
Value added SSC (1 t/ha) + 50% of RDF	29.84	40.57	1.86
Value added SSC (1 t/ha) + 100% RDF	32.92	45.84	2.02
LSD (0.05)	2.41	3.09	

Nutrient (N, P, K) content in mustard grain and stover:

The data presented in **Table 6** showed that NPK content in grain and stover increased significantly with the application of sal seed cake applied alone or applied in combination with neem cake or vermi compost or inorganic fertilizers over unfertilized control. Highest NPK content was observed when sal seed cake was applied with 100% RDF. The NPK content of mustard grain and stover samples was at par when sal seed cake applied alone or applied in combination with vermi compost and neem cake. Higher NP content was found in mustard grain samples than stover, however a reverse trend was observed in case of K.

Table 6. Effect of value added sal seed cake alone and in combination with neem cake, vermi compost and inorganic fertilizers on NPK content in grain and stover of mustard (Var. RH – 725).

Treatment	N (%)		P (%)		K (%)	
	Grain	Stover	Grain	Stover	Grain	Stover
Unfertilized control	2.96	0.53	0.551	0.117	0.654	1.223
Value added SSC (1 t/ha)	3.43	0.59	0.621	0.132	0.744	1.323
Value added SSC (0.7 t/ha + NC (0.3 t/ha)	3.48	0.61	0.622	0.134	0.745	1.325

Value added SSC (0.7 t/ha + VC (0.3 t/ha)	3.51	0.60	0.623	0.135	0.746	1.324
Value added SSC (1 t/ha) + 50% of RDF	3.62	0.62	0.641	0.136	0.752	1.331
Value added SSC (1 t/ha) + 100% RDF	3.94	0.65	0.721	0.145	0.774	1.356
LSD (0.05)	0.26	0.04	0.041	0.008	0.021	0.035

Table 7. Effect of value-added SSC alone and in combination with NC, VC and inorganic fertilizers on post-harvest soil OC (%) after mustard at Kheri Sikander (Kaithal)

Treatment	OC (%)	% increase in OC
Unfertilized control	0.61	-
Value added SSC (1 t/ha)	0.70	0.09
Value added SSC (0.7 t/ha + NC (0.3 t/ha)	0.69	0.08
Value added SSC (0.7 t/ha + VC (0.3 t/ha)	0.71	0.10
Value added SSC (1 t/ha) + 50% of RDF	0.73	0.12
Value added SSC (1 t/ha) + 100% RDF	0.75	0.14
LSD (0.05)	0.04	-

Initial OC content – 0.60%

The organic C content of soil after harvest of mustard increase (**Table 7**) with the application of sal seed cake alone or with neem cake or vermi compost or inorganic fertilizers over unfertilized control. The highest organic C content was found in sal seed cake + 100% RDF followed by sal seed cake + 50% RDF. The organic C content was at par when sal seed cake was applied alone or applied in combination with neem cake or vermi compost (**Table 7**). The percent increase in organic C content ranged from 0.08 to 0.14% with the addition of sal seed cake alone or with neem cake or vermi compost or inorganic fertilizers over unfertilized control.

Grain and straw yield of wheat at different locations:

The data related to wheat grain and straw yield (**Table 8**) indicated that application of sal seed cake alone or with neem cake or vermi compost or inorganic fertilizers increased wheat grain and straw yield over unfertilized control irrespective of locations. The highest grain and straw yield of wheat was recorded under treatment sal seed cake + 100% RDF followed by sal seed cake + 50% RDF. Wheat grain and straw yield was at par when sal seed cake was applied alone or applied in combination with neem cake or vermi compost (**Table 8**). Higher yield of wheat was observed at Kaithal site followed by Sonipat and Manesar sites. Highest B:C ratio calculated for wheat crop was observed at Kaithal site followed by Sonipat and Manesar site. Irrespective of sites, higher B:C ratio was observed when sal seed cake was applied in combination with 100% RDF.

Table 8. Effect of value added sal seed cake alone and in combination with neem cake, vermi compost and inorganic fertilizers on yield and B:C ratio of wheat at different locations of Haryana

Treatment	Grain yield (q/ha)			Straw yield (q/ha)			B:C ratio		
	Manesar (HD3086)	Sonipat (HD3226)	Kaithal (DBW187)	Manesar	Sonipat	Kaithal	Manesar	Sonipat	Kaithal
Unfertilized control	14.13	17.15	19.15	19.91	22.02	27.42	0.67	0.74	0.84
Value added SSC (1 t/ha)	26.24	28.24	30.66	33.27	34.27	45.38	1.00	1.02	1.18
Value added SSC (0.7 t/ha + NC (0.3 t/ha))	27.16	27.56	31.56	34.84	33.84	46.39	1.02	1.04	1.16
Value added SSC (0.7 t/ha + VC (0.3 t/ha))	28.42	28.81	31.77	35.75	34.75	47.97	1.06	1.07	1.20
Value added SSC (1 t/ha) + 50% of RDF	37.02	41.02	44.02	46.13	49.13	65.59	1.46	1.53	1.69
Value added SSC (1 t/ha) + 100% of RDF	41.55	47.55	49.88	55.87	58.87	75.32	1.63	1.73	1.87
LSD (0.05)	2.60	2.56	2.86	3.15	3.71	4.01			

Table 9. Effect of value-added SSC alone and in combination with NC, VC and inorganic fertilizers on N, P and K content in wheat grain at Kheri Sikander (Kaithal)

Treatment	Grain concentration (%)		
	N	P	K
Unfertilized control	0.89	0.29	0.34
Value added SSC (1 t/ha)	1.14	0.31	0.40
Value added SSC (0.7 t/ha + NC (0.3 t/ha))	1.16	0.31	0.41
Value added SSC (0.7 t/ha + VC (0.3 t/ha))	1.19	0.30	0.40
Value added SSC (1 t/ha) + 50% of RDF	1.54	0.39	0.50
Value added SSC (1 t/ha) + 100% RDF	1.66	0.43	0.54
LSD (0.05)	0.09	0.015	0.05

The Total N, P and K content in wheat grain increased significantly with the application of sal seed cake applied alone or applied in combination with neem cake or vermi compost or inorganic fertilizers over unfertilized control (Table 9). Highest N, P and K content was observed when sal seed cake was applied with 100% RDF. The N, P and K content of wheat grain was at par when sal seed cake applied alone or applied in combination with vermi compost and neem cake.

Table 10. Effect of value added sal seed cake alone and in combination with neem cake, vermi compost and inorganic fertilizers on post-harvest soil OC (%) after wheat at different locations.

Treatment	Kheri Sikandar (Kaithal)	Jagsi (Sonipat)	Manesar (Gurgaon)
Unfertilized control	0.58	0.43	0.18
Value added SSC (1 t/ha)	0.67	0.51	0.25
Value added SSC (0.7 t/ha + NC (0.3 t/ha)	0.66	0.52	0.26
Value added SSC (0.7 t/ha + VC (0.3 t/ha)	0.68	0.53	0.24
Value added SSC (1 t/ha) + 50% of RDF	0.71	0.55	0.30
Value added SSC (1 t/ha) + 100% RDF	0.72	0.57	0.32
LSD (0.05)	0.05	0.04	0.03
Initial OC (%)	0.57	0.42	0.17

The organic C content of soil after harvest of wheat at different locations increased (**Table 10**) with the application of sal seed cake alone or with neem cake or vermi compost or inorganic fertilizers over unfertilized control. The organic C content was significantly higher in sal seed cake + 100% RDF followed by sal seed cake + 50% RDF. The organic C content was at par when sal seed cake was applied alone or applied in combination with neem cake or vermi compost. The percent increase in organic C content ranged from 0.08 to 0.14%, 0.08 to 0.14% and 0.07 to 0.14% with the addition of sal seed cake alone or with neem cake or vermi compost or inorganic fertilizers over unfertilized control.

Laboratory experiment:



The NO₃-N content in soil:

With increasing period of incubation, content of NO₃-N increased with increasing period of incubation in unfertilized control or urea applied alone (**Table 11**). But when sal seed cake was applied alone or applied in combination with neem cake, it releases less amount of NO₃-N over control indicating reduction of nitrification.

Table 11. Quantitatively changes in NO₃-N concentration at different times of incubation in urea amended soil as influenced of SSC and NC.

Treatment	Days of Incubation					
	1	7	14	21	28	Mean
Soil (Control)	25.7	34.0	44.7	50.1	59.3	42.8
Soil + urea	38.7	98.0	132.7	147.1	162.5	115.8
Soil + urea + SSC (1%)	32.0	35.1	46.4	55.1	57.2	45.2
Soil + urea + NC (1%)	30.1	34.2	45.6	53.1	54.1	43.4
Soil + urea + SSC (0.75%) + NC (0.25%)	28.1	32.5	44.6	52.0	53.1	42.1
Mean	30.9	46.8	62.8	71.5	77.24	-

Lab experiment is under progress and data on nitrifying bacteria population is under progress.

Salient findings of the project:

- After value addition, total N, P and K content of SSC was increased to about 21%, 53% and 23%, respectively.
- Addition of value-added SSC alone and in combination with NC inhibited the release of N from NH₄ to NO₃ indicating an effective nitrification inhibitor.
- Application of SSC alone or with NC or VC or inorganic fertilizers increased yields of both mustard and wheat crops and their total NPK content in grain and straw) and OC content of post-harvest soil samples over unfertilized control at all the locations. However, the yield and total NPK content was found at par when SSC applied alone or applied with VC or NC.
- Highest yields of mustard and wheat were recorded under treatment SSC + 100% RDF followed by SSC + 50% RDF. Higher wheat yield was observed at Kaithal site followed by Sonipat and Manesar.
- SSC can be promoted as organic manure but use of SSC as a component of INM is advisable as it would help in sustaining crop productivity and soil health on long-term basis.

Demo 2: Providing events for Local Farmers and Food producers to contact and transfer Knowledge

Demo -2

Providing events for local farmers and food producers to connect and transfer knowledge (Free/Paid)

There is a potential availability of about 5.5 Mt sal seeds year⁻¹ and after taking oil from the sal seeds, about 3-5 Mt de-oiled sal cakes are left as waste. The nutrient needs of Indian agriculture to some extent can be met by utilizing this nutrient-rich waste. The main issue with SSC is the tannin content. Value-added SC is suggested as a remedy for this problem.

Procedure for preparation of value added sal seed cake:

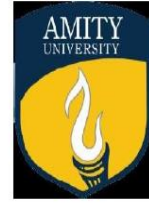
For preparation of value added sal seed cake, sal seed cake was soaked in a solution containing rock phosphate (2.0%), urea (0.5%) and kitchen wastewater (10%) for half an hour and then allowed to drain. Kept overnight, then soaked sal seed cake was mixed with cow dung (2%), FYM (5%) and vermi compost (5%) and leguminous materials. The proportion of composting material was 3 parts of sal seed cake and 1 part of mixture of organic manures. Composted material was composted in a pit of size 1m x 1m x 1m. After filling up the pits, water was added to maintain the moisture to about 60%. After 1 week, inoculation of *Trichoderma viride* @ 500 gm mycelium / tone sal cake was done to decompose of cellulosic materials. Cover the pit with a polythene sheet to conserve moisture and heat and protect from rainwater. Periodic turning of compost mixture was made once in 20 days. After 3 weeks, inoculation of *azotobacter chroococum* and PSB @ 500 ml/tonne was done. The compost was ready within 1-1½ month. The cost for preparation of one tonne of value added sal cake manure was approximately Rs. 500 to 600. The flow chart for preparation of value added sal seed cake is presented in a project report submitted to funding agency.

Salient findings based on the demonstrations conducted for preparation of value added sal seed cake:

- Sal seed cake had a total N, P, and K content of 2.16, 1.07, and 1.56%, respectively. After value addition, the sal seed cake's total N, P, and K content increased to roughly 21%, 53%, and 23%, respectively.
- The primary problem with SSC is that it had a very high tannin content, which was greatly decreased via composting for one and a half months.
- At farmers' fields at three locations (Manesar, Sonipat, and Kaithal), Haryana, the technology for preparing value-added SSC was demonstrated.
- Tribal farmers could benefit from jobs created by the preparation of value added sal seed cake.
- Local farmers in tribal areas may use it because it is not very expensive, and the preparation of value-added sal seed cake offers possibilities for creating jobs and improving the economic conditions of tribal people.
- Farmers can start production of value added sal seed cake on a commercial basis.

Demo 3: Unnat Bharat Abhiyan





UNNAT BHARAT ABHIYAAN

The Mission of Unnat Bharat Abhiyan is a Central Government Programme to enable higher educational institutions to work with the people of rural India through identifying development challenges and evolving appropriate solutions for accelerating sustainable growth. It aims to create a virtuous cycle between society and an inclusive academic system by providing knowledge and practices for emerging professions and to upgrade the capabilities of both public and private sectors in responding to the development needs of rural India.

Vision : Unnat Bharat Abhiyan is inspired by the vision of transformational change in rural development processes by leveraging knowledge institutions to help build the architecture of an Inclusive India.

Mission: The Mission of Unnat Bharat Abhiyan is to enable higher educational institutions to work with the people of rural India in identifying development challenges and evolving appropriate solutions for accelerating sustainable growth. It also aims to create a virtuous cycle between society and an inclusive academic system by providing knowledge and practices for emerging professions and to upgrade the capabilities of both the public and the private sectors in responding to the development needs of rural India.

Goals: To build an understanding of the development agenda within institutes of Higher Education and an institutional capacity and training relevant to national needs, especially those of rural India.

To re-emphasize the need for field work, stake-holder interactions and design for societal objectives as the basis of higher education.

- To stress on rigorous reporting and useful outputs as central to developing new professions.
- To provide rural India and regional agencies with access to the professional resources of the institutes of higher education, especially those that have acquired academic excellence in the field of science, engineering and technology, and management.
- To improve development outcomes as a consequence of this research. To develop new professions and new processes to sustain and absorb the outcomes of research.
- To foster a new dialogue within the larger community on science, society and the environment and to develop a sense of dignity and collective destiny.

REPORT OF UNNAT BHARAT ABHIYAAN ACTIVITIES

AIMS AND OBJECTIVES

A survey was conducted between 15-19 June 2019 under Unnat Bharat Abhiyan (under MHRD) by students of Amity institute of organic agriculture . The major objectives were

1. To find number of beneficiaries of various government schemes and to find whether these schemes are reaching common people.
2. To identify major problems of the villagers and to find solutions for the same. The villagers were asked questions based on household survey form provided by Unnat Bharat Abhiyan.

NAGLIWAZIDPUR

Nangli Wazidpur is a village in the western part of the state of Uttar Pradesh. It forms part of the New Okhla Industrial Development Authority's planned industrial city, Noida, falling in Sector-135, noida. Nangli Wazidpur is about 25 kilometers (12 mi) southeast of New Delhi and Nangli Wazidpur is around 900 meters from Yamuna Expressway,formerly known as Taj Expressway, and opposite Sector 93. The village is a part of the Dadri Vidhan Sabha (state assembly) constituency and Gautam Buddh Nagar Lok Sabha (parliamentary) constituency. In terms of caste structure, Rajputs (Hindus) are the majority in this village. The total population is 1800.



VILLAGE OVERVIEW -

GRAM PANCHAYAT	Nagli
BLOCK	
DISTRICT	Gautam Buddh Nagar
STATE	Uttar Pradesh

THEMES- Importance of millets , elaboration of unnat bharat abhiyaan , field survey

VISIT TO PRIMARY SCHOOL

First activity under unnat bharat abhiyaan was a visit to primary school which was headed by Head of department Dr.Sangeeta Pandey and Dr. Durgesh Tripathi along with the head of KVK department Dr. Mayank Rai and few students of Amity University. following were the major topics of discussion during the interaction session :

- **International year of millets**
 - Millet is easy to grow as it's low maintenance and drought resistance grain.
 - Millet grows extremely quickly and matures in almost half the time required for rice and wheat.
 - It is gluten free and a good source of protein, fiber, micronutrients.
 - Millet contains fiber, which contributes to digestive health .
 - Easy to cook millet recipes – kheer, chapati, dosa etc.

- **Unnat Bharat Abhiyaan demonstration**
 - **Objective** -The vision of Unnat Bharat Abhiyan is to enable Higher Educational Institutions (HEIs) to work with the rural people and identify the challenges they face and come up with solutions for their sustainable development.
 - **Slogan**- The main motive to carry forward the Gandhian ideology of "Swacchta Hi Seva" and the mission and vision of the team was "Say NO to single use plastics" . First, the UBA team collaborated with NSS team members in a slogan writing competition.
 - **Themes**- Organic farming, water management, renewable energy,Artisans industry and livelihood, basic amenities and convergence.

DOOR TO DOOR SURVEY

Students of Amity University went door to door visits in the village to collect information about them and to find out the problems they are facing in the village.

- **No. of house surveyed – 20**

KEY FINDINGS –

1. Major occupations include – farming, unskilled manual labour, livestock raising, only a few people migrated for work in the city.
2. Almost all the houses had electricity connection and electricity availability was approx. 22 hr/day.
3. Most of the houses had piped water at home.
4. Major crops grown – rice and wheat.

5. Farmers had no knowledge about organic farming hence they mostly preferred chemical fertilizers and pesticides.
6. Major problems-
 - a. Drainage system improper.
 - b. People were unaware of government schemes.
 - c. No work under MGNREGA.
 - d. No old age pension.

Number of households benefited from government schemes

NAME	BENEFICARY INDIVIDUAL
PM Jan Dhan Yojana	
Sukanya Samridhi Yojana	
Atal pension Yojana	
Fasal Bima Yojana	
Kisan Sinchai Yojana	
PM Ujjwala Yojana	
PM Awas Yojana	

SCOPE OF DEVELOPMENT

1. Awareness program about various beneficial government schemes.
2. Construction of proper drainage systems.
3. Development of hospitals and higher secondary schools.
4. Acknowledging people about the importance of organic farming.

Demo 4 : Indian's Only Trade Fair Specialized On Urban Farming

Demo-4

India's Only TRADE FAIR SPECIALIZED ON URBAN FARMING

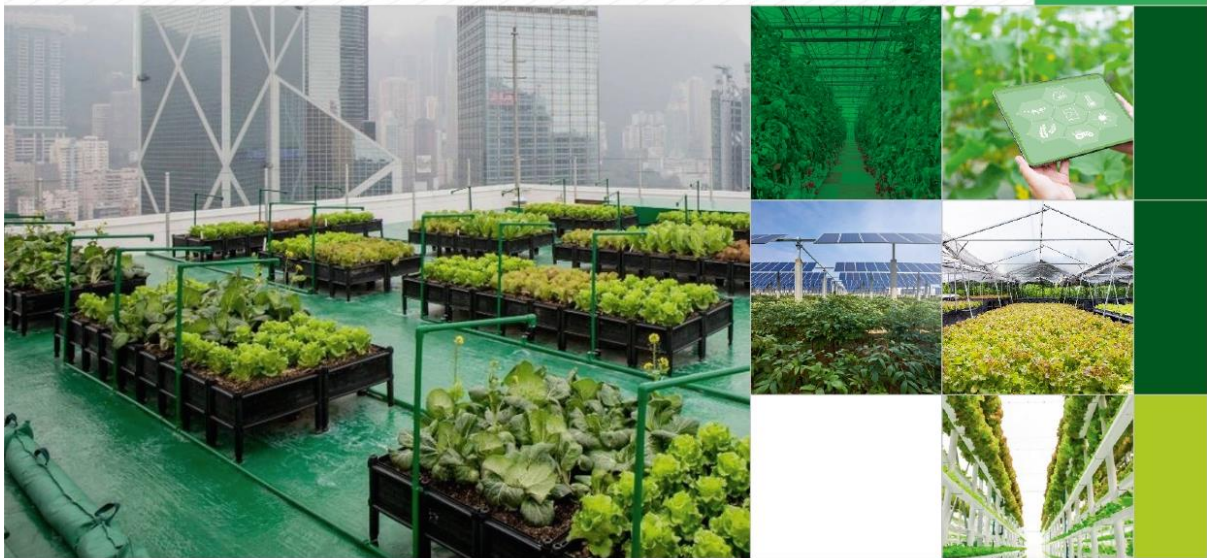
2nd Edition

SUFEX 2023

SMART URBAN FARMING EXPO

24-25, March, 2023, Thyagraj Stadium, INA, New Delhi

- Technical Sessions
- DIY Learning
- Citizen's Gallery
- Gardener's Clinic
- Investor's Session
- Start-up Pavilion
- Organic Haat
- Women Empowerment
- Awards
- Farm Visits
- CEO Conclave



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"India's Home Gardening Partner"

INTRODUCTION TO URBAN FARMING

"In this busy Urban Life, knowingly or unknowingly we contribute to degrade the environment in some or the other ways, Urban Farming is the solution to make us and our family Carbon Net Zero."

Urban Farming, is the practice of cultivating, processing, food in or around urban areas.

Urban Farming shows great potential in the fulfillment of basic human needs, it not only provides food but also ensures a sustainable distribution and production system thereby creating employment opportunities and regular income for individuals. It also helps countries in the protection of their environment It can be done in front and backyards, balconies, sunrooms, indoor greenhouses, rooftops, or patios.

Through Urban Farming, the vegetables and fruits can be grown organically. Using no chemical farming encourages the energy conservation by 35-50%. It helps reducing carbon foot prints, and also enhances the greenery in the environment.

IMPORTANCE OF URBAN FARMING

- It puts school lessons into practice and can boost children's interest in agriculture-Experiential Learning
- It can boost food security
- Urban farming is of economic importance and creates jobs
- It is of social importance and creates environmental awareness
- Urban farming improves the overall human body wellbeing
- It ensures healthy living
- It benefits the environment
- Will bring people closer to nature and its related goodness
- A sensitivity and responsibility will be inculcated

OBJECTIVE OF THE EVENT

To bring technology and farming within the reach of a common man for social, economic and health benefits leading to creation of Greenfield Spaces and Environmental friendly pockets. Today, around the world, people are starting to grow food in the most untraditional places and spaces. Urban farming has become the new frontier in farming. From simple community vegetable gardens to providing healthy food to consumers in the nearby areas, with smart technology, urban farming can go anywhere. In cities, where sufficient space is a luxury, urban farming can be a boon. Lately, health concerns have further gravitated the focus of citizens at large for food safety, healthy environment and aesthetic surrounding.

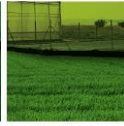
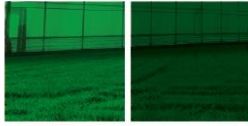
EXHIBITOR'S PROFILE

- Hydroponics
- Aquaponics
- Aeroponics
- Vertical Farmers/Growers
- Architects/Consultants/Contractors
- Organic Farms
- Urban Beekeeping
- Porta Cabins
- Automation and Technology and Accessories
- Biofloc Fish Farming
- Urban Landscaping
- Greenhouse technology
- Grow lights
- Greenhouse technology
- Grow lights
- Agrivoltaics

VISITOR'S PROFILE

- Agriculture industry
- Urban Planners
- Architects / Interior design
- Technology suppliers
- Corporate, Start - up
- System integrators
- Govern mental Bodies
(Local, Regional, National)
- Project developers
- Finance! Consulting
- Food Logistics
- Anyone interested in vertical farming

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ABOUT **SUFex** **LANDSCAPE EXPO-SULex**

SUFex Landscape Expo is the India's only specialized trade show for the industry and an ideal platform for organisations to showcase leading trend products, new services, key skills as well as being the perfect environment for visitors to discover the newest and most innovative products and solutions to help them in their designs and projects. SUFex-Landscape Expo is established as the essential trade event for discerning landscape designers, architects, architectural technologists, contractors, facilities managers and interior designers involved in some of the most important, prestigious and valuable projects in India and beyond. where buyers and sellers come together to do business. Meet face-to-face, discover new trends and expand your network to help the business and the green industry grow.



EXHIBITOR'S PROFILE

- Indoor & Outdoor Plants
- Landscape & Architect Companies
- Fountain & Accessories Suppliers
- Garden Machinery & Tools
- Fertilizer & Nutrients
- Golf Course & Play Ground Consultants
- Garden Furniture
- Water Features & Pond Accessories
- Pump & Pipes
- Flowers, Plants & Seed Companies
- Paving Materials & Tiles
- Stone & Granite Products
- Terracotta Gardenware & Pottery
- Synthetic Turf-Golf Putting, Greens & Sports
- Sculptures & Environment Art
- Bird / Pet Houses for Gardens
- Swimming Pools & Related Products
- Real Estate Developer

VISITOR'S PROFILE

- Landscape Architects
- Nurserymen
- Interior Designers
- Town Planners
- Golf Architects & Consultants
- Urban Planning Consultants
- Golf Course Superintendents and Managers
- Nurserymen & Gardeners
- Environment Consultants
- Ecologists
- Municipal Authorities
- Parks & Garden Departments
- Hotel, Restaurants & Resorts
- Tourist Development Depts.
- Hospital Planners
- Shopping Mall Designers

PAST GLIMPSES



Participation Options & rates:

Built up Stall :
Rs. 8000/- per sq.mtr. + GST
Bare Space :
Rs. 7000/- per sq.mtr. + GST
(minimum 36 sq.mtrs. to be booked)

SUFex 2023

SMART URBAN FARMING EXPO

International Rates:

Built up Stall :
\$120 per sq.mtr.
Bare Space:
\$100 per sq.mtr.



OUR PAST PARTNERS



Mojo Events in AY 2022-23

S. no.	Title of the event	Date of the event	Venue	Name of the institution organized	Major Highlights
1	Preparation to prepare value added sal cake manure	January 2022	Farmers field at Manesar (Gurgaon), Jagssi (Sonipat) and Kheri Sikander (Kaithal) in Haryana	AFAF	<p>1.After value addition, the sal seed cake's total N, P, and K content increased to roughly 21%, 53%, and 23%, respectively.</p> <p>2.The primary problem with SSC is that it had a very high tannin content, which was greatly decreased via composting for one and a half months.</p> <p>3.At farmers' fields at three locations (Manesar, Sonipat, and Kaithal), Haryana, the technology for preparing value-added SSC was demonstrated.</p> <p>4.Tribal farmers could benefit from jobs created by the preparation of value added sal seed cake.</p> <p>5.Local farmers in tribal areas may use it because it is not very expensive, and the preparation of value-added sal seed cake offers possibilities for creating jobs and improving the economic conditions of tribal people.</p> <p>6.Farmers can start production of value added sal seed cake on a commercial basis.</p>

2	Evaluation of value-added sal cake manure as organic manure in mustard and wheat crops	January 2022	Farmers field at Manesar (Gurgaon), Jagssi (Sonipat) and Kheri Sikander (Kaithal) in Haryana	AFAF	<p>1.Addition of value-added SSC alone and in combination with NC inhibited the release of N from NH₄ to NO₃ indicating an effective nitrification inhibitor.</p> <p>2.Application of SSC alone or with NC or VC or inorganic fertilizers increased yields of both mustard and wheat crops and their total NPK content in grain and straw) and OC content of post-harvest soil samples over unfertilized control at all the locations. However, the yield and total NPK content was found at par when SSC applied alone or applied with VC or NC.</p> <p>3.Highest yields of mustard and wheat were recorded under treatment SSC + 100% RDF followed by SSC + 50% RDF. Higher wheat yield was observed at Kaithal site followed by Sonipat and Manesar.</p> <p>4.SSC can be promoted as organic manure but use of SSC as a component of INM is advisable as it would help in sustaining crop productivity and soil health on long-term basis.</p>
3	Unnat Bharat Abhiyaan	22 February 2023	Nangli Wazidpur is a village in the western part of the state of Uttar Pradesh	Amity Institute of Organic Agriculture	<p>First activity under Unnat Bharat Abhiyaan was a visit to the primary school which was headed by Joint Coordinators Dr. Sangeeta Pandey and Dr. Durgesh Tripathi along with the head of KVK department Dr. Mayank Rai and few students of Amity University. Following were the major topics of discussion during the interaction session :</p> <ol style="list-style-type: none"> 1.International year of millets 2. Unnat Bharat Abhiyaan demonstration : Higher Educational Institutions (HEIs) to work with the rural people and identify the challenges they face and come up with solutions for their sustainable development. 3. DOOR TO DOOR SURVEY

4	<p>“Urban and Peri-Urban Farming: Status and Way Forward” SUFEX 2023</p>	<p>24th -25th March 2023</p>	<p>Tyagraj Stadium in New Delhi</p>	<p>Amity University</p>	<p>Highlight the ongoing global trend of urbanization, which is leading to increased demand for food in cities and the expansion of urban areas into previously agricultural land.</p> <p>Emphasize the role of urban and peri-urban farming in providing fresh, locally grown produce to urban populations, reducing the carbon footprint associated with food transportation.</p> <p>Discuss how urban and peri-urban farming can contribute to biodiversity conservation by providing habitat for pollinators and other wildlife in urban areas.</p> <p>Highlight the potential for urban farming to reduce food waste by shortening the supply chain and making use of surplus or unused land within cities.</p> <p>Support research and development efforts to improve urban farming practices, increase crop yields, and develop new varieties suitable for urban environments.</p>
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