Date: 31/07/2019

To,
The Principal
K. K. Wagh College of Agriculture,
Nashik

Subject Regarding permission for Certificate Course.....

Respected Sir,

On behalf of the Department of Agronomy, we humbly request permission to initiate a Certificate course titled **'Basics of Application of Cover crops and Green manures in Agriculture'**. This course is scheduled from 19/08/2019 to 24/08/2019 and will involve approximately 15 second year students. It is anticipated that this course will greatly benefit our students in enhancing their knowledge about application and importance of cover crops and green manures in agriculture. We kindly ask for your approval for the implementation of this course.

Thanking You,

Permission granted

31/7

K. K. WAGH COLLEGE OF AGRICULTURE NASHIK-3

Yours faithfully,

(Prof S V Sonawane)
Course Coordinator

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K. K. Wagh College of Agriculture,
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Saraswati Nagar, Panchavati, Nashik- 422 003. Maharashtra
College Code;11135 **AISHE Code: C-50690**

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Department of Agronomy

Certificate course in

'Basics of Application of Cover crops and Green manures in Agriculture'

Academic Year 2019-20

Syllabus Committee

Sr no	Name of teacher	Designation	Department	Role in course
1	Prof. S V Sonawane	Assistant Professor	Agronomy	Course coordinator
2	Prof. B R Waghmode	Assistant Professor	Agronomy	Committee member
3	Prof. P M Patil	Assistant Professor	Agronomy	Committee member

Course Coordinator
(SVSonawane)

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Date: 07/08/2019

Academic Year 2019-20
Department of Agronomy
Minutes of the Board of Studies Meeting for the Short-Term Certificate Course

A meeting of the Board of Studies for the Short-term Certificate Course in **'Basics of Application of Cover crops and Green manures in Agriculture'** was convened on 05 August 2019, at 12:00 PM in the Department of Agronomy. The meeting was attended by the following Syllabus Design Committee members:

Sr no	Name of the expert	Designation	Sign
1	Dr. S. M. Hadole	Principal	
2	Prof. S V Sonawane	Course Coordinator	
3	Prof. B R Waghmode	Member	
4	Prof. P M Patil	Member	

Minutes of Meeting

The Board of Studies convened a meeting on 5 August 2019,at 12:00 PM in the Department of Agronomy to address various aspects concerning the Short-Term Certificate Course in 'Basics of Application of Cover crops and Green manures in Agriculture' The meeting focused on the following key points:

1. Syllabus Formation: Members deliberated on developing a syllabus that emphasizes on relevant knowledge and application of cover crops and green manuring
2. Dissemination of Work: Strategies for effectively teaching practices of cultivation and use of cover crops and green manuring crops were discussed to aid students in the course.
3. Encouragement of Students: The meeting stressed the importance of offering guidance and motivation to students. Cover crops and green manuring was recognized as effective practices to improve soil health, emerging as an environmentally friendly and climate - resilient approach.
4. Examination of Short-Term Course: The examination structure and assessment methods for the short-term course were reviewed. The board explored ways to ensure fair and comprehensive evaluations that accurately assess students'

The meeting concluded with a commitment to refine the course and its delivery methods to better meet the needs of students enrolled in the Certificate Course in 'Basics of Application of Cover crops and Green manures in Agriculture'

Course coordinator

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Department of Agronomy

Certificate course in
'Basics of Application of Cover crops and Green manures in Agriculture'
Academic Year 2019-20

Syllabus Outcomes:

1. To acquire the knowledge of using the application of cover crops and green manures *viz.*, soil erosion reduction, Water retention, biodiversity enhancement, climate change mitigation.
2. Participants will get deeper knowledge of application of cover crops and green manures for improved crop yield and nutrient cycling.
3. The program will enhance the practical applicability of improved crop yield and soil health.

Sr no	Topic	Description	No of Lectures
1	Introduction of cover crops and green manures	Importance and effect of cover crops and green manure crops Difference between cover crops and green manuring crops Characteristics, Principles, Objectives of cover crops and green manuring crops.	06 hours
2	Status of cover crops and green manuring crops in India	Area Variety of crops No. of state growing under area of cover crops and green manure crops	03 hours

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Sr no	Topic	Description	No of Lectures
3	Criteria for the selection of cover crops and green manure crops and package of practices	Fast germination and emergence competitiveness ease to suppression fertility benefits low cost establishment Field preparation, crop rotation of cover crops and green manure crops Field preparation, Classification & crop rotation of cover crops and green manure crops Age of incorporation	06
4	Introduction and comparison with brown manuring	History, concept, application of brown manuring. Comparison between green manuring & brown manuring	03
5	Effect of cover crop and green manuring to agroecosystem	Advantages Limitations Effect on soil, weed, pest and disease, biodiversity and wild life	06
6	Nutrient content of cover crops and green manure crops	Nutrient content (%) in air dry weight of (N, P_2O_5, K_2O) N accumulated Dry matter (t/ha)	06
		Total	**30 hours**

Course Coordinator

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Date: 13/08/2019

Student Notice

All the students of B.Sc.(Hons.) Agriculture second year students are informed that for the academic year 2019-20 the Certificate Course on **'Basics of Application of Cover crops and Green manures in Agriculture'** is starting from 19/08/2019 to 24/08/2019. For this certificate course students should submit their names to the Certificate Course Coordinator Assistant Prof. S V Sonawane up to 16 /08 /2019.

Duration: 30 Hrs.

Period |: 19/08/2019 to 24/08/2019

Time:

Morning Session: 10.00 am to 1.00 pm

Afternoon session: 2.00pm to 5.00 pm

Note: This course is free of cost to all students.

S V Sonawane

Course Coordinator

PRINCIPAL
Principal
K.K.Wagh College of Agriculture
Saraswatinagar, Panchavati, Nashik

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Department of Agronomy

Certificate course in

'Basics of Application of Cover crops and Green manures in Agriculture'

Academic Year 2019-20

Enrolled Student List

SR NO	REGISTRATION NO	NAME OF STUDENT
1	AKN-2018/005	Ate Nikhil Amardeep
2	AKN-2018/014	Burkul Akshada Sunil
3	AKN-2018/019	Deshmukh Rohit Kailas
4	AKN-2018/029	Gaund Nikita Appasaheb
5	AKN-2018/031	Gavit Asmita Arvind
6	AKN-2018/042	Kadus Pragati Baban
7	AKN-2018/047	Kapadnis Mahesh Jibhau
8	AKN-2018/051	Kathepuri Avinash Vikas
9	AKN-2018/067	More Kartik Vilas
10	AKN-2018/076	Pagar Chaitali Tukaram
11	AKN-2018/086	Patil Rohan Rajendra
12	AKN-2018/098	Sagbhor Rutuja Vasant
13	AKN-2018/099	Shaikh Rojmin Tabrej
14	AKN-2018/104	Sonawane Harshvardhan Milind
15	AKN-2018/111	Vasave Harshada Narendra

Course Coordinator

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STUDENT REGISTRATION FORM

Academic Year: 2019-20

(Department of Agronomy)

CERTIFICATE COURSE

'Basics of Application of Cover crops and Green manures in Agriculture'

For Department Use Only

Registration No.: AKN - 2018/029

Student ID:

Name of the Student: Gaund Nikita Appasaheb

Mother's Name: Sunita

Father's Name: Appasaheb Sawala Gaund Year: 1st /2nd /3rd/4th

E-Mail ID: gaundna2000@gmail.com

Address: Sikandar Nagar, Kasaba, Baramati

State: Maharashtra PIN Code: 413102

Mobile No: 9373194593 Alternate contact number: 9763020681

Gender: Male [ ] Female [✓] Other [ ] Religion: Hindu

Date of Birth: 21/10/2000

Educational Qualification (at the time of admission):

HSC ..✓.. Other ..—..

Gaunds

Signature of Student

Place: Nashik

Date: 15/08/2019

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Department of Agronomy
Certificate course in
'Basics of Application of Cover crops and Green manures in Agriculture'
Academic Year 2019-20
Schedule of the course

Sr.no	Topic	Description	Name of the teacher	Department
1	Introduction of cover crops and green manures	Importance and effect of cover crops and green manure crops, Difference between cover crops and green manuring crops, Characteristics, Principles, Objectives of cover crops and green manuring crops.	Prof S V Sonawane	Agronomy
2	Status of cover crops and green manuring crops in India	Area, Variety of crops, No. of state growing under area of cover crops and green manure crops	Prof P M Patil	Agronomy
3	Criteria for the selection of cover crops and green manure crops and package of practices	Fast germination and emergence, competitiveness, ease to suppression, fertility benefits low cost establishment, Field preparation, crop rotation of cover crops and green manure crops, Field preparation, Classification &crop rotation of cover crops and green manure crops, Age of incorporation	Prof B R Waghmode	Agronomy
4	Introduction and comparison with brown manuring	History, concept, application of brown manuring. Comparison between green manuring & brown manuring	Prof P M Patil	Agronomy
5	Effect of cover crop and green manuring to agroecosystem	Advantages Limitations,Effect on soil, weed, pest and disease, biodiversity and wild life	Prof S V Sonawane	Agronomy
6	Nutrient content of cover crops and green manure crops	Nutrient content (%) in air dry weight of (N, P_2O_5, K_2O), N accumulated, Dry matter (t/ha)	Prof B R Waghmode	Agronomy

S V Sonawane
Course Coordinator

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Department of Agronomy

Certificate course in

'Basics of Application of Cover crops and Green manures in Agriculture'

Academic Year 2019-20

Time Table

Sr no	Date	Time		Topic
1	19/08/2019	10.00 am- 01.00 pm	03.00 pm - 05.00 pm	Introduction of cover crops and green manures
2	20/08/2019	10.00 am- 01.00 pm	03.00 pm - 05.00 pm	Status of cover crops and green manuring crops in India
3	21/08/2019	10.00 am- 01.00 pm	03.00 pm - 05.00 pm	Criteria for the selection of cover crops and green manure crops and package of practices
4	22/08/2019	10.00 am- 01.00 pm	03.00 pm - 05.00 pm	Introduction and comparison with brown manuring
5	23/08/2019	10.00 am- 01.00 pm	03.00 pm - 05.00 pm	Effect of cover crop and green manuring to agroecosystem
6	24/08/2019	10.00 am- 01.00 pm	03.00 pm - 05.00 pm	Nutrient content of cover crops and green manure crops

Course Coordinator

K. K. WAGH COLLEGE OF AGRICULTURE NASHIK-3

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K.K.Wagh College of Agriculture
Saraswatinagar, Panchavati, Nashik

K K Wagh College of Agriculture, Nashik
Department of Agronomy
Certificate course in **'Basics of Application of Cover crops and Green manures in Agriculture'**
Academic Year 2019-20

Sr No	Registration no.	Name of Students	19/08/2019		20/08/2019		21/08/2019		22/08/2019		23/08/2019		24/08/2019	
			10:00-1:00	3:00-5:00	10:00-1:00	3:00-5:00	10:00-1:00	3:00-5:00	10:00-1:00	3:00-5:00	10:00-1:00	3:00-5:00	10:00-1:00	3:00-5:00
1	AKN-2018/005	Ate Nikhil Amardeep												
2	AKN-2018/014	Burkul Akshada Sunil												
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8	AKN-2018/051	Kathepuri Avinash Vikas												
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10	AKN-2018/076	Pagar Chaitali Tukaram												
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12	AKN-2018/098	Sagbhor Rutuja Vasant												
13	AKN-2018/099	Shaikh Rojmin Tabrej												
14	AKN-2018/104	Sonawane Harshvardhan Milind												
15	AKN-2018/111	Vasave Harshada Narendra	HW	HW	HW	HW	HW	HW	HW	HW	HW	HW	HW	HW

Course Coordinator

COLLEGE OF AGRICULTURE NASHIK-3

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Certificate course in
'Basics of Application of Cover crops and Green manures in Agriculture'
Academic Year 2019-20

Examination Methodology

Sr no	Nature of exam	Marks
1	Written	50
2	**Total**	**50**

Reference:

1) Chhidda Singh, Modern techniques of raising field corps. Oxford and IBH Publishing Co. Ltd., Bangalore.

2) Modern technique of raising field crops by Chidda singh

3) "In Organic Cover Crops, More Seeds Means Fewer Weeds : USDA ARS". *www.ars.usda.gov*. Retrieved 2024-01-15.

4) Sainju, U. M.; Singh, B. P.; Whitehead, W. F. (2002). "Long-term effects of tillage, cover crops, and nitrogen fertilization on organic carbon and nitrogen concentrations in sandy loam soils in Georgia, USA". *Soil & Tillage Research*. **63** (3–4): 167–179. Bibcode:2002STilR..63..167S. doi:10.1016/s0167-1987(01)00244-6

5) Sharma P, Singh A, and Kahlon C.S, et al 2018). "The role of cover crops towards sustainable soil health and agriculture— a review paper". Am J Plant Sci 09:1935-1951. doi: 10.4236/ajps.2018.99140

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Department of Agronomy

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Academic Year 2019-20

Student Result

Sr. No.	Registration no	Name of the students	Mark Out of 50
1	AKN-2018/005	Ate Nikhil Amardeep	41
2	AKN-2018/014	Burkul Akshada Sunil	43
3	AKN-2018/019	Deshmukh Rohit Kailas	39
4	AKN-2018/029	Gaund Nikita Appasaheb	33
5	AKN-2018/031	Gavit Asmita Arvind	42
6	AKN-2018/042	Kadus Pragati Baban	43
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13	AKN-2018/099	Shaikh Rojmin Tabrej	35
14	AKN-2018/104	Sonawane Harshvardhan Milind	44
15	AKN-2018/111	Vasave Harshada Narendra	43

Course Coordinator

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K K Wagh College of Agriculture, Nashik
Department of Agronomy
Certificate course in **'Basics of Application of Cover crops and Green manures in Agriculture'**
Academic Year 2019-20

Theory examination

Name of student		**Registration no.**	
Day & Date		**Time**	
Subject		**Semester**	
Class		**Marks**	

Multiple Choice Questions

1. What is the primary goal of planting cover crops?			
a. To increase crop yields	b. To reduce soil temperature	c. To add nutrients to the soil	d. To protect the soil
2. Which of the following cover crops has a deep taproot?			
a. Clover	b. Rye	c. Oats	d. Alfalfa
3. What is the primary purpose of green manuring?			
a. To control weeds	b. To add organic matter to the soil	c. To increase crop yield	d.To reduce soil erosion
4. Which is the following is the popular green manure crop?			
a. Wheat	b. Sorghum	c. Sunflower	d. clover
5. Green manuring helps to...			
a. Increase soil pH	b. Decrease Soil temperature	c. Improve soil structure	d. Reduce soil fertility
6. What is the process called when green manure is plowed into the soil?			
a. Incorporation	b. Decomposition	c. Humification	d. Plowing
7. Green manuring reduces soil erosion by….			
a. Increasing runoff	b. Reducing water infiltration	c. Holding soil in place	d. Decreasing soil moisture
8. What is the primary purpose of planting cover crops…			
a. To reduce soil erosion	b. To increase crop yields	c. To add nutrients to the soil	d. To reduce soil temperature
9. Which of the following is a benefit of using cover crops…			
a. Reduce soil compaction	b. Increases soil pollution	c. Decreases soil water holding capacity	d. Supplies nutrients to the crops
10. Green manure crops are typically planted..			
a. During the crop season	b. After the crop season	c. Before the crop season	d. Throughout the year

11. What is the term for the decomposition of green manure…			
a. Mineralization	b. Humification	c. Decomposition	d. Ammonification
12. Which of the following green manure crops is leguminous…			
a. Oats	b. Barley	c. Clover	d. Ryegrass
13. Which of the following cover crops has a high carbon-to-nitrogen ratio..			
a. Clover	b. Rye	c. Oats	d. Buckwheat
14. Green manuring helps to control which of the following soil properties…			
a. Soil temperature	b. Soil pH	c. Soil salinity	d. Soil nutrient deficiency
15. Which of the following is a characteristics og green manure….			
a. High carbon-to-nitrogen ratio	b. Low carbon-to-nitrogen ratio	c. High water requirement	d. Low water requirement
16. Green manuring is an effective method for managing which of the following soil constraints..			
a. Soil acidity	B Soil alkalinity	c. Soil salinity	d. Soil nutrient deficiency
17. Cover crops help to improve soil structure by…			
a. Increasing soil compaction	b. Reducing soil water holding capacity	c. Adding organic matter	d. Decreasing soil aeration
18. What is the ideal time to plant cover crops..			
a. During the crop season	b. After the crop season	c. Before the crop season	d. Any time of the year
19. Which of the following crops is not typically used as a green manure…			
a. Wheat	b. Maize	c. Sunflower	d. Sugarcane
20. What of the following green manure crops is known for its ability to suppress weeds..			
a. Rye	b. Oats	c. Clover	d. Buckwheat

21. What is the primary source of nutrients for green manure crops…			
a. Soil	b. Fertilizers	c. Atmospheric nitrogen	d. Compost
22. Which of the following cover crops is commonly used to reduce soil erosion..			
a. Clover	b. Rye	c. Oats	d. Wheat
23. Which is the primary goal of planting cover crops…			
a. To increase crop yields	b. To reduce soil temperature	c. To add nutrient to the soil	d. To protect the soil
24. Green manuring helps to improve soil fertility by…			
a. Adding organic matter	b. Reducing soil pH	c. Increasing soil compaction	d. Decreasing soil water-holding capacity
25. Which of the following is a benefit of using green manure in crop rotation..			
a. Reduces soil fertility	b. Increase soil erosion	c. Decrease crop yield	d. Breaks disease cycles
26. Cover crops helps to improve soil aeration by…			
a. Increasing soil compaction	b. Reducing water holding capacity	c. Adding organic matter	d. Increasing soil porosity
27. Which of the following is a limitation of using green manure…			
a. It requires additional labor and resources	b. It can be lead to soil compaction	c. It reduces soil fertility	d. It promotes soil erosion
28. Green manuring is most beneficial for soils with…			
a. High pH	b. Low pH	c. Low nutrient availability	d. High nutrient availability
29. Green manuring helps to reduce soil pollution by…			
a. Reducing chemical fertilizer use	b. Increasing pesticide use	c. Reducing soil erosion	d. Increasing industrial waste disposal
30. What is the ideal time to terminate cover crops…			
a. During the crop season	b. After the crop season	c. Before the crop season	d. At flowering stage

41. What is the ideal time to incorporate green manure into the soil in relation to the next crop…			
a) Immediately before planting	b) 2-3 weeks before planting	c) 1-2 month before planting	d) 6-12 month before planting
42. What is the primary mechanism by which cover crops reduce soil compaction..			
a) Improving soil structure	b) Increasing soil water holding capacity	c) Reducing soil bulk density	d) Enhancing soil aeration
43. What is the term for process by which green manure crops add organic matter to the soil..			
a) Humification	b) Decomposition	c) Mineralization	d) Ammonification
44. Which of the following green manure crops is suitable for improving soil health in acidic soils...			
a. Alfalfa	b. Clover	c. Rye	d. Buckwheat
45. What is primary mechanism by which green manure crops reduce soil erosion..			
a) Improving soil structure	b) Increasing soil water holding capacity	c) Reducing soil compaction	d) Enhancing soil cover
46. Which of the following cover crops is used to improve soil health in orchards…			
a. Clover	b. Rye	c. Oats	d. Hairy vetch
47. Which of the following green manure crops has a deep taproot that can break up compacted soil layers…			
a. Radish	b. Clover	C. Rye	d. Oats
48. Which of the following green manure crops is known for its ability to suppress nematodes			
a. Marigold	b. Clover	c. Rye	d. Oats
49. Which of the main benefit of using green manure crops in agroforestry…			
a. They improve soil fertility	b. They reduce soil erosion	c. They increase crop yields	d. They promotes biodiversity
50. Which of the term for the process by which cover crops improve soil structure…			
a. Aggregation	b. Compaction	c. Erosion	d. Degradation

K K Wagh College of Agriculture, Nashik
Department of Agronomy
Certificate course in 'Basics of Application of Cover crops and Green manures in Agriculture'
Academic Year 2018-19

Answer Sheet

1	d. To protect the soil	26	d. Increasing soil porosity
2	d. Alfalfa	27	a. It requires additional labor and resources
3	b. To add organic matter to the soil	28	c. Low nutrient availability
4	d. clover	29	a. Reducing chemical fertilizer use
5	c. Improve soil structure	30	d. At flowering stage
6	a. Incorporation	31	a. They add nutrients to the soil
7	c. Holding soil in place	32	d. Increasing soil porosity
8	a. To reduce soil erosion	33	d. All of the above
9	a. Reduce soil compaction	34	c. Promotes sustainable agriculture
10	c. Before the crop season	35	b. Nutrient retention
11	a. Mineralization	36	a. They reduce soil disturbance
12	c. Clover	37	a. Reduces soil moisture
13	b. Rye	38	a. Reduces soil moisture
14	d. Soil nutrient deficiency	39	a. Alfalfa
15	b. Low carbon-to-nitrogen ratio	40	a. Infiltration
16	d. Soil nutrient deficiency	41	b. 2-3 weeks before planting
17	c. Adding organic matter	42	c. Reducing soil bulk density
18	b. After the crop season	43	c. Reducing soil bulk density
19	d. Sugarcane	44	a. Alfalfa
20	a. Rye	45	d. Enhancing soil cover
21	a. Soil	46	d. Hairy vetch
22	b. Rye	47	a. Radish
23	d. To protect the soil	48	a. Marigold
24	a. Adding organic matter	49	d. They promotes biodiversity
25	d. Breaks disease cycles	50	a. Aggregation

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Department of Agronomy

Certificate course in **'Basics of Application of Cover crops and Green manures in Agriculture'**

Academic Year 2019-20

Exam Block Report

Class- S Y BSc (Agri.) **Date-** 26/08/2019

Subject: Theory Paper of Basics of Application of Cover crops and Green manures in Agriculture

Block no: 02

SR NO	REGISTRATION NO	NAME OF STUDENT	SIGN
1	AKN-2018/005	Ate Nikhil Amardeep	
2	AKN-2018/014	Burkul Akshada Sunil	
3	AKN-2018/019	Deshmukh Rohit Kailas	
4	AKN-2018/029	Gaund Nikita Appasaheb	
5	AKN-2018/031	Gavit Asmita Arvind	
6	AKN-2018/042	Kadus Pragati Baban	
7	AKN-2018/047	Kapadnis Mahesh Jibhau	
8	AKN-2018/051	Kathepuri Avinash Vikas	
9	AKN-2018/067	More Kartik Vilas	
10	AKN-2018/076	Pagar Chaitali Tukaram	
11	AKN-2018/086	Patil Rohan Rajendra	
12	AKN-2018/098	Sagbhor Rutuja Vasant	
13	AKN-2018/099	Shaikh Rojmin Tabrej	
14	AKN-2018/104	Sonawane Harshvardhan Milind	
15	AKN-2018/111	Vasave Harshada Narendra	

Total no of student:
No of student present:
No of students absent

Name and Sign of Jr. Supervisor

Name and Sign of Sr. Supervisor
(Dr. K. D. More)

Department of Agronomy

K. K. WAGH COLLEGE OF AGRICULTURE (NASHIK-3)

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Department of Agronomy

Certificate course in
'Basics of Application of Cover crops and Green manures in Agriculture'

Academic Year 2019-20

Exam Time Table

All enrolled students of the Certificate Course are hereby informed that for the academic year 2019-20, the Certificate Course on 'Basics of Application of Cover crops and Green manures in Agriculture' has been completed. The examination for this certificate course is scheduled to be conducted on 26/08/2019. Therefore, all students are required to be present without exception.

Note: Time Table is as follow

Sr no	Date	Time	Certificate course subject
1	26/08/2019	01:00 to 03:00 pm	Theory exam: Basics of Application of Cover crops and Green manures in Agriculture

Course Coordinator **Exam Incharge** **Principal**

PRINCIPAL
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Saraswatinagar, Panchavati, Nashik

K K WAGH COLLEGE OF AGRICULTURE NASHIK-3

33/50

K K Wagh College of Agriculture, Nashik
Department of Agronomy
Certificate course in **'Basics of Application of Cover crops and Green manures in Agriculture'**
Academic Year 2019-20

Theory examination

Name of student	Gaund Nikita A.	**Registration no.**	AKN-2018/029
Day & Date	26/08/2019	**Time**	01-3:00 pm
Subject	Agronomy	**Semester**	III
Class	S.Y.Bsc	**Marks**	—

Multiple Choice Questions

1. What is the primary goal of planting cover crops?			
a. To increase crop yields	b. To reduce soil temperature	c. To add nutrients to the soil	d. To protect the soil
2. Which of the following cover crops has a deep taproot?			
a. Clover	b. Rye	c. Oats	d. Alfalfa
3. What is the primary purpose of green manuring?			
a. To control weeds	b. To add organic matter to the soil	c. To increase crop yield	d.To reduce soil erosion
4. Which is the following is the popular green manure crop?			
a. Wheat	b. Sorghum	c. Sunflower	d. clover
5. Green manuring helps to...			
a. Increase soil pH	b. Decrease Soil temperature	c. Improve soil structure	d. Reduce soil fertility
6. What is the process called when green manure is plowed into the soil?			
a. Incorporation	b. Decomposition	c. Humification	d. Plowing
7. Green manuring reduces soil erosion by....			
a. Increasing runoff	b. Reducing water infiltration	c. Holding soil in place	d. Decreasing soil moisture
8. What is the primary purpose of planting cover crops...			
a. To reduce soil erosion	b. To increase crop yields	c. To add nutrients to the soil	d. To reduce soil temperature
9. Which of the following is a benefit of using cover crops...			
a. Reduce soil compaction	b. Increases soil pollution	c. Decreases soil water holding capacity	d. Supplies nutrients to the crops
10. Green manure crops are typically planted..			
a. During the crop season	b. After the crop season	c. Before the crop season	d. Throughout the year

11. What is the term for the decomposition of green manure…			
a. Mineralization	b. Humification	c. Decomposition	d. Ammonification
12. Which of the following green manure crops is leguminous…			
a. Oats	b. Barley	c. Clover	d. Ryegrass
13. Which of the following cover crops has a high carbon-to-nitrogen ratio..			
a. Clover	b. Rye	c. Oats	d. Buckwheat
14. Green manuring helps to control which of the following soil properties…			
a. Soil temperature	b. Soil pH	c. Soil salinity	d. Soil nutrient deficiency
15. Which of the following is a characteristics og green manure….			
a. High carbon-to-nitrogen ratio	b. Low carbon-to-nitrogen ratio	c. High water requirement	d. Low water requirement
16. Green manuring is an effective method for managing which of the following soil constraints..			
a. Soil acidity	B Soil alkalinity	c. Soil salinity	d. Soil nutrient deficiency
17. Cover crops help to improve soil structure by…			
a. Increasing soil compaction	b. Reducing soil water holding capacity	c. Adding organic matter	d. Decreasing soil aeration
18. What is the ideal time to plant cover crops..			
a. During the crop season	b. After the crop season	c. Before the crop season	d. Any time of the year
19. Which of the following crops is not typically used as a green manure…			
a. Wheat	b. Maize	c. Sunflower	d. Sugarcane
20. What of the following green manure crops is known for its ability to suppress weeds..			
a. Rye	b. Oats	c. Clover	d. Buckwheat

21. What is the primary source of nutrients for green manure crops…			
a. Soil	b. Fertilizers	c. Atmospheric nitrogen	d. Compost
22. Which of the following cover crops is commonly used to reduce soil erosion..			
a. Clover	b. Rye	c. Oats	d. Wheat
23. Which is the primary goal of planting cover crops…			
a. To increase crop yields	b. To reduce soil temperature	c. To add nutrient to the soil	d. To protect the soil
24. Green manuring helps to improve soil fertility by…			
a. Adding organic matter	b. Reducing soil pH	c. Increasing soil compaction	d. Decreasing soil water-holding capacity
25. Which of the following is a benefit of using green manure in crop rotation..			
a. Reduces soil fertility	b. Increase soil erosion	c. Decrease crop yield	d. Breaks disease cycles
26. Cover crops helps to improve soil aeration by…			
a. Increasing soil compaction	b. Reducing water holding capacity	c. Adding organic matter	d. Increasing soil porosity
27. Which of the following is a limitation of using green manure…			
a. It requires additional labor and resources	b. It can be lead to soil compaction	c. It reduces soil fertility	d. It promotes soil erosion
28. Green manuring is most beneficial for soils with…			
a. High pH	b. Low pH	c. Low nutrient availability	d. High nutrient availability
29. Green manuring helps to reduce soil pollution by…			
a. Reducing chemical fertilizer use	b. Increasing pesticide use	c. Reducing soil erosion	d. Increasing industrial waste disposal
30. What is the ideal time to terminate cover crops…			
a. During the crop season	b. After the crop season	c. Before the crop season	d. At flowering stage

31. Which of the following is a benefit of using legume cover crops…			
a. They add nutrients to the soil	b. They improve soil structure	c. They improve water holding capacity	d. They increase soil compaction
32. Green manuring helps to improve soil aeration by …			
a. Increasing soil compaction	b. Reducing soil water holding capacity	c. Adding organic matter	d. Increasing soil porosity
33. Green manuring aims to…			
a. Improve soil structure	b. Reduce soil pollution	c. Increase soil aeration	d. All of the above
34. Which of the following is a benefit of using green manure in organic farming..			
a. Reduces soil fertility	b. Increases soil pollution	c. Promotes sustainable agriculture	d. decreases crop yield
35. What is the term for the process by which green manure crops absorb and hold nutrients in the soil…			
a. Nutrient cycling	b. Nutrient retention	c. Nutrient uptake	d. Nutrient storage
36. Which are the main advantages of using cover crops in conservation agriculture…			
a. They reduce soil disturbance	b. They increase soil erosion	c. They promote soil compaction	d. They reduce soil fertility
37. Which of the following green manure crops is known for its ability to suppress weeds..			
a. Buckwheat	b. Clover	c. Rye	d. Oats
38. Which of the following is a benefit of using green manure in soil conservation…			
a. Reduces soil moisture	b. Increase soil compaction	c. Reduces soil erosion	d. Decrease crop yield
39. Which of the following green manure crops has a high nitrogen content…			
a. Alfalfa	b. Clover	c. Rye	d. Oats
40. What is the term for the process by which cover crops improve soil water holding capacity..			
a. Infiltration	b. Percolation	c. Transpiration	d. Evapotranspiration

41. What is the ideal time to incorporate green manure into the soil in relation to the next crop…			
a) Immediately before planting	b) 2-3 weeks before planting	c) 1-2 month before planting	d) 6-12 month before planting
42. What is the primary mechanism by which cover crops reduce soil compaction..			
a) Improving soil structure	b) Increasing soil water holding capacity	c) Reducing soil bulk density	d) Enhancing soil aeration
43. What is the term for process by which green manure crops add organic matter to the soil..			
a) Humification	b) Decomposition	c) Mineralization	d) Ammonification
44. Which of the following green manure crops is suitable for improving soil health in acidic soils...			
a. Alfalfa	b. Clover	c. Rye	d. Buckwheat
45. What is primary mechanism by which green manure crops reduce soil erosion..			
a) Improving soil structure	b) Increasing soil water holding capacity	c) Reducing soil compaction	d) Enhancing soil cover
46. Which of the following cover crops is used to improve soil health in orchards…			
a. Clover	b. Rye	c. Oats	d. Hairy vetch
47. Which of the following green manure crops has a deep taproot that can break up compacted soil layers…			
a. Radish	b. Clover	C. Rye	d. Oats
48. Which of the following green manure crops is known for its ability to suppress nematodes			
a. Marigold	b. Clover	c. Rye	d. Oats
49. Which of the main benefit of using green manure crops in agroforestry…			
a. They improve soil fertility	b. They reduce soil erosion	c. They increase crop yields	d. They promotes biodiversity
50. Which of the term for the process by which cover crops improve soil structure…			
a. Aggregation	b. Compaction	c. Erosion	d. Degradation

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Department of Agronomy

Certificate course in 'Basics of Application of Cover crops and Green manures in Agriculture'
Academic Year 2019-20

Report

K. K. Wagh Education Society's K. K. Wagh College of Agriculture, Saraswatinagar, Nashik which provide education in agriculture at U.G. level students. College has to decide introduce new Certificate Course in **'Basics of Application of Cover crops and Green manures in Agriculture'**. Total 15 students are enrolled for course. Due to this certificate course in 'Basics of Application of Cover crops and Green manures in Agriculture' Students get more knowledge of different type of Cover crops and green manuring crops, their application in agriculture to improve fertility of soil and for climate resilience.

Course outcome

1) To acquire the knowledge of using the application of cover crops and green manures *viz*., soil erosion reduction, Water retention, biodiversity enhancement, climate change mitigation.
2) Participants will get deeper knowledge of application of cover crops and green manures for improved crop yield and nutrient cycling.
3) The program will enhance the practical applicability of improved crop yield and soil health.

Students are able to understand application of cover crops and green manures in agriculture. Student get understand several factors which affect the vegetable crop growth specially biotic and abiotic. This will help to improve their Problem solving skill. Students understand that cover crops and green manuring promises to be an effective tool against various biotic and abiotic stresses; which has also emerged as an environment-friendly and climate resilient approach. In academic year 2019-20 fifteen students are enrolled for this certificate course. Theory examination has been conducted for total 50 marks. Duration for this certificate course is 19/08/2019 to 24/08/2019 (Total 30 hrs.). The students who successfully completed the certificate course were given a certificate as appreciation by the college.

Course coordinator is Prof. S V Sonawane and member for this certificate course are, Prof. B R Waghmode and Prof. P M Patil.

Course Coordinator

K. K. WAGH COLLEGE OF AGRICULTURE NASHIK-3

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Saraswatinagar, Panchavati, Nashik - 422 003

Certificate

This is to certify that Mr./Ms. ...Sonawane Harshwardhan Milind.....

Class S.Y.B.Sc. *has completed Certificate Course on* Basics of Application of Cover Crops and Green Manures in Agriculture *from* 19/08/2019 *to* 24/08/2019 *organized by Department of* Agronomy *in academic year* 2019-20

Date : 26/08/2019

Place : Nashik

Course Coordinator

Principal
K K Wagh College of Agriculture
Nashik