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,

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Yours faithfully,

(Prof S V Sonawane)

**Course Coordinator** 



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(Affiliated to Mahatma Phule Krishi Vidyapeeth, Rahuri)

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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



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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	N.
2	Prof. S V Sonawane	Course Coordinator	-
3	Prof. B R Waghmode	Member	UH
4	Prof. P M Patil	Member	(Yelmi)

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 <sub>2</sub> O <sub>5</sub> , K <sub>2</sub> O) N accumulated Dry matter (t/ha)	06
	۸	Total	30 hours

SV10 NO OWO 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.

Course Coordinator

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 10	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

SVIO NAUNAUL Course Coordinator NASHIK-3

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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.: AIRN - 2018/029 Student ID:
Name of the Student: Gaund Nikita Appasand
Mother's Name: Sunita
Father's Name: Appasoned Sawola Gaund Year: 1st /2nd /3rd/4th
E-Mail ID: gaund 192000 @gmail.com
Address: Sikandar Nagar, Kasaba, Baramati
State: Monarashta q PIN Code: 413/02
Mobile No: 9373194593 Alternate contact number: 9763020681
Gender: Male Other Religion: Hind U
Date of Birth: 21/10/2000
Educational Qualification (at the time of admission):
HSC Other
Daunel
Signature of Student
Place: Naswi
Place: Nashi< 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	Importance and effect of cover	Prof S V Sonawane	Agronomy
	cover crops and	crops and green manure crops,		
	green manures	Difference between cover crops		4
	_	and green manuring crops,		1
		Characteristics, Principles,		
		Objectives of cover crops and	1	
		green manuring crops.		
2	Status of cover	Area, Variety of crops, No. of state	Prof P M Patil	Agronomy
	crops and green	growing under area of cover crops		
	manuring crops in	and green manure crops		
	India			
3	Criteria for the	Fast germination and emergence,	Prof B R Waghmode	Agronomy
	selection of cover	competitiveness, ease to		
	crops and green	suppression, fertility benefits low		5.0
	manure crops and	cost establishment, Field	1	
	package of	preparation, crop rotation of cover		
	practices	crops and green manure crops,		
	1.5	Field preparation, Classification		
	3.75	&crop rotation of cover crops and		
		green manure crops, Age of	Ja.	
		incorporation		
4	Introduction and	History, concept, application of	Prof P M Patil	Agronomy
	comparison with	brown manuring. Comparison		
	brown manuring	between green manuring & brown		
		manuring		
5	Effect of cover	Advantages	Prof S V Sonawane	Agronomy
	crop and green	Limitations, Effect on soil, weed,		
,	manuring to	pest and disease, biodiversity and		
	agroecosystem	wild life		**************************************
6	Nutrient content of	Nutrient content (%) in air dry	Prof B R Waghmode	Agronomy
	cover crops and	weight of (N, P2O3, K2O), N		
	green manure crops	accumulated, Dry matter (t/ha)		
	D			

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	Date	Т	ime	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

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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

Sr No	Registration no.	Name of Students	19/08/20	119	20/08/2	2019	21/08/2	2019	22/08/2	019	23/08/2	019	24/08/2	2019
			10:00-	3:00- 5:00	10:00-	3:00- 5:00	10:00-	3:00- 5:00	10:00-	3:00-	10:00-	3:00-	10.00=	3:00-
1	AKN-2018/005	Ate Nikhil Amardeep	NIKAM	المالك	N.X-10	Mike	Nimm	N.K.14	Niki-W	N.W. W.	N: Horse	Nikant	1:00 1:00	2:00
2	AKN-2018/014	Burkul Akshada Sunil	Brul	april	Deur	Park	But	ash	RRAL	agel	april	azul	002	QB.
3	AKN-2018/019	Deshmukh Rohit Kailas	BY	RY)	BU	(8.7)	(2)	(Q1)	670	60	67	611	600	6
4	AKN-2018/029	Gaund Nikita Appasaheb	Praure	Paup	Paure	Praure	Brand	County	Anuni	Deaura	Maura	3	Daniel	1
5	AKN-2018/031	Gavit Asmita Arvind	(3my-	344	1844	(3-11)	Cally	- Burk	BUH	BANA	Continu	Colly	12 Uy	MINE
6	AKN-2018/042	Kadus Pragati Baban	Bragaet	Pagat	Progat	Broger	Pagati	Proget	Bayati	Orayak	Pagat	Branchi	(a) was	3
7	AKN-2018/047	Kapadnis Mahesh Jibhau	C. Nande	- Jan	C. Janes	- Just	Jul	huch	Just	co whe	alub	Page	1 JL	Bonge
8	AKN-2018/051	Kathepuri Avinash Vikas	Nest-	Nello	AVESTA	NUTH	NIFE	AKSTP	Milte	dille	tothe	Mark	Good	Cus-
9	AKN-2018/067	More Kartik Vilas	Romande	ring	Rome	Parone	0	(1)	1	O	(I)	(L)	Ned of	1 thy
10	AKN-2018/076	Pagar Chaitali Tukaram	Roger.		Root	O ar	0	0	Pinau	ONC	True	- Inel	Due	Hu
11	AKN-2018/086	Patil Rohan Rajendra	3PMI	Berg	2 Ani	C Parti	1 0001	-	Storie C	Yoras	(Topi)	109	-Yogar	1700
12	AKN-2018/098	Sagbhor Rutuja Vasant	Rufujo		ia Robin	Dului	0	0	0	() (	D II	Etmi	Charles	0
13	AKN-2018/099	Shaikh Rojmin Tabrej	Spitch	Soikh	200	2015	Seoil	Sorh	Seark?	Ewik!	Duty	न्यामिव	- Harriet	KANA
14	AKN-2018/104	Sonawane Harshvardhan Milind	A WIM OF	_			-						Sidly	
15	AKN-2018/111	Vasave Harshada Narendra	HW	HW	HW	HW-	HW	HM	HW		HW.	+W	HM	HW

VSO VOUCOUM Course Coordinator

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

## Certificate course in 'Basics of Application of Cover crops and Green manures in Agriculture' 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
7	AKN-2018/047	Kapadnis Mahesh Jibhau	38
8	AKN-2018/051	Kathepuri Avinash Vikas	40
9	AKN-2018/067	More Kartik Vilas	37
10	AKN-2018/076	Pagar Chaitali Tukaram	44
11	AKN-2018/086	Patil Rohan Rajendra	39
12	AKN-2018/098	Sagbhor Rutuja Vasant	42
13	AKN-2018/099	Shaikh Rojmin Tabrej	35
14	AKN-2018/104	Sonawane Harshvardhan Milind	44
15	AKN-2018/111	Vasave Harshada Narendra	43

Sysoral 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

Theory examination

N O	or y chammation
Name of student	Registration no.
Day & Date	Time
Subject	, Semester
Class	Marks

## **Multiple Choice Questions**

1. What is the primary	goal of planting cover cro	ops?	
a. To increase crop	b. To reduce soil	c. To add nutrients to	d. To protect the soil
yields	temperature	the soil	and proceed time som
2. Which of the follows	ing cover crops has a deep	p taproot?	
a. Clover	b. Rye	c. Oats	d. Alfalfa
3. What is the primary	purpose of green manurir	ng?	
a. To control weeds	b. To add organic	c. To increase crop	d.To reduce soil
	matter to the soil	yield	erosion
4. Which is the followi	ng is the popular green m	anure crop?	
a. Wheat	b. Sorghum	c. Sunflower	d. clover
5. Green manuring help	os to	41	
a. Increase soil pH	b. Decrease Soil	c. Improve soil	d. Reduce soil fertility
	temperature	structure	
-			
6. What is the process of	called when green manure	is plowed into the soil?	
a. Incorporation	b. Decomposition	c. Humification	d. Plowing
		<u> </u>	
7. Green manuring redu	ices soil erosion by	a a	
a. Increasing runoff	b. Reducing water	c. Holding soil in	d. Decreasing soil
	infiltration	place	moisture
8. What is the primary p	ourpose of planting cover	crops	
a. To reduce soil	b. To increase crop	c. To add nutrients to	d. To reduce soil
erosion	yields	the soil	temperature
			temperature
9. Which of the following	ng is a benefit of using co	over crops	
9. Which of the following a. Reduce soil	ng is a benefit of using cobb. Increases soil		d. Supplies nutrients
9. Which of the following a. Reduce soil compaction	b. Increases soil pollution	c. Decreases soil water	d. Supplies nutrients
a. Reduce soil compaction	b. Increases soil pollution		d. Supplies nutrients to the crops
a. Reduce soil	b. Increases soil pollution	c. Decreases soil water	1

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	ng cover crops has a high	carbon-to-nitrogen ratio	ARA .			
a. Clover	b. Rye	c. Oats	d. Buckwheat			
14. Green manuring help	s to control which of the f	ollowing soil properties	· Wile			
a. Soil temperature	b. Soil pH	c. Soil salinity	d. Soil nutrient			
			deficiency			
15. Which of the following	ng is a characteristics og g	reen manure	1_			
a. High carbon-to-	b. Low carbon-to-	c. High water	d. Low water			
nitrogen ratio	nitrogen ratio	requirement	requirement			
16. Green manuring is an e	ffective method for managin	g which of the following so	il constraints			
a. Soil acidity	B Soil alkalinity	c. Soil salinity	d. Soil nutrient			
			deficiency			
17. Cover crops help to in	mprove soil structure by	•				
a. Increasing soil	b. Reducing soil water	c. Adding organic	d. Decreasing soil			
compaction	holding capacity	matter	aeration			
18. What is the ideal time	to plant cover crops					
a. During the crop	b. After the crop	c. Before the crop	d. Any time of the year			
season	season	season				
19. Which of the following	g crops is not typically us	ed as a green manure				
a. Wheat	b. Maize	c. Sunflower	d. Sugarcane			
20. What of the following	green manure crops is kn	own for its ability to supp	press weeds			
a. Rye	b. Oats	c. Clover	d. Buckwheat			
- 3	-7		100			

21. What is the primary source of nutrients for green manure crops						
a. Soil	b. Fertilizers	c. Atmospheric	d. Compost			
0.00		nitrogen				
22. Which of the following	g cover crops is commonly	y used to reduce soil erosi	on			
a. Clover	b. Rye	c. Oats	d. Wheat			
23. Which is the primary goal of planting cover crops						
a. To increase crop	b. To reduce soil	c. To add nutrient to	d. To protect the soil			
yields	temperature	the soil				
24. Green manuring helps	to improve soil fertility b	y				
a. Adding organic	b. Reducing soil pH	c. Increasing soil	d. Decreasing soil			
matter	9	compaction	water-holding capacity			
25. Which of the followin	g is a benefit of using gre	en manure in crop rotatior	1			
a. Reduces soil fertility	b. Increase soil erosion	c. Decrease crop yield	d. Breaks disease			
		- 4	cycles			
26. Cover crops helps to i	mprove soil aeration by		V.			
a. Increasing soil	b. Reducing water	c. Adding organic	d. Increasing soil			
compaction	holding capacity	matter	porosity			
27. Which of the following	g is a limitation of using	green manure				
a. It requires additional	b. It can be lead to soil	c. It reduces soil	d. It promotes soil			
labor and resources	compaction	fertility	erosion			
28. Green manuring is mo	ost beneficial for soils wit	h				
a. High pH	b. Low pH	c. Low nutrient	d. High nutrient			
a. mgn pm	0.20 p	availability	availability			
	1 1 2 1 4 1					
29. Green manuring helps to reduce soil pollution by						
a. Reducing chemical	b. Increasing pesticide	c. Reducing soil	d. Increasing industrial			
fertilizer use	use	erosion	waste disposal			
30. What is the ideal time	to terminate cover crops					
	,					
a. During the crop	b. After the crop	c. Before the crop	d. At flowering stage			
season	season	season				

41. What is the ideal time to incorporate green manure into the soil in relation to the next crop								
<ul> <li>a) Immediately before</li> </ul>	b) 2-3 weeks before	c) 1-2 month before	d) 6-12 month before					
planting	planting	planting	planting					
42. What is the primary m	42. What is the primary mechanism by which cover crops reduce soil compaction							
a) Improving soil	b) Increasing soil water	c) Reducing soil bulk	d) Enhancing soil					
structure	holding capacity	density	acration					
43. What is the term for p	rocess by which green ma	nure crops add organic m	atter to the soil					
a) Humification	b) Decomposition	c) Mineralization	d) Ammonification					
44. Which of the following	green manure crops is suitab	le for improving soil health	in acidic soils					
a. Alfalfa	b. Clover	c. Ryc	d. Buckwheat					
45. What is primary mechanism by which green manure crops reduce soil erosion								
a) Improving soil	b) Increasing soil water	c) Reducing soil	d) Enhancing soil cover					
structure	holding capacity	compaction						
46. Which of the followin	g cover crops is used to in	nprove soil health in orcha	ards					
a. Clover	b. Rye	c. Oats	d. Hairy vetch					
47. Which of the followin	g green manure crops has	a deep taproot that can br	eak up compacted soil					
layers								
a. Radish	b. Clover	C. Rye	d. Oats					
48. Which of the followin	g green manure crops is k	nown for its ability to sup	press nematodes					
a. Marigold	b. Clover	c. Rye	d. Oats					
49. Which of the main bene	fit of using green manure cro	pps in agroforestry						
a. They improve soil	b. They reduce soil	c. They increase crop	d. They promotes					
fertility	erosion	yields	biodiversity					
50. Which of the term for	the process by which cove	er crops improve soil struc	ture					
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**

	An	swer one	
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



K. K. Wagh Education Society's

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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

Exam Block Report

Class-SYBSc (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	Nikm Ate
2	AKN-2018/014	Burkul Akshada Sunil	agril
3	AKN-2018/019	Deshmukh Rohit Kailas	(RV)
4	AKN-2018/029	Gaund Nikita Appasaheb	Dannel
5	AKN-2018/031	Gavit Asmita Arvind	Buy-
6	AKN-2018/042	Kadus Pragati Baban	Pragati
7	AKN-2018/047	Kapadnis Mahesh Jibhau	Chil
8	AKN-2018/051	Kathepuri Avinash Vikas	ACTA?
9	AKN-2018/067	More Kartik Vilas	(Kyrrace
10	AKN-2018/076	Pagar Chaitali Tukaram	(Roex
_ 11	AKN-2018/086	Patil Rohan Rajendra	BBHIL
12	AKN-2018/098	Sagbhor Rutuja Vasant	Dutula
13	AKN-2018/099	Shaikh Rojmin Tabrej	Scith_
14	AKN-2018/104	Sonawane Harshvardhan Milind	manawane.
15	AKN-2018/111	Vasave Harshada Narendra	HW
No of stud	of student: dent present: dents absent  Bull Figures ad Sign of Jr. Supervisor	N	ign of Sr. Supervisor

Name and Sign of Sr. Supervisor

(Dr.K.D.More)

Department of Agronomy



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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

SVSONAUCAUL Course Coordinator

Exam Incharge

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





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	Gound	Nikita	A.	Registration no.	AKN-201	8/029
Day & Date	26/08	2019		Time	01-3:00	-
Subject	Agro	nomy		Semester	Ш	
Class	B.F.S	sc		Marks	_	19

## **Multiple Choice Questions**

1. What is the primary	goal of planting cover cr	ops?	
a. To increase crop	b. To reduce soil	c. To add nutrients to	d. To protect the soil
yields	temperature	the soil	
2-Which of the follow	ing cover crops has a dee	p taproot?	14.3
a. Clover	b. Rye	c. Oats	d. Alfalfa
3. What is the primary	purpose of green manuri	ng?	
a To control weeds	b. To add organic	c. To increase crop	d.To reduce soil
	matter to the soil	yield	erosion
4. Which is the follow	ing is the popular green m	nanure crop?	7
a. Wheat	b. Sorghum	c. Sunflower	d-elover
5. Green manuring hel	ps to		
a. Increase soil pH	b. Decrease Soil	g. Improve soil	d. Reduce soil fertility
	temperature	structure	
	,	1	
6. What is the process	called when green manure	e is plowed into the soil?	
a Incorporation	b. Decomposition	c. Humification	d. Plowing
		1	
7. Green manuring red	uces soil erosion by		
a. Increasing runoff	b. Reducing water	c Holding soil in	d. Decreasing soil
	infiltration	place	moisture
8. What is the primary	purpose of planting cover	crops	1110101010
a. To reduce soil	b. To increase crop	c. To add nutrients to	d. To reduce soil
erosion	yields	the soil	temperature
9. Which of the followi	ng is a benefit of using co	over crops	1
a Reduce soil	b. Increases soil	c. Decreases soil water	d. Supplies nutrients
compaction	pollution	holding capacity	to the crops
10. Green manure crops	are typically planted		1.00
a. During the crop	b. After the crop	c Before the crop	d. Throughout the
season	•	· ·	a. I in oughout the

what is the term for	or the decomposition of gree	n manure	100
a Mineralization		o. Decomposition	d. Ammonifica
leguminous	wing green manure crops is	2	
a. Oats	b. Barley	c. Cłóver	d. Ryegrass
13. Which of the follow	wing cover crops has a high	carbon-to-nitrogen ratio	D
a Clover	b. Rye	c. Dats	d. Buckwheat
14. Green manuring he	elps to control which of the	following soil properties	 S…
a. Soil temperature	b. Soil pH	c. Soil salinity	d. Soil nutrient
15. Which of the follow	wing is a characteristics og g	reen manure	deficiency
nitrogen ratio	b Low carbon-to- nitrogen ratio	c. High water	d. Low water
16. Green manuring is an	n effective method for managir	ng which of the following	requirement
a Soil acidity	B Soil alkalinity	c. Soil salinity	d. Soil nutrient
17. Cover crops help to	o improve soil structure by		deficiency
a. Increasing soil compaction	b. Reducing soil water holding capacity	c. Adding organic	d. Decreasing so
18. What is the ideal ti	me to plant cover crops	12 W	ucration
During the crop season	b. After the crop season	c. Before the crop	d. Any time of t
19. Which of the follow	ving crops is not typically us	sed as a green manure	7,500
a. Wheat	b. Maize	c. Sunflower	d Sugaras
20. What of the following	ing green manure crops is kr	lown for its ability to su	Inpress woods
a Rye	b. Oats	c. Clover	d. Buckwheat
	3 %		d. Buckwheat

in the

21. What is the primary sou	rce of nutrients for green ma	nure crops	
a Soil	b. Fertilizers	c. Atmospheric	d. Compost
		nitrogen	
22. Which of the following	ng cover crops is common	y used to reduce soil eros	sion
a. Clover	b. Rye	c. Oats	d. Wheat
23. Which is the primary	goal of planting cover cro	ps	
a. To increase crop	b. To reduce soil	E. To add nutrient to	d. To protect the soil
yields	temperature	the soil	£ -0
24. Green manuring help	s to improve soil fertility b	y	an the
a. Adding organic	b. Reducing soil pH	c. Increasing soil	d. Decreasing soil
matter		compaction	water-holding capacit
25. Which of the following	ng is a benefit of using gre	en manure in crop rotatio	n
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	-1	1
a. Increasing soil	b. Reducing water	c. Adding organic	d Increasing soil
compaction	holding capacity	matter	porosity
27. Which of the following	ng is a limitation of using	green manure	
alt requires additional	b. It can be lead to soil	c. It reduces soil	d. It promotes soil
labor and resources	compaction	fertility	erosion
28. Green manuring is m	ost beneficial for soils wit	h	+1
High pH	b. Low pH	c. Low nutrient	d High nutrient
		availability	availability
29. Green manuring help	s to reduce soil pollution b	by	
a. Reducing chemical	b. Increasing pesticide	c. Reducing soil	d. Increasing industri
	use	erosion	waste disposal
fertilizer use		E. E.	
30. What is the ideal time	to terminate cover crops.	••	1
a. During the crop	b. After the crop	c. Before the crop	d. At flowering stage
		season	

31. Which of the follow	ing is a benefit of using le	gume cover crops	-112/
	b. They improve soil	c. They improve water	d. They increase some compaction
the soil	structure	holding capacity	Companion
32. Green manuring help	os to improve soil aeration	by	
A. Increasing soil	b. Reducing soil water	c. Adding organic	d Increasing soil
compaction	holding capacity	matter	porosity
33. Green manuring aim	s to	•	
a Improve soil structure	b. Reduce soil	c. Increase soil aeration	d. All of the above
)	pollution		1,7 (1)
	ng is a benefit of using gre	en manure in organic farr	
a. Reduces soil fertility	b. Increases soil	c, Promotes	d. decreases crop yield
	pollution		1
soil		n manure crops absorb and	I hold nutrients in the
		c. Nutrient uptake	d. Nutrient storage
		crops in conservation agric	culture
	b. They increase soil	c. They promote soil	d. They reduce soil
V-Euro	erosion	compaction	fertility
37. Which of the following	g green manure crops is k	nown for its ability to sup	press weeds
a. Buckwheat	.b. Clover	c. Rye	d. Oats
38. Which of the followin	g is a benefit of using gree	en manure in soil conserva	tion
a Reduces soil moisture	b. Increase soil	c. Reduces soil erosion	d. Decrease crop yield
	compaction		
39. Which of the following	g green manure crops has	a high nitrogen content	L.
a. Alfalfa	b. Clover	c. Rye	d. Oats
40. What is the term for th			nolding capacity
a. Infiltration	b. Percolation	c. Transpiration	d. Evapotranspiration
	a. They add nutrients to the soil  32. Green manuring help a. Increasing soil compaction  33. Green manuring aim a improve soil structure  34. Which of the following a Reduces soil fertility  35. What is the term for the soil a. Nutrient cycling  36. Which are the main and a contract the main and a contract the soil disturbance  37. Which of the following a Reduces soil moisture  38. Which of the following a Reduces soil moisture	the soil  32. Green manuring helps to improve soil aeration  4. Increasing soil  5. Reducing soil water  6. Reducing soil water  7. Reduces soil structure  8. Reduces soil fertility  8. Reduces soil  8. Reduces soil  9. Pollution  34. Which of the following is a benefit of using green soil  8. Nutrient cycling  8. Nutrient cycling  8. They reduce soil  9. They increase soil  10. Buckwheat  10. Buckwheat  10. Buckwheat  10. Clover  11. Reduces soil moisture  12. Description  13. Which of the following green manure crops is kanned at the following is a benefit of using green are deduced as the following green manure crops is kanned as the following green manure crops has a sea Alfalfa  13. Which of the following green manure crops has a sea Alfalfa  14. Clover  15. Clover  16. Clover  17. Clover  18. Which of the following is a benefit of using green are deduced as the following green manure crops has a sea Alfalfa  18. Clover  19. Which of the following green manure crops has a sea Alfalfa  19. Which of the following green manure crops has a sea Alfalfa  19. Which of the following green manure crops has a sea Alfalfa  19. Clover	the soil  32. Green manuring helps to improve soil aeration by  4. Increasing soil  5. Reducing soil water holding capacity  33. Green manuring aims to  5. Reduce soil  5. Reduce soil  6. Reduce soil  7. Increase soil aeration matter  34. Which of the following is a benefit of using green manure in organic farrows are the term for the process by which green manure crops absorb and soil  6. Nutrient cycling  7. Which are the main advantages of using cover crops in conservation agriculture are the main advantages of using cover crops in conservation agriculture are the main advantages of using cover crops in conservation agriculture are the main advantages of using cover crops in conservation agriculture are the main advantages of using cover crops in conservation agriculture are the following green manure crops is known for its ability to sup a substitute are the following is a benefit of using green manure in soil conservation are deduced as the following is a benefit of using green manure in soil conservation are deduced as the following green manure crops has a high nitrogen content  7. Reduces soil erosion compaction  7. Which of the following green manure crops has a high nitrogen content  7. Reduces soil water the process by which cover crops improve soil water the following green manure crops improve soil water the following the following green manure crops improve soil water the following the following green manure crops improve soil water the following the following green manure crops improve soil water the following the following green manure crops improve soil water the following the following green manure crops improve soil water the following green manure crops improve soil wat

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structure	holding capacity	density	aeration
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layers			
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fertility	erosion	yields	biodiversity
50. Which of the term	n 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 'Basies 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 way, 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

PRHINGGAPAL K.K.Wagh College of Agriculture Saraswatinagar, Panchavati, Hashik

