GOVERNMENT OF TELANGANA

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE (GURUKULAM)

DEPARTMENT

OF

ZOOLOGY

CERTIFICATE COURSES

(2021-2022)

Certificate course/ Add-on course/ Value based course (Pls select one)	Certificate course
Organization	Telangana Tribal Welfare Residential Degree College (M), Kamareddy
Title of the course	SERICULTURE
Permission letter:	To The Principal TTWRDC(M), Kamareddy, Sub: Proposal for organizing Certificate Course – Sericulture. Respected Sir, We Department of Zoology propose to Organize Certificate Course- SERICULTURE for UG students of Telangana Tribal welfare Residential Degree College. This course duration is 30 hrs. We therefore request you to kindly grant permission to organize Certificate Course Sericulture. Thanks and Regards Mr.B.CHINNA LAXMAN Dept. of Zoology.

Date of commencement of course	20-01-20 TO 25-2-2020
Course duration	30 Hours
Resource person	B.CHINNA LAXMAN
No. of students enrolled	20

Course content, Outcome:

Objectives of the Course:

- To give basic information about the silk worm rearing..
- To give knowledge about the mulberry tree collation.
- To familiarize student with the economic benefits by the sericulture

Preparing Rural Youth and Farmers: The course aims to prepare rural youth and farmers to view sericulture as a profitable enterprise.

Creating awareness: The course also focuses on raising awareness

OVER VIEW:

	Sericulture is a principal source of income for farmers in many developing countries such as China, India, Brazil, Vietnam and Thailand. Cocoon production by China is almost 80% of worldwide production. In 2011, China produced 6.61×10^8 kg of cocoons; the income of sericulturists was 22.4 billion Yuan and the value of the silk industry output was 203.8 billion Yuan. Sericulture faces biological challenges from pathogenic viruses, fungi and bacteria, which cause losses of almost 20% of potential cocoon production each year (Jiang et al., 2013c). Viral diseases are responsible for almost 80% of total cocoon loss. These diseases are induced mainly by *Bombyx mori* nucleopolyhedrovirus (BmNPV) (Gomi et al., 1999; Rahman and Gopinathan, 2004), *B. mori* cytoplasmic polyhedrosis virus (BmCPV) (Cao et al., 2012) or *B. mori* densovirus (BmDNV) (Tijssen and Bergoin, 1995; Wang et al., 2007). BmNPV is the most prevalent threat to sericulture in almost all countries. BmNPV, a member of the Baculoviridae family, has a circular double-stranded DNA genome (Gomi et al., 1999) that combines with capsid proteins to form a nucleocapsid that is contained within an envelope (Kondo and Maeda, 1991). The NPV replication cycle has two virion phenotypes: occlusion-derived virus (ODV) is transmitted among hosts and budded virus (BV) spreads throughout the host (Keddie et al., 1989; Rahman and Gopinathan, 2004). ODV but not BV virions are packaged and protected in a polyhedral body that is a highly symmetrical, covalently cross-linked lattice (Ji et al., 2010). BmNPV invades silkworm larvae mainly via oral infection. Polyhedral bodies are dissociated and ODVs are released in the alkaline environment of the gut juice after ingestion (Horton and Burand, 1993; Keddie et al., 1989). The peritrophic membrane is destroyed by the virus, creating holes that facilitate the passage of ODVs (Wang and Granados, 1997). Nucleocapsids enter the columnar epithelial cells of the midgut by envelope-mediated membrane fusion to initiate primary infection (Horton and Burand, 1993; Keddie et al., 1989). Viral DNA is released from nucleocapsids to be used as a template to generate new DNA and mRNA (Horton and Burand, 1993; Keddie et al., 1989). Viral proteins are synthesized using host components. Subsequently, progeny nucleocapsid obtains an envelope by budding from the host cell membrane to generate a BV that causes secondary infection via the host tracheal system (Engelhard et al., 1994; Slack and Arif, 2007). At the late stage of infection, progeny ODVs are assembled into polyhedral bodies that are released in Breeding resistant strains by traditional or transgenic methods is an approach to silkworm disease control. Disease resistance and economic characteristics are the two most important traits in breeding silkworm strains. Traditional breeding methods have limitations such as enhancing pathogen resistance at the expense of the quality of economically important characteristics (Jiang et al., 2012a). To date, a few resistant silkworm strains have been bred by traditional methods and none have been applied in sericulture. The limitations of traditional breeding methods might be avoided by transgenic technology, which theoretically changes only the target trait. Overexpression and RNA interference (RNAi) are two established gene regulation strategies that have been applied in some organisms to improve pathogen resistance.

B. mori, a lepidopteran model (Duan et al., 2010; Mita et al., 2004; Xia et al., 2007, 2008, 2004, 2009) and BmNPV, a typical baculovirus (Gomi et al., 1999), are a model of insect host and pathogen interaction. Studies of viral genes (Gomi et al., 1999), the BmNPV invasion process (Rahman and Gopinathan, 2004), the silkworm immune response (Sagisaka et al., 2010; Xue et al., 2012), host antivirus genes (Nakazawa et al., 2004; Ponnuvel et al., 2003) and silkworm genomes (Mita et al., 2004; Xia et al., 2009, 2008, 2004) paved the way for developing a transgenic silkworm with antiviral properties. Enhancement of antiviral capacity by transgenic technology in the silkworm has important theoretical and practical values and could promote antiviral research in other animals and breeding antiviral silkworms for sericulture.

Antiviral research is pursued worldwide; for example the Nagaraju group (Kanginakudru et al., 2007; Subbaiah et al., 2013) have used transgenic technology to develop viral resistance in silkworms and created a transgenic silkworm with high resistance to BmNPV. However, problems that remain to be solved include further enhancing the anti-BmNPV trait and determining if a single major silkworm gene is responsible for resistance to BmNPV. In this review we explore the possibility of (1) creating transgenic silkworms with strong resistance to multiple viruses; (2) selecting silkworm strains for transgenic improvement; and (3) establishing the safety of transgenic silkworms. We pay particular attention to antiviral strategies based on the infection process of BmNPV, the future for antiviral improvement of silkworms, and challenges to commercial application of transgenic silkworms.

Duration of the course: 3**0 Hours (Theory)**

SYLLABUS

UNIT-I (15 Periods)

1.1 History and economic important of sericulture ,types of silkworm

1.2 Systematic position of Bombyx and lifecycle

1.3 Mulberry cultivation-environmental conditions of mulberry cultivation

1.4 Diseases and pests of mulberry and control methods.

UNIT – II (15 Periods) 2.2 Sericulture

2.2.1.Silkworm rearing 2.2.2. Structure of silk gland and secretion of silk 2.2.3. Silkworm rearing technology. 2.2.4. Spinning, harvesting and storage of cocoons. 2.2.5. Silk worm Pests and Diseases: Uzi fly; Protozoan, Viral, Fungal and Bacterial; Control and prevention. 2.2.6. Prospects of Sericulture in India , E-mail, Establishing your e-mail account

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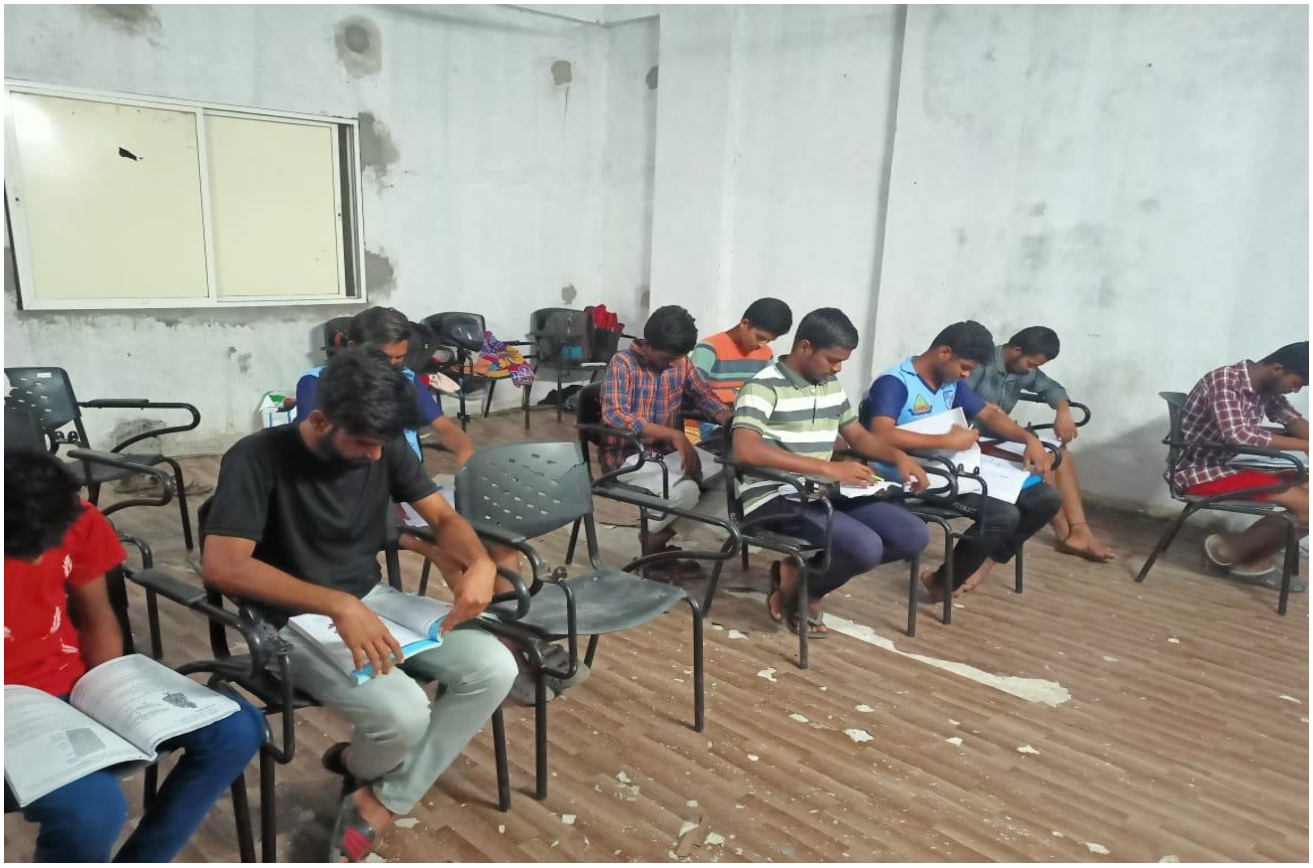
Picture 	Br

TTWRDC FOR MEN KAMAREDDY

CERTIFICATE OF SERICULTURE

Is proudly awarded to

Mr._____ of Class _____ for the successful completion of the Certificate Course during the Academic Year _____.

CONGRATULATIONS!

Course Coordinator Vice Principal Principal

List of students enrolled in Sericulture

S. No	Name of the student	Roll Number
1.	B.VINOD	2005080445005
2.	B.SARDAR	20055080445006
3.	CH.AKASH	20055080445007
4.	D.SRIKANTH	20055080445008
5.	D.SHAN	20055080445010
6.	G.YASHWANTH	20055080445012
7.	J.PAVAN	20055080445013
8.	K.MANOJ	20055080445014
9.	M.RAKESH	20055080445017
10.	M.ANIL	20055080445018
11.	N.VENKATESH	20055080445019
12.	P.NANDAKUMAR	20055080445020
13.	P.PAVAN	20055080445021
14.	P.PEERSINGH	20055080445022
15.	P.RAVINDER	20055080445023
16.	R.JEEVAN	20055080445024
17.	V.CHANDERASHEKAR	20055080445025
18.	V.PAVAN	20055080445026
19.		
20.		

ATTENDANCE OF STUDENTS ATTENDING

CERTIFICATE COURSE SERICULTURE.

S.N0	NAME OF THE STUDENT	ROLL NUMBER	27-01-2020	28-01-2020	29-01-2020	30-01-2020	31-01-2020	01-02-2020	06-02-2020	07-02-2020	08-02-2020	10-02-2020	11-02-2020	12-02-2020	13-02-2020	14-02-2020	15-02-2020
1.	**B.VINOD**	**2005080445005**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
2.	**B.SARDAR**	**20055080445006**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
3.	**CH.AKASH**	**20055080445007**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
4.	**D.SRIKANTH**	**20055080445008**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
5.	**D.SHAN**	**20055080445010**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
6.	**G.YASHWANTH**	**20055080445012**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
7.	**J.PAVAN**	**20055080445013**		P	I	I	I	I	I	I	I	I	I	I	I	I	I
8.	**K.MANOJ**	**20055080445014**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
9.	**M.RAKESH**	**20055080445017**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
10.	**M.ANIL**	**20055080445018**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
11.	**N.VENKATESH**	**20055080445019**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
12.	**P.NANDAKUMAR**	**20055080445020**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
13.	**P.PAVAN**	**20055080445021**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
14.	**P.PEERSINGH**	**20055080445022**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
15.	**P.RAVINDER**	**20055080445023**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
16.	**R.JEEVAN**	**20055080445024**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
17.	**V.CHANDERASHEKAR**	**20055080445025**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
18.	**V.PAVAN**	**20055080445026**	P	P	I	I	I	I	I	I	I	I	I	I	I	I	I
19.																	
20.																	