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INVESTIGATION AN EFFECT OF DIFFERENT TYPES OF MOUNTAGES ON SILKWORM BOMBYX MORI L. AT POONCH DISTRICT OF JKUT

Anju Bali[1], Mohd Riaz[2], Kalpna Sudan[3]

1. Research Scholar, Department of Sericulture, Campus Poonch J&K
2. Sericulture Assistant, Deptt. Of sericulture, J&K
3. Teaching, Assistant, Department of Sericulture, Campus Poonch J&K

Contact detail kalpna sudan
Email :sudankalpna306@gmail.com

Abstract: - Mountage is a mechanism that allows mature silkworms to spin cocoons on a platform. At the field, there are several sorts of mountages, some of which are more popular. Farmers construct such mountages out of a variety of locally accessible materials. Although there are various types of mountages available, each has its own set of drawbacks. In this study we use certain types of mountages i.e. Rotatary Collapsible mountages, Mulberry twigs mountages, Egg tray mountages, Husk rice mountages and Pinus mountages. Single cocoon weight was recorded highest in the Paddy Husk Mountages than other mountages. Highest Avg. Filament length is observed in Paddy Husk mountage (93.33) and the lowest Avg. Filament Length are observed in Rotatary Collapsible Mountage. The Non Breakable Avg. Filament Length in our study observes that the highest in Pinus Mountage (78.66) and lowest in Rotatary Collapsible Mountage (71.33). The Avg. Filament Denier highest observed in Rotatary Collapsible Mountage (2.61) and lowest Pinus Mountage.(2.33) In conclusion, the Paddy Husk mountage employed in this study is the best for silkworm rearing, because it is easily and locally available in everywhere in the villages as well as town. The cost of the Paddy Husk was very low and quality of cocoon formed by Paddy Husk mountage is very good cocoon and the post cocoon parameters. The result of the present study reveals that, the Paddy Husk mountage is the better when compared to the other mountages for various parameters such as cocoon and the post cocoon parameters.

Keywords:- Investigation, mountages, Silkworm, Bombyx, Sericulture

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Introduction:-

Sericulture is the science that deals with the production of silk by rearing of silkworm. Silk is called the queen of textiles due to its glittering lustres, softness, elegance, durability, and tensile properties. The word 'Sericulture' is derived from the Greek 'Sericos' meaning 'silk' and the English 'culture 'meaning 'rearing' Sericulture refers to the conscious mass scale rearing of silk producing organisms in order to obtain silk from them . Mulberry sericulture and involves the cultivation of mulberry to produce leaf , rearing of silkworm to convert leaf to cocoon, reeling of the cocoon to obtain silk yarn and weaving to convert yarn to fabrics. Sericulture which involves the rearing of silk producing insects known as silkworm (Bombyx mori L.) is an agro – industrial endeavours which is in unpopular in this parts of the world although it has been in existence for about 5000 years in China[1]. The development of these insects, start from eggs to larval through pupa to adulthood. Silk production is a feature unique to the arthropods with approximately 98% of Lepidoptera species producing some form of silk. Silk formed inside but perform outside the body, requiring specialization to both internal processing and external climatic impact. As silkworms are ectothermic the environment during spinning plays a crucial role in both physiology and behavior with consequences for the properties and performance of the silks.In Jammu and Kashmir sericulture is practiced in 20 districts of the Union Territory and the major silk production districts includes Anantnag, Kupwara, Pulwama, Baramula, Gandarbal, Udhampur, Rajouri, Reasi and Kathua[2]. Jammu and Kashmir even though having congenial climatic conditions favourable for production of quality foliage in terms of mulberry leaf for boosting silkworm rearing and obtaining higher productivity, but unfortunately the average yield is quiet low because of various factors ranging from insufficient leaf supply, poor hybrid performance, technical limitations and lack of awareness etc. Therefore, in order to cope these drawbacks, various research and extension institutions working towards the progressive development of sericulture including SKUAST-Jammu, SKUAST-Kashmir, Central Silk Board with its extensions like CSRTI Pampore, Regional Sericulture Research Station Miran sahib (RSRS), Research Extension Centers (REC), sub-units of RECs, State Sericulture Development Department (SSDD) and Department of Sericulture, University of Jammu are actively involved for formulating strategies and their direct implementation by organizing various extension activities. Thus it becomes the responsibility of such instructions to pay attention towards the

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development of sericulture status in the UT of Jammu and Kashmir so as to contribute in improvement of overall production at national and international level[3].The spinning of cocoons, which is also the nest for silkworm to Metamorphosis into pupa, is a crucial phase among silkworm rearing, that starts with identification and collection (picking) of mature larvae and transferring them on to cocooning structure, the process of which is defined as mounting. The time and method of mounting as well as the cocooning frames , otherwise called as mountage are the most important factor influencing the quality cocoons and thereby , the raw silk yield and quality. Even if the silkworm crop is healthy improper mounting methods spinning conditions, mounting density, mounting of pre or over mature larvae and poor type of mountages can result in inferior quality of cocoon .Thus ,the equipment used for supporting the spinning larvae i.e., the mountages plays a vital role in determining quality of cocoon and price fixation at the cocoons market. Mounting is the last stage of rearing operation. Transferring of mature larva to mountages is called mounting. When larva are fully mature, they become translucent, their body shrinks, they stop feeding and start searching for suitable place to attach themselves for cocoon spinning and pupation. These movements clearly indicate to transfer the mature larva into mountages.They are picked up and put on mountages. The worms attach themselves to the spirals of the mountages and start spinning the cocoon[4-6]. By continuous movement of head, silk fluid is released in minute quantity which hardens to form a long continuous filament. The silkworm at first lays the foundation for the cocoon structure by weaving a preliminary web providing the necessary foot hold for the larva to spin the compact shell of cocoon. Owing to characteristic movement of the head, the silk filament is deposited in a series of short waves forming the figure of eight. This way layers are built and added to compact cocoon shell. Mountages plays a vital role in quality cocoon production. Farmer depend on resource and use different types of material available locally for making mountages types of material used , finishing of mountages ,space available for spinning worms in mountages etc. will decide the quality of cocoon[7-10].

Material and Method:-

The present study was designed and will be executed at post graduate department of Sericulture Poonch Campus University of Jammu.Material to be used: Silkworm bivoltine hybrid:-Fc1×Fc

Mulberry variety: - Chakmajra variety

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Methods: Plastic Collapsible mountages

Mulberry twigs mountages

Egg tray mountages

Husk rice mountages

Pinus mountages

Experimental Design

CRD (Complete Randomized Design)

Data analyzed by ANOVA (analysis is variance)

Procurement of live material and type of seed

Silkworm hybrid strain FC1 X FC2 was procured from the State Sericulture Department, Mendhar for the present investigation. After incubation of eggs at 25±1°C and relative humidity of 80±5%, black box was carried out on 8th day to achieve uniformity in hatching. The larvae hatched from the loose eggs were reared separately under uniform laboratory conditions as described by Yokoyama (1963) and Krishnaswami (1978).

Area of study

The present investigation on effects of mountage types on silkworm *Bombyx mori* spinning FC1×FC2 was conducted in Department of Sericulture, Poonch Campus, and University of Jammu.

RESULT AND DISCUSSION:-

The results on the present investigation entitled “Effect of Mountages Types in Silkworm Spinning” (FC1 X FC2 Silkworm hybrid). The experimental result showed that there were significant changes in the growth, development and economical attributes of silkworm due to different mountages .

A> Single Cocoon weight (gms):-

Treatment	Single Cocoon Weight (g)	
	Mean	S.E.
1: Paddy Husk Mountage	1.611	0.015
2.Mulberry Twig Mountage	1.486	0.009
3. Egg Tray Mountage	1.441	0.015
4.Rotatary Collapsible Mountage	1.340	0.017
5.Pinus Mountage	1.459	0.035
C.D.	0.068	

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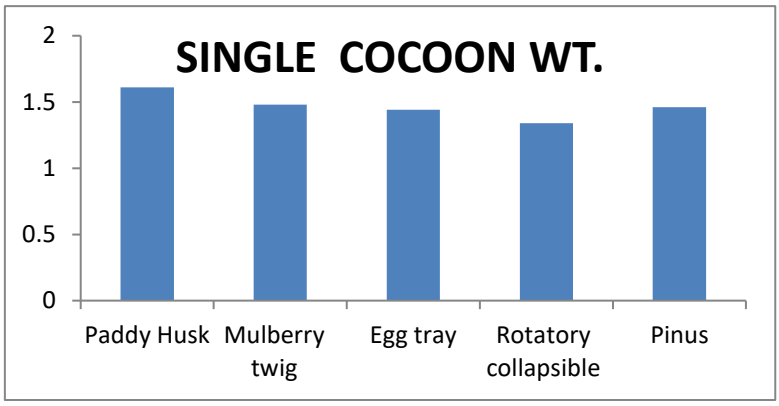
SE(m)	0.22	
SE(d)	0.031	
C.V.	2.989	

Table no 2:- single cocoon weight

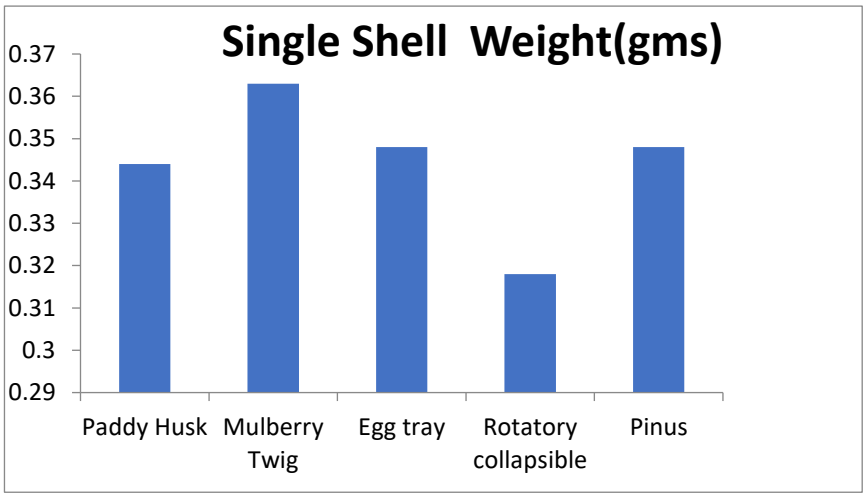


Graph no 1:-Single Cocoon Weight

B> Single Shell Weight (gms):-

Treatment	Single Shell Weight (g)	
	Mean	S.E.
1: Paddy Husk Mountage	0.344	0.013
2.Mulberry Twig Mountage	0.363	0.002
3. Egg Tray Mountage	0.348	0.018
4.Rotatary Collapsible Mountage	0.318	0.017
5.Pinus Mountage	0.348	0.007
C.D.	N/A	
SE(m)	0.011	
SE(d)	0.016	
C.V.	6.614	

Table no 3:- Single Shell Weight



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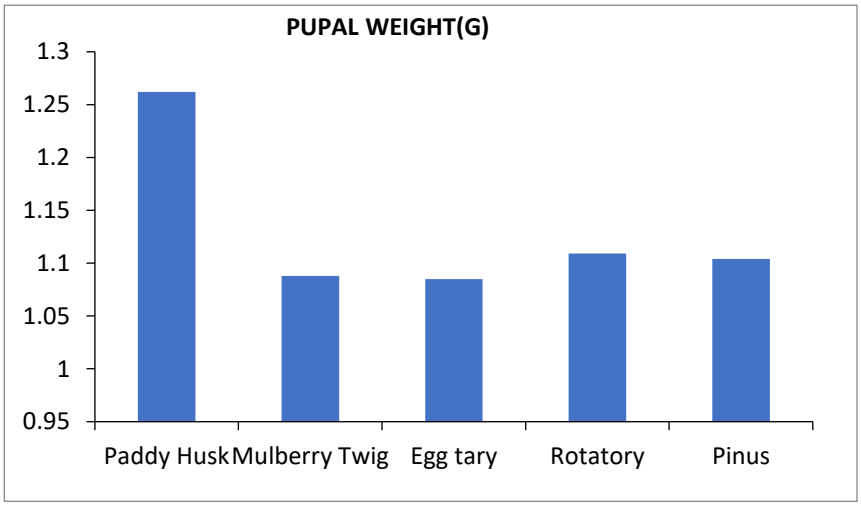
Graph no 2:- Single Shell Weight Pupal weights (Gms)

Treatment	Pupal Weight (g)	
	Mean	S.E.
1: Paddy Husk Mountage	1.262	0.009
2.Mulberry Twig Mountage	1.088	0.033
3. Egg Tray Mountage	1.086	0.011
4.Rotatary Collapsible Mountage	1.020	0.007
5.Pinus Mountage	1.105	0.039
C.D.	0.051	
SE(m)	0.017	
SE(d)	0.023	
C.V.	2.972	

Table no 4:-Pupal Weight (g)



Graph no 3:- Pupal Weight (g)

C> . Shell ratio (%):-

Treatment	Shell Ratio	
	Mean	S.E.
1: Paddy Husk Mountage	21.095	0.574

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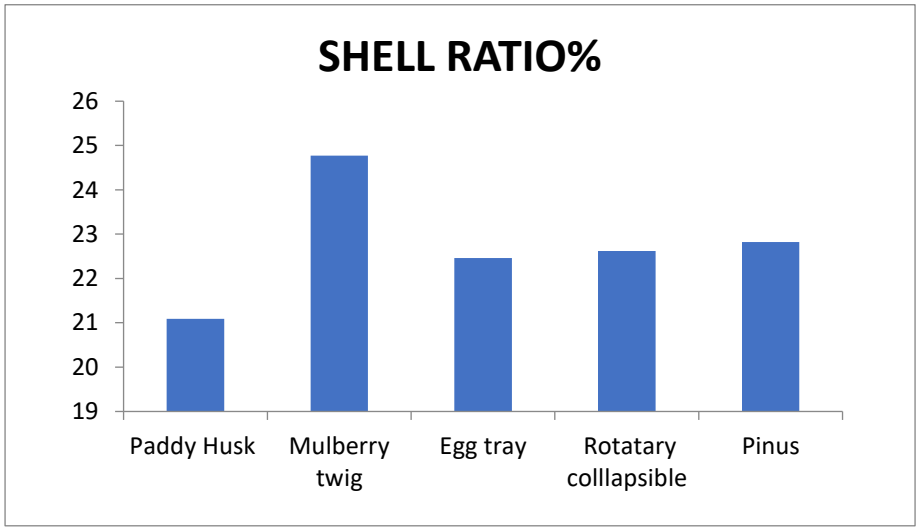
2.Mulberry Twig Mountage	24.770	0.274
3. Egg Tray Mountage	24.463	0.413
4.Rotatary Collapsible Mountage	22.620	0.199
5.Pinus Mountage	22.823	0.258
C.D.	1.284	
SE(m)	0.412	
SE(d)	0.583	
C.V.	3.623	

Table no :-5 Shell Ratio %



Graph no 4:- Shell Ratio %

D> . Pupation (%):-

Treatment	Pupation %	
	Mean	S.E.
1: Paddy Husk Mountage	94.665	0.943
2.Mulberry Twig Mountage	93.333	0.471
3. Egg Tray Mountage	91.333	1.247
4.Rotatary Collapsible Mountage	92.000	1.633
5.Pinus Mountage	89.333	0.943
C.D.	N/A	
SE(m)	1.130	
SE(d)	1.598	
C.V.	2.453	

Table no 6:-Pupation %

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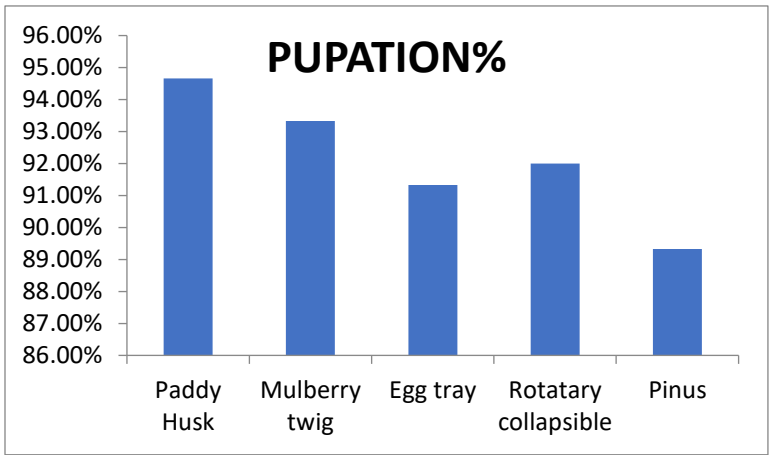
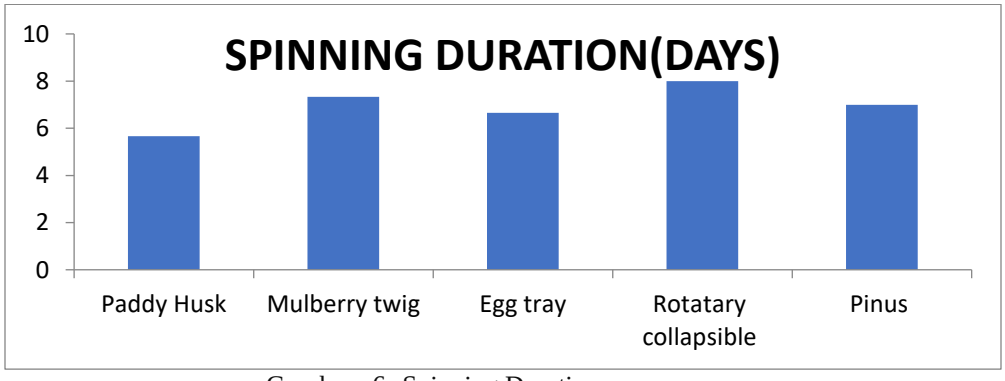


Graph no 5:- Pupation %

E> Spinning duration (Days):-

Treatment	Spinning Duration(days)	
	Mean	S.E.
1: Paddy Husk Mountage	5.665	0.236
2.Mulberry Twig Mountage	7.333	0.236
3. Egg Tray Mountage	6.665	0.236
4.Rotatary Collapsible Mountage	8.000	0.408
5.Pinus Mountage	7.000	0.000
C.D.	0.884	
SE(m)	0.284	
SE(d)	0.401	
C.V.	8.188	

Table no 7:- Spinning Duration



Graph no 6:-Spinning Duration.

F> . Good Cocoon %:-

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Treatment	Good Cocoon %	
	Mean	S.E.
1: Paddy Husk Mountage	83.333	1.247
2.Mulberry Twig Mountage	78.000	0.816
3. Egg Tray Mountage	78.665	1.700
4.Rotatary Collapsible Mountage	72.000	0.816
5.Pinus Mountage	76.000	1.633
C.D.	3.381	
SE(m)	1.085	
SE(d)	1.535	
C.V.	2.797	

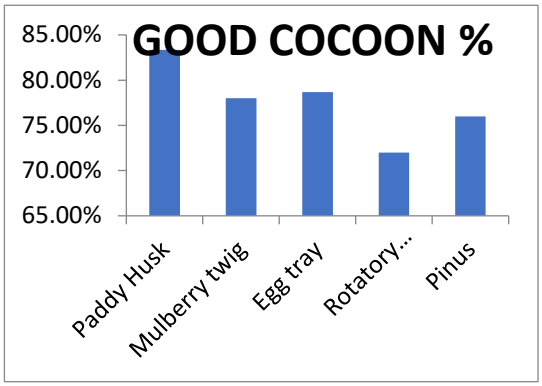
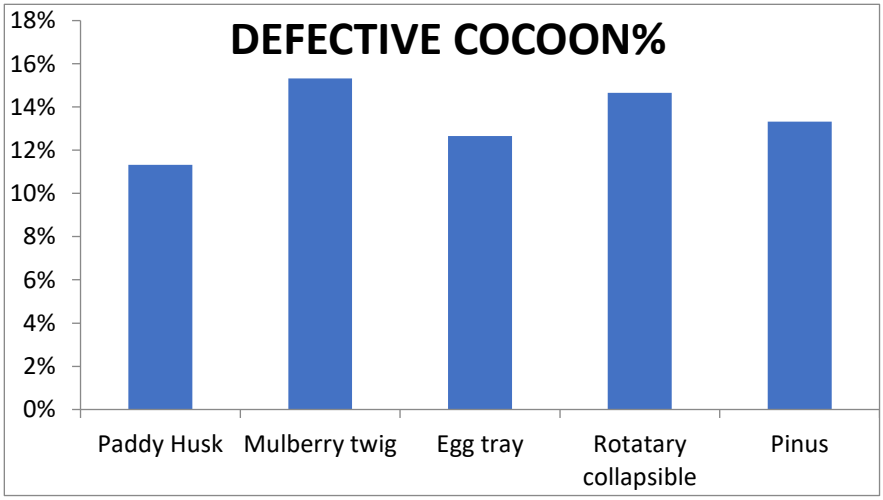


Table no 8:-Good Cocoon % & Graph no 7:- Good Cocoon

G> . Defective cocoon %:-

Treatment	Defective Cocoon	
	Mean	S.E.
1: Paddy Husk Mountage	11.250	0.479
2.Mulberry Twig Mountage	15.250	0.479
3. Egg Tray Mountage	12.665	0.943
4.Rotatary Collapsible Mountage	14.750	3.301
5.Pinus Mountage	13.333	1.886
C.D.	N/A	
SE(m)	1.551	
SE(d)	2.193	
C.V.	23.060	

Table no 9:- Defective Cocoon %



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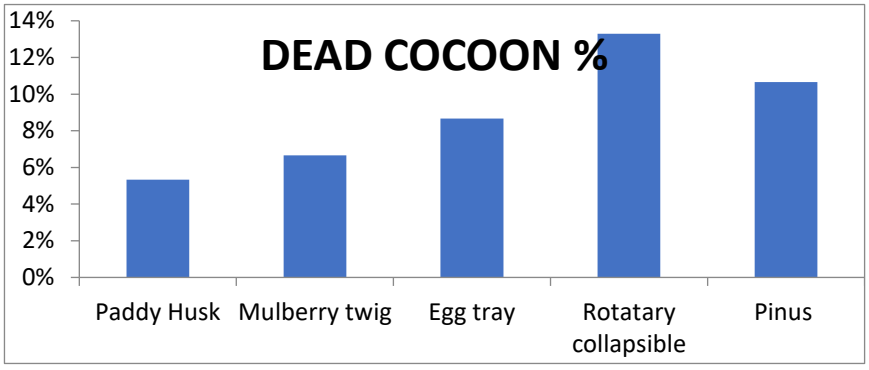
Graph no 8:-Defective Cocoon %

H> Dead Cocoon:-

Treatment	Dead Cocoon %	
	Mean	S.E.
1: Paddy Husk Mountage	5.250	0.946
2.Mulberry Twig Mountage	6.750	0.479
3. Egg Tray Mountage	8.750	1.250
4.Rotatary Collapsible Mountage	13.250	2.490
5.Pinus Mountage	10.750	0.946
C.D.	4.304	
SE(m)	1.381	
SE(d)	1.954	
C.V.	30.870	

Table no 10:-Dead Cocoon %

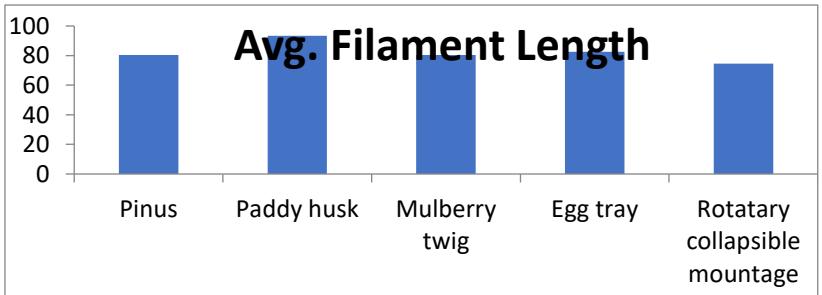


Graph no 9:-Dead Cocoon %

2> Objectives: - To Determine the Effect of Different Mountages on Post Cocoon Parameters.
Following Parameters have been observed in Post Cocoon Stage
A> **Avg. Filament Length:-**

Treatment	Avg. Filament Length	
	Mean	S.E.
Pinus Mountage	88.33	2.248
Paddy Husk Mountage	93.33	1.247
Mulberry Twig Mountage	80.33	2.718
Egg tray Mountage	82.66	2.779
Rotatary Mountage	74.66	1.700

Table no 11:- Avg. Filament Length



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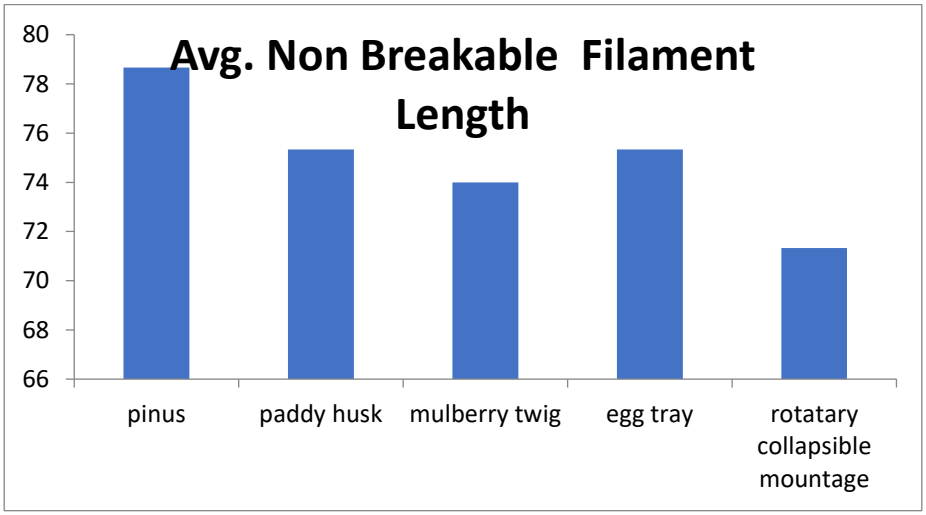
Graph no10:- Avg. Filament Length.

B> Avg. Non Breakable Filament Length:-

Treatment	Avg. Non Breakable Filament Length	
	Mean	S.E.
Pinus Mountage	78.66	1.650
Paddy Husk Mountage	75.33	2.494
Mulberry Twig Mountage	74	1.633
Egg tray Mountage	75.33	2.055
Rotatary Mountage	71.33	2.055

Table no 12:- **Avg. Non Breakable Filament Length**



Graph no 11:- Avg. Non Breakable Filament Length.

C> Avg. Filament Denier:-

Treatment	Avg. Filament Deniers	
	Mean	S.E.
Pinus Mountage	2.33	0.103
Paddy Husk Mountage	2.43	0.103
Mulberry Twig Mountage	2.45	0.134
Egg tray Mountage	2.36	0.143
Rotatary Mountage	2.61	0.92

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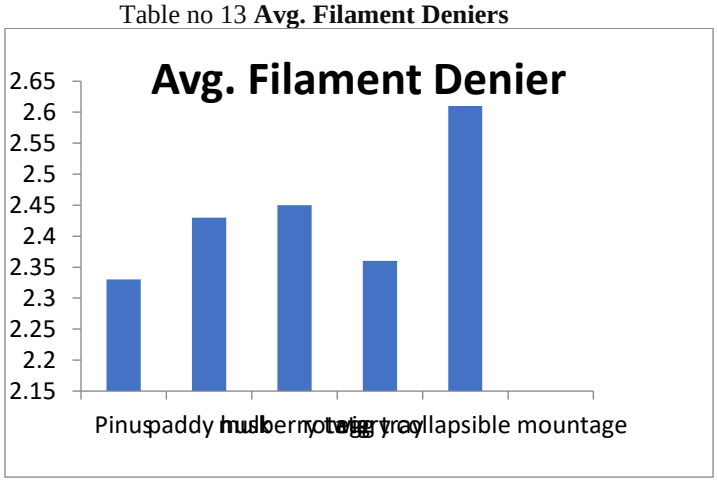
Table no 13 **Avg. Filament Deniers**



Graph no 12 Avg. Filament Deniers

Summary and Conclusion

Mountage is a mechanism that allows mature silkworms to spin cocoons on a platform. At the field, there are several sorts of mountages, some of which are more popular. Farmers construct such mountages out of a variety of locally accessible materials. According to previous research, the type of material utilized, as well as the design and construction of the mountage, will determine the quality of the silkworm cocoon, Bombyx mori L. In addition to providing support for spinning worms, mountages should meet the following requirements: providing a convenient and uniform space with appropriate dimensions for spinning good sized cocoons, preventing the formation of double and malformed cocoons, providing ventilation for drying up the worm's last excreta prior to spinning, and allowing easy mounting and harvesting. Narrow area limits ventilation for spinning larvae, resulting in poor cocoon reelability; larger room, on the other hand, wastes silk in the form of floss used by the silkworm to build foundation for cocoon formation. (Mathur and Qadri, 2010). Improper mounting structure and careless handling and maintenance of mature silkworms result in the creation of faulty cocoons, resulting in a loss of 5 to 8% of cocoon output. (Chandrakanth *et al*., 2004As a result, the quantity and quality of good cocoons are heavily reliant on the proper selection and application of mountages during cocoon spinning by developed larvae. Although there are various types of mountages available, each has its own set of drawbacks. In this study we use certain types of mountages i.e. Rotatary Collapsible mountages, Mulberry twigs mountages, Egg tray mountages, Husk rice mountages and Pinus mountages single cocoon weight was recorded highest in the Paddy Husk Mountages (1.61gms) than other mountages such as Mulberry Twig Mountages (1.48gms), Egg Tray Mountages (1.44gms), Pinus Mountages (1.46gms) while Rotatary Collapsible Mountages have a lesser value (1.34gms). Mulberry Twig Mountage (0.363gms), Egg Tray Mountage (0.348gms), Pinus Mountage (0.348gms), and Paddy Husk Mountages all had much higher shell weight than the other types of mountages (0.344gms) Rotatary Collapsible Mountages are less expensive (0.318gms). Paddy Husk Mountage has the highest mean pupal weight (1.262gms), Mulberry Twig Mountage is second (1.088gms), Egg Tray Mountage is third (1.085gms),

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Rotatary Collapsible Mountage has the lowest pupal weight (1.019gms), and Pinus Mountage has the lowest pupal weight (1.019gms) (1.085gms). Mulberry Twig Mountage has the greatest cocoon shell ratio (24.77%), followed by Pinus Mountage (22.82%), Rotatary Collapsible Mountage (22.62%), Egg Tray Mountage (22.46%), and Paddy Husk Mountage (22.46%), according to statistics. (22.46%). In comparison to other Mountages, such as Mulberry Twig Mountage, the pupation rate in Paddy Husk Mountage was greatest (94.66 %). Egg Tray Mountage has the highest Pupation Rate (91.33 %), followed by Rotatary Collapsible Mountage (92 %), and Pinus Mountage has the lowest Pupation Rate (89.33 %). The Rotatary Collapsible Mountage has the significantly longest spinning duration, according to statistical analysis (8 days). Mulberry Twig Mountage Spinning Duration (7.33 days) is noticed in Paddy Husk Mountage (5.66 days), Egg Tray Mountage Spinning Duration (6.66 days), and Pinus Mountage Spinning Duration (7.33 days). The Rotatary Collapsible Mountage has the longest spinning duration (8 days), while Paddy Husk Mountage has the shortest spinning duration (5 days). The largest percentage of good cocoons was found in Paddy Husk Mountage (83.33%), followed by Egg Tray Mountage (78.66%), Mulberry Twig Mountage (78%), Pinus Mountage (76%), and Rotatary Collapsible Mountage (72%). Mulberry Twig Mountage and Rotatary Collapsible Mountage have the greatest faulty cocoon percentage (15%), followed by Pinus Mountage (13.33%), and Egg Tray Mountage (12.66%). In this study, we discovered that Paddy Husk Mountage (5%) has the lowest proportion of dead cocoons, whereas Mulberry Twig Mountage has the second lowest percentage (7%). The Dead Cocoon proportion in Egg Tray Mountage is 9%, followed by Pinus Mountage with a Dead Cocoon percentage of (11%). The highest percentage of Dead Cocoons is observed in Rotatary Collapsible Mountage (13%). %).The highest Avg. Filament length is observed in Paddy Husk mountage (93.33) and the lowest Avg. Filament Length are observed in Rotatary Collapsible Mountage. The Non Breakable Avg. Filament Length in our study observes that the highest in Pinus Mountage (78.66) and lowest in Rotatary Collapsible Mountage (71.33). The Avg. Filament Denier highest observed in Rotatary Collapsible Mountage (2.61) and lowest Pinus Mountage.(2.33)

In conclusion, the Paddy Husk mountage employed in this study is the best for silkworm rearing, because it is easily and locally available in everywhere in the villages as well as town. The cost of the Paddy Husk was very low and quality of cocoon formed by Paddy Husk mountage is very good cocoon and the post cocoon parameters. The result of the present study reveals that, the Paddy Husk mountage is the better when compared to the other mountages for various parameters such as cocoon and the post cocoon parameters viz., total number of cocoon and their weight of good cocoon per mountage. Similarly, number of defective cocoon per mountage was found least on Paddy Husk mountage than egg tray mountage. The cocoon production is the end product of silkworm rearing before transferring to textile industry. The quality and quantity of cocoon produced is very essential to every Sericulturist. Paddy husk mountage exhibit the highest cocoon quality and quantity among the parameters measured. Although the Paddy husk mountage has some demerit in terms of

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biodegradation and sticking to the shell of the cocoon. All needed precaution are needed to put into

Consideration to get optimum quantity and quality of cocoon. It is therefore been recommended that sericulturist should explore the use of paddy husk mountage which are readily available in their environment. The main objective of the sericulture is the production of large quantity of good cocoon which in turn result in production of good quality of silk. This cannot be obtained only by the use improvement of mulberry cultivation and silkworm rearing, but also by the method of mounting and mountages used (Singh et al., 1994). Therefore, the present study was conducted "To investigate the effect of different mountage on spinning of cocoon" obtained from the Paddy Husk mountage in comparison to with the control and showed that, the Paddy Husk mountage exhibited better results when compared to the Mulberry twig mountage and Rotatary collapsible mountage. However, subsequent studies are needed to verify as which of these Paddy Husk mountage would be the best mountages to release into farmers field.

References

1. Ademola, I.T., Alebiosu., I.B,Toyinbo .,E.O,Ayoola., O.A and Fakorede , C.O. Quality and Quantity assessment of cocoon. Spinning by silkworm (Bombyx mori) on different mountages.Science and Technology 2(4):29078-29080,2014.
2. Barman, H., Bagri,G., Hani,P.N.,Choudhury, B.C., and Geridhar, K Develop of pull strips mountages and Mounting performance over traditionally used Mountages. Indian journal 3(1):34-40,2014.
3. Chen, F., Porter, D., and Vollrath F. Studied on Structure and physical properties of silkworm cocoons. J. R. Soc 9(2):2299-2305,2012.
4. Debaraj, Y., Singh, N1. Sarmah, M C. and Singh, R, Fabrication of suitable low cost bamboo mountages for silkworm spinning. Entomology & Zoology. 7(1): 646-649,2012.
5. Gowda, N.B., and Redd.Influence of Different Environmental Conditions on Cocoon Parameters and Their Effects on Reeling Performance of Bivoltine Hybrids of Silkworm, Bombyx mori. L. International Journal of Industrial Entomology 14(1):15-21,2015.
6. Gulamova., Avazov ,K., and Abrayqulov,B (2021). Research of quality silk and cocoon making Technology. Institute of Physics 4(7): 1-10,2021.
7. Gowda, B.N., and Reddy, N.M,Studied on Influence of Different Environmental Conditions on Cocoon Parameters and Their Effects on Reeling Performance of Bivoltine Hybrids of Silk worm, Bombyx mori. L. International Journals Industrial Entomology 14(1):15-21,2006.
8. Hailu, A. Assessment of growth and performance of silkworm (Bombyx mori. L) on Mulberry leaves at Jimma , South West Ethiopia. Journal of Biology, Agriculture and Healthcare 6(9):10-16,2006.

ISSN: 0975-3583, 0976-2833 VOL 15, ISSUE 9, 2024

9. Himanthraj, M.T., Das,K.,K,M., Kumari, V., and Rajan, R.K, Acceleration of self-mounting method and its effect on Cocooning cocoon character and reeling character in silkworm Bombyx mori . International journal of Industrial Entomology 4(1):19-22,2002.

10. Hussain,M.,Khan,S.A., Naeem,M., and Mohsin,Au 2009 . Effect of Relative Humidity on Factors of Seed Cocoon Production in some Inbred Silk Worm (Bombyx mori) Lines. International journal of Agricultural and Biology 13(1):57-60,2009.