

The Development of Fancy Yarn from Banana and Cotton Fiber Blend

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Abstract

The research of development Fancy yarn from Banana fiber and cotton fiber blend was conducted to seek Ratio of Banana fiber and cotton fiber for making sliver by ROLLER CARD. It was found that blending banana fiber and cotton fiber at 20: 30, 30: 40, 40: 60 and 50: 50 was able to be spun as sliver. Due to the quantity of Banana fiber, there were quantity of yarn less than or equal with cotton fiber it made both fibers cling together. In the parts of the suitable sliver laying direction to contain to the GAREBO YARN TUBE was found that the suitable laying direction to contain into the GAREBO YARN TUBE could make sliver easily draw and continue spinning yarn. About Ratio and weight of sliver in GAREBO YARN TUBE that was affect to Fancy yarn spinning as SLUB YARN was found that the qualification of thread for seeking yarn twist, yarn strength and Elongation (Percentage) of Banana Fiber : cotton Fiber 20:80 was found that the weight of Sliver 20 grams have yarn twist (turn/inches) mean 10.8 (newton) of sliver 40 grams mean 6.27 and Elongation (Percentage) of sliver 30 grams mean 4.45. Banana Fiber : cotton Fiber 30:70 was found that the weight of Sliver 30 grams have yarn twist (turn/inches) mean 10.9 (newton) of sliver 30 grams mean 7.68 and Elongation (Percentage) of sliver 30 grams mean 4.93. Banana Fiber : cotton Fiber 40:60 was found that the weight of Sliver 40 grams have yarn twist (turn/inches) mean 10.5 (newton) of sliver 20 grams mean 6.20 and Elongation (Percentage) of sliver 40 grams mean 4.76. Banana Fiber : cotton Fiber 50:50 was found that the weight of Sliver 20 and 40 grams have yarn twist (turn/inches) mean 10.9 (newton) of sliver 30 grams mean 6.07 and Elongation (Percentage) of sliver 20 grams mean 5.09. Banana Fiber : cotton Fiber 60:40 was found that the weight of Sliver 20 grams have yarn twist (turn/inches) mean 11.2 (newton) of sliver 40 grams mean 5.34 and Elongation (Percentage) of sliver 40 grams mean 4.57.

Keywords : Banana fiber , Cotton fiber , Fancy yarn

Preface

Spinning Industry or Thread Production is the Middle Step of Textile Industry that concern to thread Production made from natural Fibers and Synthesis fiber especially making Thread from Natural Fibers. They are materials to use in Textile Industry which created several kind of Products such as to use in weaving , Home Textile and Apparel (Boonchai and others,1998)

Types of Fiber can separate 2 Types is man-made; Fiber modified from Natural Polymer, inorganic Fiber, Synthesis Fiber and Natural yarn that can classify follow source of Fiber ; animals and plant. In the present, have develop plant fiber to thread for fabric such as Bamboo textile clothes Mangosteen fiber clothes pine apple fiber fabric Hemp fiber (Banana and others,2008). Now, there is Banana Fiber in Industry Production. Getting Banana Fiber 12% Rayon 23% and Polyester 65% blend to produce as thread and textile but the identity of fabric was not present the clearly identities of Banana Fiber.

So the researcher is interested in Banana Fiber and Cotton Fiber Blend. For seeking the suitable ratio to produce as thread in the sort of fancy yarn and to study Sliver put into GAREBO YARN TUBE.

Objective

1. To study Ratio of Banana Fiber and cotton Fiber Blend.
2. To study the sliver laying direction contain in the GAREBO YARN TUBE.
3. To study Ratio and weight of sliver in GAREBO YARN TUBE that are affect to fancy yarn spinning as SLUB YARN.

Limitations

In this research, Study and experiment only the Fancy yarn in SLUB YARN.

Equipment and Experimentation

4.1 Tools

4.1.1 ROLLER CARD

4.1.2 GAREBO

4.1.3 TWIST TESTER (yarn twist (turn/inche) testing)

4.1.4 USTER TENSORAPID 3 V6.1 (Yarn strength and Elongation)

4.2 To study Ratio of Banana fiber and cotton fiber Blend

4.2.1 Providing Banana yarn

Separation Banana fiber started by Banana Fiber Separating Machine, which produced by Rajamangala University of Technology Phra Nakhon, can speedily separate fiber and sponge in acceptable level. There are separated Methods as follows.

1. Banana was cut the bunch of Banana ages 8-10 months.
2. Take outside of shells Banana amount 5-6 Shells.
3. Halving by longside of shells and cut width 3-4 inches.
4. shells cut and put into Banana fiber separating Machine with turning upside down and put into (sponge overturned) machine for cutting sponge and tissues out
5. Taking Shells passed separated sponge and tissues to comb by fiber comb while fiber is still wet for cleaning. And keeping only fiber.
6. Cut Banana fiber 2 inches put into ROLLER CARD for making fiber scattered to cleaning fiber in order to throw tissues away.
7. Banana Fiber pass 1 time by ROLLER CARD and then blend cotton in order to both fiber blend and spin to be sliver

4.2.2 Ratio of Banana fiber and cotton fiber, this research to know about Ratio of Banana fiber that can blend cotton fiber and spin sliver with different Ratio as follow.

BANANA : COTTON

20 : 80

30 : 70

40 : 60

50 : 50

60 : 40

4.3 To study of the laying direction of Sliver to GAREBO yarn Tube. To cut Sliver 30 cm put down 6 row amount 3 levels. Sliver as above and take the wooden bar diameter 1 cm and long 50-60 cm, it was used to roll sliver for putting in wooden tube to GAREBO YARN TUBE. There are the laying direction of Sliver as follow.

4.3.1 The crosswise laying in GAREBO yarn TUBE.



Fig.1 The crosswise laying

4.3.2 The longwise in GAREBO yarn TUBE.



Fig.2 The longwise laying

4.3.3 The angle 45 degree laying in GAREBO yarn TUBE.



Fig.3 The angle 45 degree laying

4.4 To Study Ratio and weight of Sliver in GAREBO yarn TUBE. That are affect to Fancy yarn spinning as SLUB YARN. Planning experiment in 5x3 factorial Design and 50 tested repeats. From the factor is composed of 2 Factors as follow.

4.4.1 First factor: Ratio of Banana Fiber and Cotton Fiber (A) in different Scale is 20 : 80, 30 : 70, 40 : 60, 50 : 50 and 60 : 40.

4.4.2 Second factor: Weight of Sliver (B) in GAREBO yarn Tube to spin Fancy yarn as SLUB YARN. There are to allot to contain Sliver in 3 levels as 20 grams 30 grams and 40 grams.

Analyze

5.1 The result of Ratio of Banana fiber and cotton fiber blend.

The characteristics of fibers as Sliver With Roller Card were found that The blending between Banana fiber and cotton fiber Ratio 20 : 30, 30 : 40, 40:60 and 50 : 50 can spin sliver. Due to Banana fiber there are quantity of yarn less than or equal with cotton fiber, it made both fibers can cling together. Blending Ratio 60 : 40 was found that it can not spin sliver because there are Banana fiber more than cotton, it made hard probable cling together and flimsier in process.

5.2 The Result of the Sliver directions into GAREBO yarn Tube.

5.2.1 The experiments were found that the crosswise laying of sliver in GAREBO yarn tube have overlay and tum tube circle. It made while drawed sliver on the top of the tube, hard to draw and involve together with another Sliver so Thread had Large node scale and stuck some parts or tightly

twist too much, it can not draw to be. Threa Sometimes Thread is out large size all over line. Thus, the crosswise laying can not produce because. It was large too much to produce as textile.



Fig.4 Present about spinning fancy yarn as SLUB YARN

5.2.2 The result of experimental of the longwise laying was found that.

The Fancy yarn spinning as SLUB YARN in GAREBO can easy draw thread and continues spin yarn. Thread is small and tightly and loose of thread some parts. It made puff thread that was to be characteristic of Fancy yarn as SLUB YARN.

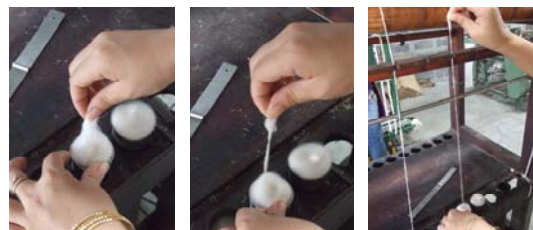


Fig.5 showing about spinning Fancy yarn as SLUB YARN in the longwise laying in GAREBO yarn Tube.

5.2.3 The result of experimental of the angle 45 degree laying was found that the fancy yarn spinning as SLUB YARN can little draw because sliver, which was angle 45 degree in Tube Tare firmly in the middle but the top and the end of tube was loose. It made Sliver easy to be off the GAREBO yarn Tube while it was in spinning process.

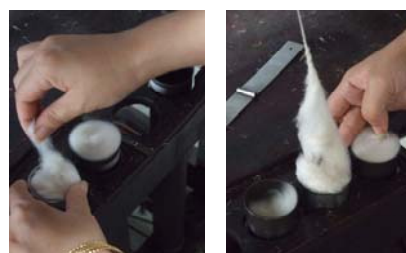


Fig. 6 showing abollt spinning Fancy yarn as SLUB YARN in angle 45 degree laying in GAREBO yarn Tube.

5.3 The result of Ratio and weight of Sliver contain in GAREBO yarn tube, having effect to spinning Fancy yarn in SLUB yarn. There are 15 Samples thread and test the qualifications of threads about yarn Twist, Yarn strength and Percentage of elongation. Showing in Table 2 about the result of qualification yarn testing.

Table 2 The result of the qualification yarn testing about yarn twist, Yarn strength and Percentage of elongation

Samples thread	Weight of Sliver	Yarn Twist (Turn/inches)	Tensile (Newton)	Elongation
1. BANANA 20% : COTTON 80%	20 grams	10.8	3.26	3.95
2. BANANA 20% : COTTON 80%	30 grams	9.8	5.52	4.45
3. BANANA 20% : COTTON 80%	40 grams	10.5	6.27	4.42
4. BANANA 30% : COTTON 70%	20 grams	10.8	3.95	3.93
5. BANANA 30% : COTTON 70%	30 grams	10.9	7.68	4.93
6. BANANA 30% : COTTON 70%	40 grams	10.0	4.26	4.12
7. BANANA 40% : COTTON 60%	20 grams	9.9	6.20	4.62
8. BANANA 40% : COTTON 60%	30 grams	10.3	4.77	4.27
9. BANANA 40% : COTTON 60%	40 grams	10.5	4.59	4.76
10. BANANA 50% : COTTON 50%	20 grams	10.9	5.94	5.09
11. BANANA 50% : COTTON 50%	30 grams	10.3	6.07	4.50
12. BANANA 50% : COTTON 50%	40 grams	10.9	3.34	3.77
13. BANANA 60% : COTTON 40%	20 grams	11.2	5.28	4.20
14. BANANA 60% : COTTON 40%	30 grams	10.3	4.27	4.22
15. BANANA 60% : COTTON 40%	40 grams	10.3	5.34	4.57

Conclusion

6.1 The Research of Ratio and Weight of Banana Fiber : Cotton Fiber.

The Study of Ratio and weight of Banana fiber : cotton fiber that were spun sliver by Roller card were found that blending between Banana fiber and cotton fiber Ratio ; 20 : 30, 30 : 40, 40 : 60, and 50 : 50 can spin sliver. Due to Banana fiber, there are quantity of yarn less than or equal with cotton fiber, it made both fiber can cling together.

6.2 The research of the laying direction of sliver to GAREBO yarn Tube.

The result of the laying direction of sliver to GAREBO Yarn Tube was found that the most suitable Sliver laying direction is longwise because it was laid tidy and was not overlay. Able to easy draw and to flow spinning.

6.3 The result of Ratio and weight of sliver contain in GAREBO yarn tube, having effect to spinning Fancy yarn in SLUB yarn

The result performed by Physical Properties Testing about yarn twist, yarn strength and Percentage of Elongation were found that

6.3.1) Banana Fiber and Cotton Fiber have ratio at 20 : 80 was found that sliver have weight 20 grams, there are yarn twist (turn/inches) 10.8, Tensile(Newton) was found that the weight of sliver at 40 grams that effect to tensile 6.27. And Elongation (Percentage) was found that Sliver have weight 30 grams that effect to elongate 4.45

6.3.2) Banana Fiber and Cotton Fiber have ratio at 30 : 70 was found that sliver have weight 30 grams, there are yarn twist (turn/inches) 10.9, Tensile(Newton) was found that the weight of sliver at 30 grams that effect to tensile 7.68. And Elongation (Percentage) was found that Sliver have weight 30 grams that effect to elongate 4.93

6.3.3) Banana Fiber and Cotton Fiber have ratio at 40 : 60 was found that sliver have weight 40 grams, there are yarn twist (turn/inches) 10.5, Tensile(Newton) was found that the weight of sliver at 20 grams that effect to tensile 6.20. And Elongation (Percentage) was found that Sliver have weight 40 grams that effect to elongate 4.76

6.3.4) Banana Fiber and Cotton Fiber have ratio at 50 : 50 was found that sliver have weight 20 grams and 40 grams, there are yarn twist (turn/inches) 10.9, Tensile(Newton) was found that the weight of sliver at 30 grams that effect to tensile 6.07. And Elongation (Percentage) was found that Sliver have weight 20 grams that effect to elongate 5.09

6.3.5) Banana Fiber and Cotton Fiber have ratio at 60 : 40 was found that sliver have weight 20 grams, there are yarn twist (turn/inches) 11.2, Tensile(Newton) was found that the weight of sliver at 40 grams that effect to tensile 5.34. And Elongation (Percentage) was found that Sliver have weight 40 grams that effect to elongate 4.57

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