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TECHNOLOGY INCREASE KENAF PRODUCTION BY FARMERS

Project
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TITLE

**Adaptation Toward Kenaf Bio-Retting
Technology by Famer: Evidence from
Merchong, Pekan, Pahang**



INTRODUCTION

Kenaf

Accepted as Industrial Commercial Crop.

Kenaf also known as bast fiber consists of two fiber types:

- The outer bark or bast portion (30% of the plant)
- The inner woody core material (70%).

Advantages

- Higher fiber yield, and
- Greater flexibility as an agricultural resources, over the other bast fiber,
- High potential as fiber material or lignocelluloses material, renewability and biodegradability that is essential for making environmentally friendly products.



INTRODUCTION

Retting

To separate fiber from the entire surrounding plant material, or process of removal gum includes pectin, hemicelluloses, lignin, and other impurities without damage to cellulose fiber.

Types Of Retting:

Water

Chemical

Microbe

Enzyme

Bioretting

Consider eco-friendly method to produced kenaf long fiber by mean of microbe and enzyme.



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OBJECTIVE STUDY

To identified factors farmer's understanding, capability, perceive, and interest to perform bio-retting technology.





Methodology

Study Site

Respondent farmers from Kampung Permatang Tepong, Kampung Permatang Durian, Kampung Permatang Limau, Kampung Badong and Kampung Padang Merchong, Pekan, Pahang.

Total number of respondent participate 21 farmers

Data collection

Face interview using a structured semi-standard questionnaire.

The question was divided in to five sections:

Farmers personal characteristic.

Farmers understanding.

Farmers' capability.

Farmers perceive .

Farmers Interest.



Statistical Analysis

Statistical analysis was executed using the software IBM®SPSS 22.

Non-parametric test was used to analyzed data collected. Selection of non-parametric test analytical because it is best suited to small samples size with five-scale social.

Second, two-tailed chi-square tests were performed to test the differences between farmers with respect to their characteristics and choices for various questions.

Third, correlation analysis was performed to assess the potential relationships between farmers' characteristics and their choices. Pearson's and Spearman Rho correlation tests were used between two interval scale parameters.

Spearman Rho based on assumption that the data were not normally distributed.



Result and Discussion

Farmers' personal characteristic

| Profile | Frequency (n) | Percentages (%) |
|---------------------------|------------------|--------------------|
| Gender | | |
| Men | 16 | 76.2 |
| Women | 5 | 23.8 |
| Level of education | | |
| Primary | 14 | 66.2 |
| Secondary | 7 | 33.3 |
| Income (RM) | | |
| 500-1500 | 17 | 81.0 |
| 1501-2500 | 3 | 14.3 |
| 2501-3500 | 1 | 4.8 |
| Race | | |
| Malay | 21 | 100 |

n = 21

n = 21



Farmers' understanding on bio-retting technology

| Items | Mean | Standard Deviation |
|------------------------------------------------------------------------------------------------------|--------|--------------------|
| Do you understand kenaf bio-retting methods in long fiber production | 2.857 | 0.72703 |
| There are seven steps in the processing of bio-retting do you understand each step to be carried out | 2.6667 | 0.57735 |
| Attend this workshop on bio-retting is its improve your understanding of this technology. | 2.8571 | 0.91026 |

1: Not very understand, 2: Not understand. 3: Less understand, 4: understand, 5: Very understand., χ^2 used to determined differences $p = 0.05$ and $p = 0.01$.



Farmers' understanding on bio-retting technology

3 items are listed below,

Item 1 and 2, are significance difference at alpha 0.05 between items and gender (Item 1, $\chi^2 = 29.476^b$, $p = .000$); (items 2 $\chi^2 = 14.857^c$, $p = .001$).

Majority of farmers agreed that they were less understand statements on

- Method in production of long kenaf fiber by using bio-retting and
- Process producing long quality fiber by mean of bio-retting.

Results given by the farmers mostly influence by the present fiber production and technology know how. Present practices long fiber production for five villages was applied by mechanical retting.

Farmers suggested formalized and recommended comprehensive intense workshop by agency involved.



Farmers' capability to perform bio-retting technology.

| Item | Mean | Standard Deviation |
|-------------------------------------------------------------------------------------------------------|--------|--------------------|
| If the method introduced bio-retting your area are you willing to apply | 2.9524 | 0.92066 |
| If you are given the opportunity to produce the fiber through the process bio retting are you able. | 3.2857 | 0.90238 |
| If given the opportunity to engage in a course you are you willing to attend | 4.2857 | 0.46291 |
| If your area is selected as main bio- retting technology site is it possible community willing to do. | 4.0000 | 0.31623 |

1: Very not able, 2: Not able, 3: Less able, 4: Able, 5: Very able, χ^2 used to determined differences $p = 0.05$ and $p = 0.01$



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Farmers' capability to perform bio-retting technology.

4 items are listed.

Item 2, 3 and 4, clearly indicate there are significance difference at alpha 0.05] between gender and items, for (item 2, $\chi^2 = 10.810^b$, $p = .013$); (items 3, $\chi^2 = 3.857^a$, $p = .050$); (items 4 $\chi^2 = 30.85^c$, $p = .000$).

For item 1, there is no significance difference at alpha 0.05. This demonstrates farmers more caution in making decision and agreed they should attended workshop or courses particularly on this technology for them before engage.

To strengthen their confident and successful project that they should be provided proper knowledge and expertise.



Farmers' perceive on bio-retting technology

| Item | Mean | Standard Deviation |
|-------------------------------------------------------------------------------------------|--------|--------------------|
| Bio-retting changing your prospect on the future of kenaf | 4.0952 | 0.43644 |
| Bio-retting technology receive kenaf as the best option crop for famer to plant | 4.0476 | 0.66904 |
| Willingness to engage in kenaf cultivation no other crops suitable grown on your farm. | 3.2857 | 0.90238 |
| Does your involvement in the kenaf cultivation due to subsidies granted by the government | 4.3333 | 0.85635 |
| Market is the main factor pushing you involved in this kenaf cultivation | 4.6667 | 0.48305 |

1: Very not agree, 2: Not agree, 3: Less agree, 4: Agree, 5: Very agree. χ^2 used to determined differences $p = 0.05$ and $p = 0.01$.



Farmers' perceive on bio-retting technology

5 items were listed,

Item 1, 3 and 4, are significance difference at alpha 0.05 between gender and items (item 1, $\chi^2 = 21.714^b$, $p = .000$); (items 3 $\chi^2 = 14.952^b$, $p = .005$); (item 4, $\chi^2 = 12.333^c$, $p = .006$).

For item 2 and 5 are no significance differences at alpha 0.05. Statement on introduced bio-retting kenaf as best choice crop and marketing was not farmers' priorities.

Based on this evidence, statement on

- Change farmers' view on the potential of kenaf,
- Subsidies provided by the government and
- Farmers decision on choice of planting crop in field were more preferred.

Majority of farmers agreed mechanical retting and bio-retting technology should be established in their district conversion process of fiber will be more cost effective and time



Farmers' interest on bio-retting technology

| Items | Mean | Standard Deviation |
|------------------------------------------------------------------------------------|--------|--------------------|
| Throughout your engagement do you believe kenaf has a bright future | 4.3333 | 0.48305 |
| Are you confident that the technology will accelerate kenaf cultivation your area. | 4.3810 | 0.49761 |
| Bio-retting technology will add interesting planting kenaf. | 4.3333 | 0.57735 |
| Involvement in the kenaf industry because there are no other options. | 3.0000 | 0.72548 |
| Involvement in the kenaf cultivation are convinced of the potential of this crop. | 4.1429 | 0.47809 |
| Price of long fiber influence farmer in this kenaf cultivation. | 3.7619 | 0.88909 |
| Agency often practices open door and received views from farmers | 4.0478 | 0.38421 |

1: Not very agree, 2: Not agree, 3: Less agree, 4: Agree, 5: Very agree. χ^2 used to determined differences $p = 0.05$ and $p = 0.01$.



Farmers' interest on bio-retting technology

7 items were listed

Item 3,5,6, and 7 showed significance difference at alpha 0.05, between items and gender (item 3: $\chi^2 = 8.857$, $p = .012$); (items 5: $\chi^2 = 18.000$, $p = .000$); (item 6: $\chi^2 = 15.381$, $p = .002$); (items 7: $\chi^2 = 26.000$, $p = .000$).

For item 1,2 and 4 are no significance difference at alpha 0.05. Majority of farmers convince four statements on bio-retting technology

- Will enhance their interest on kenaf cultivation,
- Confident the potential of kenaf,
- kenaf pricing and
- Ideas from farmers should be acceptable by agency.

Bio-retting as value added technology which can be developed in small scale for smallholder, with low cost

Able to secure good price for long kenaf fiber where the pricing of long kenaf fiber are based on the quality, strength and other physical properties of the kenaf fiber



Conclusion

- Tendency of adaptation on this technology consider being moderate due to extent of farmers in influence in shaping policy, option and implementation were minimal any decision mainly depend on their own knowledge .
- Factor capable and interest shows significant difference as compare to understanding and perceive. Purpose further in depth study related to farmers' intentional behavioural in decision making and it is suggest by adopting psycho-social theory.
- Consider to be top down project farmers are sceptical on the implementation and adaptation on bio-retting technology and they suggest better extension programs, workshops or courses and consensus between farmers and care taker should be emphasis.



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**End
Thanks**