



## CARERIGYAN: PORTABLE ABACA STRIPPING TOOL

### BACKGROUND

CARE, with funding from the Government of Canada through the Global Affairs Canada, implemented the Typhoon Haiyan Reconstruction Assistance (THRA) project to establish sustainable and resilient economic activities in focus value chains (VC) that involve the most vulnerable households. CARE and partner Antique Development Foundation (ADF) have supported the abaca (Manila hemp) value chain in Antique through training on good agricultural practices and technical assistance to improve productivity and market. However, the farmers needed efficient tools to increase their productivity in fiber production.

CARE collaborated with the Metals Industry Research and Development Center (MIRDC) of the Department of Science & Technology on a research project to develop an improved portable manual abaca fiber stripping machine that can be easily transported to mountainous abaca plantations. The success of this collaboration paved the way for the new stripping machine that is portable, more efficient and gender-friendly. In April 2018 at the 2<sup>nd</sup> Abaca Congress held in Antique, the new portable manual abaca stripping machine was launched, later named **Carerigyan**, from the confluence of the name of the organization CARE and the *Karay-a* term for a tool used in extracting fiber which is “kerigyan”. The name itself is a contribution to the technical glossary of the abaca industry. The improved stripping machine is also women-friendly (Photo 2).

### The abaca strippers' pain points include inefficient tools and dangerous terrain.

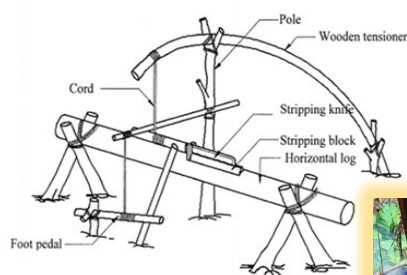


Figure 1. Old stripping set up designed by PhilFIDA

(Source: DTI PNS/PAES 255:2011)



Prior to the project intervention, most abaca farmers used common knives to extract abaca fiber, but they turned out low fiber recovery. Some abaca farmers have abaca stripping knives with proper serration distributed by the Philippine Fiber Industry Development Authority (PhilFIDA). However, it easily rusted, needed frequent sharpening of the blade and was challenging to install.

These knives require *bawog*, which used bamboo and other indigenous materials to press the blade against the abaca tuxy before pulling. Installation of *bawog* took a considerable amount of time, and the *bawog* set-up needed frequent adjustment to keep the blade tightly pressed into the wooden board during the stripping process resulting in low productivity.

In addition, the strippers struggled with dangerous routes. They trekked mountain paths and jagged rocks for one to six hours to the plantation. They need lighter materials to bring with them.

### The parties designed Carerigyan based on the requirements of abaca farmers.

CARE and MIRDC applied the principles of human-centered design, which is a philosophy to create and share solutions for the end-users' core needs through feedback and constant iterations.

The design of the abaca fiber stripping machine was conceptualized based on the gathered data and in accordance with the requirements of the abaca farmers/strippers.

The parties consulted with women and men abaca farmers, the ADF and PhilFIDA Region VI. MIRDC validated the design concept from the initial assessment and conducted functional testing at its facility using abaca tuxy from ADF.





Photo 2: The improved prototype of Carerigyan after a series of tests

The team learned that the thickness of the blade should be around 6mm, and the depth of serration should be approximately 1-1.5 mm.

The number of serrations depended on the required fiber quality, and the material used for the blade must be leaf spring steel.

In addition, the prototype machine is spring-loaded and operated by foot, which eliminated the tedious process of pushing and pulling the lever before abaca fibers could be stripped. When the stripper steps on the pedal mechanism, the string tied to it pulls the lever on the other end.

This process puts the machine in an open position and releasing the foot will put it back to its normal position. This design makes abaca tuxy easy to load to the machine for stripping.

### MIRDC, together with CARE and ADF, conducted field tests.

In order to evaluate the functionality of the developed machine, a series of tests in various stripping sites were conducted with the women and men abaca farmers, with corresponding adjustments and improvements done after each test.

The parties tested the first prototype in Barangay Leon, Laua-an in March 2018. Women and men abaca farmers gave their comments and suggestions, which MIRDC considered in further improving the prototype. In April 2018, the parties conducted the second field testing for performance in Egana, Sibalom. Women and men abaca farmers gave positive feedback and acknowledged the significant upgrade from the traditional stripping knife. The women said that having this kind of tool will help them strip abaca easily and will let them participate in the stripping tool set-up. It is easier for them to bring the tool to the stripping site because of its lighter weight compared to the previous design.

In May 2018, endurance and efficiency tests were carried out in Barangay Flores, Culasi by using the machine regularly for 15 days. Additional recommendations to improve the machine were provided.

Various test results form the basis of Carerigyan's technical features for the commercial model.



### Technical Features

- Weight: 5 kg
- Blade made of stainless steel 440C series prevents rusting and frequent sharpening
- Two-edge blade with 18 and 24 serrations per inch, which produces higher recovery rates of extracted fiber and excellent fiber quality than previously
- A hard wooden board (*dapilan*) mounted on a metal frame and can be easily adjusted by using a hammer, wood, stone or any hard object
- Easily adjustable spring to maintain the blade tightly pressed into the wooden board
- Can be installed in less than 10 minutes
- Can be installed for right-hand or left-hand use
- Produces S2 fiber grade

For inquiries about Carerigyan, email [maria.bayombong@care.org](mailto:maria.bayombong@care.org)



Canada  
Program undertaken with the financial support of the Government of Canada provided through Global Affairs Canada

