

Philippine Fiber Industry Development Authority

Accomplishment Report

as of 3rd Quarter FY 2022

Fiber Industry Performance

Export earnings from fibers and fiber-based products reached US\$67,554,066* with abaca as major contributor accounting for 95.3% of the total. Earnings from fibers and manufactures for the period were contributed by the following:

Abaca - US\$64,409,408
Coir - US\$3,032,663
Buntal/Raffia - US\$111,995

*2022 preliminary data (January-April)

Fiber Production from January to August 2022 (m.t.)

Abaca	-	40,735.19
Coir	-	12,729.78
Buntal	-	3.091
Raffia	-	22.240
Salago	-	133.250
Kapok	-	2.340
Piña	-	45.639
Canton	-	175.750
Musa Species (MSP)	-	740.375
Cocoon	-	0.465
Seed Cotton	-	3.944
Cotton Lint	-	35.550
Banana	-	0.386

Output Indicators

- 10,316 individual farmers and 24 farmer groups beneficiaries of different goods and services
- 100% of the beneficiaries who rated the quality of the goods and services provided are satisfied
- 100% of the beneficiaries who rated the timeliness of the delivery of the goods and services provided said that it is timely.

To sustain the Philippine fiber industry, PhilFIDA continues to undertake programs and projects geared towards increasing farm productivity and production, improving post-harvest technologies, improving fiber quality, establishing strong market base, and enhancing skills and capability of government technicians and industry players.

FIBER DEVELOPMENT PROGRAM

Fiber Development Program is composed of three sub-programs: Production Support Services; Extension Support, Education and Training Services; and Research and Development. Each sub-program has different activities spearheaded by the different divisions of the PhilFIDA.

Production Support Service

- Maintained 8 seedbanks, 4 Tissue Culture Laboratories (TCL), 1 Tissue Culture and Diagnostic Laboratory, 3 Diagnostic Laboratories, 1 Immunology Laboratory and 1 Cotton Research Center.
- Produced 64,628 abaca tissue culture plantlets and distributed 31,245 to 70 beneficiaries
- Produced 220,602 corms/suckers from seed banks and distributed 74,031 to 71 beneficiaries
- Produced 994,593 abaca plantlets from seeds and distributed 507,507 to 623 beneficiaries
- Abaca Disease Management Project (ADMP) - covered 1,739.270 hectares
- Maintained a total of 115 hectares abaca nurseries
- Indexed 4,860 leaf samples
- Produced 925 kilograms of cotton foundation seeds
- Produced 862 kilograms of registered cotton seeds
- Produced 3,176 trichogramma strips and distributed 1,877 strips
- Produced 28,800 pieces of sisal bulbils and distributed 32,300

The agency is in continuous collaboration with local and foreign research institutions in conducting undertakings on fiber processing and utilization

1. Philippine-OISCA Sericulture Project - continuous monitoring of project implementation
2. Field Production of Jute Fibers (*Corchorus olitorius* L.) for Woven Fabrics
 - ♦ Finalized and printed in A3 the content of technical poster for jute fiber production for woven fabrics
 - ♦ Distributed 500g jutes seed to Mr. Mark Joseph G. Jose in Plaridel, Bulacan
3. Increasing Productivity of Sericulture Farmers in Claveria, Cagayan
 - ♦ Prepared fire evacuation plans as requirement for fire safety certificate
 - ♦ Prepared Certificate of No Objection for connecting power lines and sub-meter from the registered connection of Ms. Magno, the association President

- ◆ Prepared the 90% inspection report, accomplishment report and statement of work and accomplishment of the sericulture infra-structure project
- ◆ On-going preparation of as-built plan drawing of RRM and VTRM
- ◆ Conducted performance and durability testing and evaluation of one-unit VTRM and RRM last September 13 and 21, 2022
- ◆ Drafted the construction marker for the Sericulture Center

Extension Support Services

- Opened 839.61 hectares new abaca areas involving 711 farmers
- Rehabilitated 744.75 hectares of old and unproductive abaca areas involving 563 farmers
- Conducted various trainings on fiber production and technology, which include
 - ◆ 2 Farmers' Field School (FFS) with 34 participants
 - ◆ 8 Farmers' Livelihood Training with 185 participants
- Distributed 112,366 Information Education Communication (IEC) materials

Research and Development

The PhilFIDA through the Research Division and Regional Research Units pursues research undertakings on abaca, cotton and other fiber crops as well as undertakes the propagation of fiber crop planting materials for distribution to farmers thru the LGUs and fiber crop farmer groups. The research program is composed of three (3) major research disciplines, namely: Varietal Improvement (Crop Breeding and Biotechnology), Pest Management (Crop Protection, Entomology and Pathology) and Production Systems (Agronomy, Cropping System and Cultural Management). The following are the ongoing researches:

Research on Fiber crops and Other Related Research

1. Abaca Multilocational Trial

Location 1:

Seven tissue-cultured abaca plantlets of the different varieties from Albay, Leyte, and Davao Tissue Culture Laboratories were planted for evaluation as follows: Abuab, Tinawagan Puti, Tangongon, Kutay-kutay, Inosa, Hagbayanon, and Luno. Luno variety served as the regional check variety. The varieties were laid out in Randomized Complete Block design with four (4) replications. Each replication was spaced at 3.0m between blocks. Rows were spaced 2.5m apart and hill distanced at 2.0m apart. Each plot comprised six (6) rows with seven (7) hills per row.

Initial harvesting and stripping were done using the spindle stripping machine. Agronomic data of the different varieties were simultaneously gathered.

No significant variations were observed from the different varieties in terms of stalk weight, length and number of leaf sheaths. However, a significant effect was noted on the number of stalks/hills. Numerically, Kutay-kutay had more stalks/hill followed by Tinawagan Puti

Initial results revealed no significant differences on the dried fiber yield produced per plot. Though numerically Tangongon and Kutay-kutay outyielded other varieties on trial. Likewise, fiber recovery showed significant difference ranging from 0.62 to 1.63%.

There is no conclusion yet as the trial is still on-going. Characterization of the varieties on trial using the abaca descriptors list is in progress.

Location 2:

Fertilizer application at the National Abaca Multilocational Trial following the general recommendation – 300g 14-14-14 and 200g 46-0-0



Fertilizer application



Removal of dry hanging leaves and ringweeding

Data gathering for the 3rd harvest has started this quarter. Agronomic characteristics such as number of stalks per hill, number of harvested stalks per hill, length of stalk, stalk diameter (base, middle, top), number of leaf sheath and weight of stalk were recorded. Likewise, fiber yield data such as dry fiber weight and percentage recovery were obtained.

Location 3:

Planted replication 1, Abuab, Hagbayanon, Tangongon, Inosa, Laylay, and Kutay-kutay. Only Abuab has complete number of hills. Missing hills will be planted or replaced upon arrival and after hardening of tissue-cultured plantlets. Plantlets will be available on November 2022.

Location 4:

Typhoon Odette that hit the country on December 15, 2021 devastated the experimental set-up. The topmost part of the plants was twisted and had no chance to recover while debris were all over the site. With this, the plants were cut and the area was cleared of debris.

The abaca plants are vigorously growing, although, few of them were infected with bract mosaic and bunchy top viruses. These infected plants were removed.

Location 5:

Since its establishment in November 2018, the abaca experienced El Nino. Nevertheless, the experimental set up has recovered with proper maintenance including replanting of the missing hills.

The data encoding for replications 1, 2, 3 & 4 is on-going.

Location 6:

The study is on its 4th harvesting. Agronomic/horticultural characteristics are gathered every harvesting. Number of stalks harvested per hill per replication were as follows:

2. *Molecular Analysis to Differentiate Abaca, Banana, and Other Musa sp.*

The following are the accomplishments of the study:

- Purification and quantification of replicate DNA samples extracted previously.
- Optimization of PCR protocols based on Musa textilis–derived SSR Markers.
- Orthologous gene mapping revealed new SSR loci that can be used in designing variety exclusive markers.
- New Musa textilis SSR markers were mapped in the said genome.

3. *Development of Molecular Marker for Varietal Characterization of Sisal, Maguey, and Pineapple*

The following are the accomplishments of the study:

- Newly designed markers, as well as the genotyping method, are particularly useful for varietal identification, germplasm management, and breeding programs.
- Plant samples are being maintained in the green house and will be used once the markers are ready.
- Developed new sets of SSR primers targeting the tensile strength of sisal, maguey, and pineapple.
- SSR primers are being used for in silico PCR to determine the accuracy of the designed markers.

4. *Molecular Characterization and Varietal Identification of Abaca Germplasm Collection at Sorsogon Seedbank, EVRFES, and Davao Seedbank*

The following are the accomplishments of the study:

- Purification and quantification of replicate DNA samples extracted previously.
- Optimization of PCR protocols based on Musa textilis–derived SSR Markers.
- Orthologous gene mapping revealed new SSR loci that can be used in designing variety exclusive markers
- New DNA samples are extracted. DNA extraction protocol is currently being optimized to increase the quality of DNA (86/86)
- Batches of samples are currently being subjected to PCR amplification using multiple primers.

5. *Varietal Identification of Selected Abaca (Musa textilis Nee.) Varieties in the Philippines using Simple Sequence Repeat (SSR) Markers*

The following are the accomplishments of the study:

- Purification and quantification of replicate DNA samples extracted previously.
- Optimization of PCR protocols based on Musa textilis–derived SSR Markers.
- Orthologous gene mapping revealed new SSR loci that can be used in designing variety exclusive markers.
- New Musa textilis SSR markers were mapped in the said genome.

6. *Detection of Banana Bract Mosaic Virus (BBRMV) and Sugarcane Mosaic Virus (SCMV-Ab) on Abaca Seeds and Seedlings*

The following are the accomplishments of the study:

- Collection and seed germination of abaca.
- Observation of relevant symptoms of disease in seedlings.
- RNA extraction and reverse transcription of abaca samples
- PCR confirmation of Banana Bract Mosaic Disease in seeds.

7. *Evaluation of the Bioactivities of Natural Phenolics in Abaca*

The following are the accomplishments of the study:

- Identifying target natural phenolics present in abaca.
- Mapping candidate pathways and genes that can be used for functional analysis as well as marker design.
- Strategizing eventual phenolic extraction to determine the quantity of the compound in Abaca.

8. Molecular Characterization of Jute (*Corchorus olitorius*)

The following are the accomplishments of the study:

- Optimization of Jute DNA extraction protocol for high purity DNA stock.
- Mapping candidate gene and/or SSR loci for marker/primer design.
- Collection of Jute leaf samples from RSO 6, Iloilo.

9. Characterization and Identification of Cotton Germplasm Collection through DNA Fingerprinting

The activities done for the 3rd quarter were mainly on the discussion among co-workers on how the data obtained should be presented based from the comments and suggestions of the panel of evaluators during the 2022 In-house R4D Review in Cebu.

Activities in the laboratory were postponed to cater to the upcoming calibration and diagnosis of some of the equipment commonly used during experiments. Materials are being prepared to have a smooth-sailing work once the scheduled calibration/ preventive maintenance is done.

10. Development of New and Improved Cotton Varieties with High Yield and Resistance to Pests: Selection for Damping-off Resistance in Segregating Cotton Populations

The activities accomplished for the period includes the collection and production of damping-off organism in which damped-off seedlings from those cotton planted in basins were collected, washed and portion of the stems were placed in disposable plastic. Cobweb-like growth that later turned to black small spores were observed. Healthy seedlings were also collected and inoculated spores on it to mass produce the organism.

Preparation of other materials for the activity on screening cotton lines for damping-off resistance were also done.

11. Development of New and Improved Cotton Varieties with High Yield and Resistance to Pests: Selection for Damping-off Resistance in Segregating Cotton Populations

Re analysis of data on insect pest population and on-going revision of the report to incorporate suggestions of evaluators during the In-House Review.

12. Nursery Establishment, Characterization and Performance Evaluation of Sisal (*Agave sisalana*) in San Juan, Ilocos Sur Experiment Farm

For the 3rd quarter of 2022 (July to September 2022), the activities and accomplishments were the following:

- Harvesting/collection, propagation of sisal planting

materials in soil-beds. A total of 28,800 sisal bulbils were propagated this 3rd quarter (July to August 2022).

- Sisal screenhouse maintenance—Periodic under-brushing/weeding and irrigation of sisal planting materials were done. IFES-San Juan Experiment Station needs an additional one (1) unit screen house to be constructed for propagated sisal planting materials.
- Maintenance and cleaning/weeding of the sisal nursery in both Block B2 and Block D2 were implemented. Also, half portion of block D2 was tractor rotated/cultivated and re-establishment/planting of sisal was done following the 2m x 2m distance.

13. Nursery Establishment, Characterization and Performance Evaluation of Sisal (*Agave sisalana*) in San Juan, Ilocos Sur Experiment Farm

Sisal fibers were extracted using the decorticating machine for the raw materials needed for the training on LGU-led Basic Skills Training on Sisal Scrunch Making.

14. Rice-based Cropping Systems Involving Cotton and Related Dryland Crops

The setting up of the rice crop was done. The farm was land prepared by tractor rotavation, harrowing and leveling using "kuliglig" followed by rice transplanting last August 18-24, 2022. Maintained the rice crop by broadcasting the nitrogen fertilizer, sprayed herbicide to some farm lots and pump water for the supplemental irrigation aside from rainfall.

15. Effect of the Organic-based Liquid Fertilizer on the Growth and Yield Performance of Abaca, *Musa textilis* Nee (var. Luno)

The study was conducted at the PhilFIDA Mindoro Fiber Experiment Station in Socorro, Oriental Mindoro from September 2016 to December 2021. It aimed to determine the agronomic and yield performance of the Abaca Luno variety as affected by the application of organic-based liquid fertilizer.

Treatments consisted of T1-no fertilizer, T2-recommended rate of T14 (357g/plant) and Urea (107g/plant) based on soil analysis and T3-organic-based liquid fertilizer (OBLF) at the rate of 1L/100L water. These were laid out in Randomized Complete Block design with three replications. Agronomic and yield data were analyzed through CropStat by IRRI.

Eyebuds soaked in the organic-based liquid fertilizer for 1 hr and with 48-hr incubation significantly emerged earlier on three weeks after planting and attained 100% emergence within the 6th week and 7th week after planting for both set ups.

Agronomic characters such as stalk weight, number of suckers and leafsheaths were significantly affected with-

er by the application of inorganic fertilizers or OBLF. Comparable number of suckers produced was obtained in T2 and T3.

Abaca plants applied with inorganic fertilizer and OBLF significantly produced higher dried fiber yield/stalk and consequently the estimated dried fiber yield/ha yearly and at two years of harvest. Likewise, in set-up 2 for Year 2 harvest, both the use of organic fertilizer and OBLF significantly outyielded those unfertilized plants. Fiber recovery ranged from 0.80-1.45%

Tensile strength of the fiber produced ranged from 42.54 to 50.67 kgF/g/m and 49.15 to 54.91 kgF/g/m set up 1 and 2, respectively while elongation ranged from 3.54-3.97.

Cost and return analysis showed positive net benefit in the application of inorganic fertilizer. The increment in yield from plants applied with OBLF did not compensate for the cost of the liquid fertilizers. Thus, existing fertilizer recommendation in the area based on soil analysis is still feasible.

16. Collection, Evaluation and Characterization of Abaca Cultivars, Hybrids and Strains

There are 98 accessions maintained in the field genebank to date.

Maintenance activities such as weeding, removal of dry hanging leaves and matured stalks were conducted in the Block I, II, and III of the field genebank. Also, the initial 32 accessions planted in Block I to re-establish the genebank are maintained and these are:

Abuab	Abuab Tissue-Cultured
Abuab Labo	Abuab Rapu-rapu
Abuab San Miguel	Samuro
Putian	Linobloban (Baras)
Linobloban (Sa Miguel)	Unidentified (Bacon)
Lausigon Red	Lausigon
Bulao	Casilihon
Pisgan	Natural (Tabaco)
Yoga	Binagakay
Sogmad	Canarahon
Tipon Tipon	Tusoy
Kurisan	Inosa
Mininonga	Bongolanon
Lagonoyom Itom	Lagonoyom Puti
Florentino	Musa Tex 82
Igit	Kutay-kutay

17. Comparative Yield and Morphological Characteristics of Abaca, var. Abuab, Grown from Seeds, Seedpieces and Tissue Culture under Field Condition

The target experimental site is being maintained after cleaning has been done. Regrowths from remaining abaca stumps that were uprooted are continuously

being removed. This is being done while the abaca planting materials to be used are being prepared. The fruits produced through manual pollination are yet to mature. Likewise, tissue-cultured plantlets are being produced in the Sorsogon Tissue Culture Laboratory.

Some of the manually pollinated abaca inflorescence have already formed fruits but yet to mature.

The one pollinated on May 30, 2022 has promising fruits. It is expected to mature by December 30, 2022.

18. Collection and Evaluation of Fibercrops

Maintained the following fibercrops:

- Abaca – Bisaya, Negro, Hagbayanon, Totoo, Tabuka non, Luno, Laob, Laylay, Minenonga, Inosa, Kutay-kutay, Tangongon, Laguis, Abuab
- Mulberry – Batac, CLSU, Taiwan, Sakon Nakon, Alfonso, Canva, China (seed-derived)
- Pineapple – Red Spanish, Hawaiian, Native Green, Del Monte, Queen Formosa
- Jute – Green Stem, Red Stem, Native
- Kenaf
- Cotton – Wild/Native
- Ramie
- Sisal
- Maguey
- Salago

19. Production of Abaca Plantlets Using Inflorescence

Abaca plantlets were regenerated from male inflorescence using the Murashige and Skoog Nutrient Basal medium supplemented with 2.5 ppm BAP.

Inflorescence-derived plantlets var. Laylay were already planted in soil medium and hardened in the nursery. Field establishment of inflorescence-derived Laylay abaca plants for performance evaluation in the field will be done as soon as the weather permits.

Inflorescence-derived abaca plants var. Kutay-kutay produced from previous invitro test cultures were already growing in the field. POT recommended for Abaca in Region VIII was maintained as preliminary field test plants for evaluation.

20. Shoot Tip Culture of Sisal, Maguey, Salago, and Red Spanish Pineapple

Mass propagation of Red Spanish Pineapple (RSP):

- Slips and crown are preferred explants
- Fruits should not be ripe to avoid attack by ants that would become agent of contamination
- Sterilization—Less concentrated sterilant (10% sodium hypochlorite) with antibiotic added

- soaked less than an hour is preferred by RSP
- Initiation medium—MS + 2ppm BAP + 1ppm IAA + 15% cocowater + .06 % agar + 3% sucrose
- RSP prefers light incubation during initiation stage and all throughout its culture duration
- Temperature requirement of RSP in in vitro culture is from 22-25°C
- Proliferation medium—MS + 1.16 ppm BAP % 15% cocowater + .06% agar + 3% sucrose with additives, Glycine, Thiamine and Myo-inositol
- Splitting of shootlet during micropropagation gave rise to multiple
- Microshoots

Mass propagation of Sisal:

- Received planting materials from Regional Office V and VII and continued their maintenance in the nursery to serve as explants for the optimization of in vitro procedure
- Presented the study during the In-House Review in Cebu, June 20-24,2022
- To conduct field trial of Sisal tissue-cultured plantlets as per recommendation during the In-house Review

Mass propagation of Maguey:

- Received planting materials from Region VII for the preliminary in vitro trial
- Continued maintenance of planting materials to serve as explants for the in vitro culture
- Tissue-cultured Sisal plantlets

21. *Evaluation on the Efficacy of Selected Organic Fertilizers on the Growth and Yield of Abaca*

The following are the highlights of the study:

- The effect of the different fertilizers applied had no significant effects on the horticultural data, except for the number of suckers produced. Aside from the fact that organic fertilizers are slow in releasing nutrients, the plants experienced an average minimal rainfall of 16.3 mm and 10.05mm on the 1st until the 4th quarter of 2018 and 2019. The average rainfall needed by abaca is at least 200mm per year. Since the study is a fertilizer trial involving different organic sources, dissolution and absorption of which by the plant, need ample amount of water. The plants can be fertilized with inorganic fertilizer, chicken dung, Vermicast and IMO6 to produce more suckers except for Masinag liquid fertilizer.
- The different fertilizers applied had no significant effect on maturity, stalk length, stalk weight, number of harvested stalks, tuxy weight, fresh fiber, dry, weight and fiber recovery.
- The different fertilizers applied did not control the occurrence of bunchy top disease and mosaic in the treated abaca plants. The highest percentage of infection with bunchy top was noted in plants applied with inorganic fertilizer (31.25%) while, mosaic infection was observed in the untreated plants with

12.5%, the highest.

- The initial and final soil analysis in the research area was taken to determine the influence of the different organic soil amendments on the nutrient status of the soil. There was an increase of 53.67% of the organic matter content in the soil after using the different organic fertilizers as treatments in the study. Furthermore, there was a minimal increase of the Phosphorous content of 11.19% while, 81.56% increase in exchangeable Potassium.
- Submitted samples of Vermicast, IMO and Chicken manure used in the study for analysis of N, P, K, OM and humic acid to DA Soils Laboratory as per recommendation during the In -House Review conducted last June 20-24,2022.

22. *Abaca Germplasm, Collection, and Characterization*

The following are the highlights of the study:

- Replanted abaca plants in the water-logged area already recovered. However, a suspected Sigatoka disease was observed in the area. Removal of dry leaves and spraying of fungicide were done to minimize or eradicate the disease.
- Inoculated 67 new explants of Putian, Abuab, Lagosog, Bisaya, Linawaan, Libutanay, Maguindanao, Laguis, Laylay, Meninonga, Kutay-kutay Zamboanga, Linino, and Kutay-kutay Samar. They were the excess planting materials after thinning the mat and those no longer fit as explant for tissue culture, the seedpieces were collected and pre-germinated in pots to be included in the distribution of planting materials from seedbank.
- Maintained abaca varieties in slow-growth medium (Linawaan, Linino ,Lagurhuan, Libutanay, Bisaya, Lagosog, Putian and Meninonga)

23. *Abaca Germplasm, Collection, and Characterization*

The following were the abaca cultivars in the collection as of the 3rd Quarter of 2022:

Tangongon	Maguindanao
Maguino Inosog	Inosa
Abuab	Tanglaw
Toud	Bongolanon
Lagusog	Laylay
Bisaya	Putian
Batayan	Laub
Pacol	Inosa Green
T-Pula	MH 83.1
Tambo	Bongma
Tangs	Javaque
Daratex	Lutay

Collections of two cultivars next month from Marilog and Paquibato Districts of Davao City were scheduled. In addition, data gathering of the growth and yield parameters of abaca will also be conducted.

24. Verification of the Efficacy of Colloidal Silver Nanoparticles as Antiviral Against Abaca Bunchy Top Virus

The following are the highlights of the study:

- As of this quarter, we already collected aphids and mass reared them in the chamber. But we need to collect more because many of them died inside the chamber maybe they do not prefer the environment we provided.
- Already have 320 healthy test plants prepared but they need to be re-assayed due to disease infection occurrence.

25. Effect of Organic-based Liquid Fertilizer on the Growth of Abaca (*Musa textilis* Nee)

To evaluate the effect of organic liquid fertilizer on abaca growth and development, this study is conducted at Bago Oshiro, Davao City using three different levels of concentration of organic based liquid fertilizer (K-plus) plus Control (C0, C1, C2, C3) and three kinds of abaca planting materials namely; Abaca eye buds (PM1), Abaca seedlings (PM2) and Tissue cultured abaca (PM3). Variety used is Tangongon.

On fiber yield, PM3 have the highest yield per stalk with PM3C1 as the highest yielder followed by PM3C2, PM3C0 and PM3C3 at 0.372, 0.335, 0.314 and 0.303 kg. dry fiber, respectively. On fiber recovery, PM3C2 (1.764%) has the highest percent fiber recovery followed by PM3C3, (1.643%) PM1C0, (1.637%) and PM3C1 (1.554%). As for the weight of stalk and number of suckers per hill PM3 and PM1 have heavier stalks and a greater number of suckers compared to PM2. However, results showed a not significant difference among the treatment means in all the yield parameters measured. So, with the interaction of the kind of planting materials and concentrations of OBLF.

Likewise, the application of OBLF at different levels of concentration did not prevent viral disease infection on abaca. The experimental plants were severely affected with virus diseases like bunchy top, abaca mosaic and bract mosaic with Percent Infection ranging from 12.5% to 25%.

The Fiber Utilization and Technology Division (FUTD) on the other hand conduct researches on fiber processing technologies and fiber utilization. The following are the researches being undertaken by the division;

Research on Fiber Processing Technologies

1. Manipulation of Raw Materials for the Manufacture of Natural Fiber-based Products

The technical poster for the project Performance Testing of MFTM was finalized and the preparation of the terminal report is ongoing. For the Development of Bamboo Fiber Extraction Machine, the agency submitted a follow-up let-

ter on the status of the research proposal that was submitted last August 2022.

2. Adaptation of Existing PhilFIDA-Design Multi-Fiber Decorticating Machine (MFDM)

Adaptability Trial of Jute and Its Characterized Fiber Properties for Specific End-use – the analysis and interpretation of data through the help of SPSS and MS Excel to complement the third objective of the research project is ongoing.

Research and Development on Fiber Utilization

1. Effect of Different Additives and Fillers on the Properties of Natural Fiber-based Polymer Matrix Composites (banana, maguey, and sisal)

- Procured Jigsaw Blade refill to be used for sample preparation for mechanical testings
- Prepared a Plan of Change for the activities of the project due to unstable supply of electricity that cannot do extrusion and injection molding operation
- Sun dried the maguey fibers in preparation for cutting

2. Investigation of Fermentation Performance of Abaca Fiber Extraction Waste- Derive Acid Hydrolyzates for Ethanol Production

- Conducted decrystallization and acid hydrolysis trials (third batch) of AEW for ion-exchange column chromatography trials using the following parameters:

Hydrolysis temp/duration/L/M ratio = 85-90°C/1 hr/2.5:1
Hydrolysis temp/duration/L/M ratio = 85-90°C/2 hrs/2.5:1

- Performed separation of reducing sugar and acid from abaca hydrolyzates and 2 hrs, 2.5:1 L/M ratio) by ion-exchange column chromatography efficiency trials)

Volume of acid recovered:

Hydrolysis temp/duration/L/M ratio = 85-90°C/1 hr/2.5:1 – 330 ml
Hydrolysis temp/duration/L/M ratio = 85-90°C/2 hrs/2.5:1 – 310 ml

Volume of reducing sugar recovered:

Hydrolysis temp/duration/L/M ratio = 85-90°C/1 hr/2.5:1 – 100 ml
Hydrolysis temp/duration/L/M ratio = 85-90°C/2 hrs/2.5:1 – 100 ml

- Performed DNS assay of reducing sugar resulted from ion-exchange column chromatography (third batch)

Hydrolysis temp/duration/L/M ratio = 85-90°C/1 hr/2.5:1 – 217.383ppm
Hydrolysis temp/duration/L/M ratio = 85-90°C/2 hrs/2.5:1 – 2363.182 ppm

- Separated reducing sugar from hydrolyzate
Hydrolysis temp/duration/L/M ratio = 85-90°C/1 hr/2.5:1 – 2,889.918 ppm
Hydrolysis temp/duration/L/M ratio = 85-90°C/2 hrs/2.5:1 – 2268.703 ppm
- Conducted Baker's yeast fermentation trials of the 3rd batch of hydrolyzates resulted from column chromatography efficiency trials

3. Characterization of Physical, Chemical, and Morphological Properties and SEM Imaging with Elemental Analysis of Different Abaca Varieties from Different Locations in the Philippines

A. Chemical Analysis (Zamboanga Del Norte)

- Solubility in Hot water of decorticated Putian
- Lignin and celluloses:

Spindle-stripped Tangongon

Lignin-8.48% Holo-91.88% Alpha- 72.96% Hemi-38.99%

Spindle-stripped Putian

Lignin-6.83% Holo-93.23% Alpha- 74.78% Hemi-19.50%

Decorticated Putian

Lignin-6.12% Holo-92.78% Alpha- 63.66% Hemi-42.59%

Decorticated Kutay-kutay

Lignin-6.46%

B. Morphological Analysis (Zamboanga Del Norte)

- Analyzed 3 varieties of abaca (spindle-stripped and decorticated)

4. Development of Cellulose Acetate from Banana Lacatan Fibers for Industrial Application

- Conducted peroxide treatment of banana pulp. Pre-treatment done at 4% consistency, 70°C for 1h, pH controlled at 10.5 - 11.2. Chemical added based on OD weight of pulp as follows: 1% Na₂SiO₃, 2.25 % NaOH, 0.2% MgSO₄ · 7H₂O, 0.3% DTPA, 3% H₂O₂
- Prepared 40 g Banana cellulose acetate
- Determined the cellulose acetate yield from banana pulp after drying & Trituration
- Conducted solubility trials for abaca CA using acetone & DMAc and banana CA using acetone, DMAc & DCM
- Bleached and matted banana samples

5. Effects of Esterification on the Water Absorption Property of Abaca Fiber

- Internet search of literatures for the preparation of project concept/proposal

Special Research Projects – DA-BAR & DA-BPO Funded

1. Varietal Identification and Genetic Improvement for Climate Change Adaptability and Virus-Resistance via Abaca Functional Genomics.
2. Enhancing Virus Detection Technology for Effective Disease Management in Abaca.
3. Loop Mediated Isothermal Amplification (LAMP) for Abaca Viruses: Packaging and Field Validation.
4. Enhancing Capability on Virus Detection and Propagation (Micro and Macro) for SUCs for a More Effective and Sustained Disease Management in Abaca

FIBER INDUSTRY REGULATORY PROGRAM

Quality Control and Inspection

To maintain fiber quality and standards, PhilFIDA performed the following activities:

- Inspected and approved 62,196.47 bales of abaca fibers
- Issued a total of 311 Primary Certificates on fiber inspection
- Issued a total of 821 Permit to Transport Fibers (PTF)
- Total of 1,276 inspections conducted

Registration and Licensing

PhilFIDA generated revenues amounting to PhP83,128 from license fees collected from the 107 industry clients.

Fiber Inspector Training Program

This training program aims to equip, develop and capacitate Regulatory personnel the skills and knowledge in enforcement of policies, rules and regulations regarding fiber quality, standard grading, and fiber classification. It is divided in two (2) parts, 1st part of training will last for six (6) months. The trainee will undergo hands-on training in an active Grading Baling Establishment (GBE) in their Region or to another Region they prefer to be assigned. After the six (6) months training, trainee will be given practical and written examination by the trainer with the supervision of the Regulatory Unit Head or the Regional Director where he/she undergo training. If the trainee successfully passes the 1st training examination, he/she will be cross posted for three (3) months as the 2nd part of this training program. After completion of this 3 months training, he/she will be given again theoretical and practical examination that will be administered by the Regulatory Division and Executive Director. He/she should have a grade of 75% to pass the training. After completing the nine (9) months training and have successfully passed the examination, the trainee will be issued his/her Identification Control Number (ICN) and will be designated as Fiber Inspector in his/

her Regional office.

Fiber inspector trainee is expected to learn and be familiar with the inspection activities in an establishment specifically in a GBE, learn to identify the different grading and classifications of different natural fiber as per Philippine National Standards, be knowledgeable about the Regulatory rules and regulations being implemented, be able to prepare reports, and issued permits & certificates.

This year FY 2022, the agency targeted 1 training program, 6 personnel from Regional Office 4, 5, 8 and 13 were trained and were able to finish the program. They will be added to the work force in the implementations of PhilFIDA's rules and regulations to ensure production of globally competitive and quality fibers.

Stakeholders' Forum

One way to promote the growth and development of the Philippine natural fiber is through standard implementation and trade regulation under Fiber Industry Regulatory Program (FIRP). FIRP conducts stakeholder's forum and training of traders to address the issues and concerns of fiber stakeholders relating to the production, quality, trading rules and regulations that affects the industry. This forum set as venue for creating possible solutions for their concerns and problems being faced in different Regions by our fiber producers and traders. Also, PhilFIDA is conducting this kind of activity to update the fiber industry stakeholders regarding the development and implementation of new policies, rules and regulations that will be beneficial to sustain the production of quality fiber and progressive fiber trading for the industry.

As of September, 4 stakeholders forum were conducted in the areas of Albay, Oriental Mindoro and 2 in Lanao del Sur. In conducting this activity PhilFIDA were able to hear the concerns and problems of the fiber stakeholders specially those trading Abaca. PhilFIDA also use the opportunity to educate the fiber producers about the proper grading and classification of fiber to help them to properly produce better quality of fiber and generate higher income yield. We believe that it is a combined effort of fiber producers, stakeholders and PhilFIDA to ensure the sustainability of globally competitive fibers.

SPECIAL PROJECTS

Cotton Development Project

Planting of cotton seeds have started in Regional Offices VII, IX and RSO VI. A total of 40.25 hectares were already planted, of which 56 farmers benefited. Regional Office IX conducted "Farmers Training on the Recommended Cotton Production Technology: Cultural Management Practices and Pest Management on August 30-September 1, 2022 to their selected beneficiaries.

An ocular inspection and evaluation of the existing structure in San Juan Fiber Experiment Station in Batac, Ilocos Norte was conducted. Based on the evaluation, PhilFIDA prepared a renovation plan and technical specifications of the existing structure. The experiment station was the possible area for the Establishment of Cotton Processing Center.

PhilFIDA is also pursuing the importation of the Bt cotton. Application documents for the Bt cotton's biosafety permit for propagation and for the registration the Bt cotton gene, GFM cryIA, as plant incorporated protectant (PIP) are being readied for simultaneous submission to BPI and FPA.

LOCALLY-FUNDED PROJECTS

The agency was given an allocation for the establishment of different weaving and processing centers/facilities in CY 2016 and CY 2018. The centers/facilities were turned over to their respective farmer group beneficiaries. PhilFIDA is continuously monitoring the activities of the centers.

Weaving and Processing Centers

A. Malabor Abaca-Piña Weavers Association

Brgy. Malabor, Tibiao, Antique

- Product lines - Plain piña cloth, piña seda cloth, abaca cloth
- Raw materials used - Abaca, silk, piña fiber (bastos washed)
- Participated in the Antique Trade and Tourism Fair last April 27, 2022
- Production:
 - Abaca silk cloth – 22.2 meters
 - Cloth - 3 meters
 - Cloth w/ design – 1 meter
 - Crop top blouse- 15 pcs
 - Facemask – 7 pcs
 - Filipiniana sleeve – 5 pairs
 - Handkerchief – 18 pcs
 - Patadyong – 1 pc.
 - Piña silk cloth plain – 19 meters
 - Piña silk cloth with design – 13 meters
 - Pina silk cloth w/ embroidery – 15 meters
 - Pure Cotton Cloth – 12 meters
 - Pure cotton fabric – 51 meters
 - Polyester cloth – 20 meters
 - Shawl - 17pcs
 - Shawl pure cotton – 23 pcs
 - Shawl poly cotton w/ design – 2 pcs
 - Square pants – 5 pcs
- Total sales: P96,900.00

B. Barangay Lamdalag Women's T'nalak Weavers Association Brgy. Lamdalag, Lake Sebu, South Cotabato

- Product lines - T'nalak products
- Raw materials used - Abaca
- Total sales – Php 18,200.0

- C. Dumingag Federated Women's Association
Brgy. Lower Landing, Dumingag, Zamboanga del Sur
- Product lines - Sinamay Fabrics/bags, bags, wall decors, garlands
 - Raw materials used - Abaca and cotton
 - Production
 - Abaca wine holder – 63 pcs
 - Abaca scrunch bag – 146 pcs
 - Abaca garland – 15 pcs
 - Abaca fashion bags – 5 pcs
 - Abaca sling bags – 6 pcs
 - Cotton cloth – 3 meters
 - Twine bag – 1 pc
 - Wine holder – 34 pcs
 - Total sales: P62,391.00
- D. Kiangnan Weavers Association
Brgy. Poblacion, Kiangnan, Ifugao
- Product lines - Ifugao garments, Ifugao blankets
 - Raw materials used - Cotton Polyester
 - Conducted 5-day skills enhancement training using the four-harness loom to improve product and production of the KIWA through DTI and the Office of the Governor
 - Participated in the year's MaArte Fair at the Manila Pen from August 19-21, 2021
- E. ABAI Weavers Multi-Purpose Cooperative
Brgy. Kibaghot, Laguindingan, Misamis Oriental
- Product lines - Handwoven silk fabric and shawls of various designs and embroidery
 - Raw materials used - Silk
 - Production
 - Handwoven pure silk – 8 meters
 - 30 Width Cloth Plain Silk – 69 meters
 - 30 Width Cloth Silk w/ design – 16.80 meters
 - 15 Width Cloth – 15 meters
 - Silk fabric, 30" width – 9 meters
 - Silk fabric, 15" width – 12.9 meters
 - Total sales: P135,585.13
- F. Bagtason Loom Weavers Association
Brgy. Bagtason, Bugasong, Antique
- Product lines - Different kind of Patadyong (plaid patterned cotton tubular garments; shawl; scarf.
 - Raw materials used - Cotton and Polyester
 - Participated in the Antique Trade and Tourism Fair last April 27, 2022
 - Production
 - Coin purse – 333 pcs
 - Cloth polyester – 2425.18 meters
 - Cloth cotton – 55.5 meters
 - Facemask – 409 pcs
 - Hat – 37 pcs
 - Lei – 801 pcs
 - Patadyong – 5 pcs
 - Patadyong cotton – 83.5 pcs
 - Patadyong polyester – 255.82 pcs
 - Pouch – 148 pcs
- Scarf (big & small)– 586 pcs
Scarf, polyester – 422 pcs
Scarf big polyester– 106 pcs
Shawl polyester – 342 pcs
Shawl-336 pcs
T-shirt – 4 pcs
- Total sales: P1,210,880.50
- G. Sto. Rosario Multi-Purpose Cooperative
Brgy. Sto. Rosario, Pandan, Antique
- Product lines - Placemats, carpet, coin purse, wallet, sling bags, handbags, wine holder, hats
 - Raw materials used - Abaca Bariw and Buri
 - Conducted Bariw Bag Making last June 14-15, 2022
 - Participated in the Antique Trade and Tourism Fair last April 27, 2022
 - Production
 - Sling bag – 3906 pcs
 - Asstd. sling bags – 510 pcs
 - Back pack bags – 18 pcs
 - Bayong – 42 pcs
 - Placemats – 463 pcs
 - Asstd. Bags – 1433 pcs
 - Pot holders – 31 pcs
 - Pot – 22 pcs
 - Hats – 134 pcs
 - Coin purse – 434 pcs
 - Beer holders – 148 pcs
 - Carpets – 14 pcs
 - Wallets – 297
 - Lei – 30 pcs
 - Wine holder – 70 pcs
 - Total Sales - P992,766.00
- H. Indag-an Primary Multi-Purpose Cooperative
Brgy. Indag-an, Miag-ao, Iloilo
- Product lines - Barong, shawl, polyester-cotton cloth, pure cotton cloth, patadyong; bandana; table runner and sablay
 - Raw materials used - Abaca, cotton and polyester
 - Production
 - Patadyong – 232 pcs
 - Assorted shawl – 15 pcs
 - Assorted bags – 158 pcs
 - Facemasks – 469 pcs
 - Hankie – 313 pcs
 - Sandals – 33 pairs
 - Fabric checkered, 5m – 39 pcs
 - Cloth, checkered, 5 m – 14 pcs
 - 3 cut 3 1/2 m Barong Barong – 24.5 cuts/pcs
 - 3 m barong – 28 pcs
 - Barong, 4 m cut – 27 cuts
 - Patadyong – 13 pcs
 - T-Shirts – 117 pcs
 - Sandals – 108 pcs
 - Shawl (asstd. sizes) – 144 pcs
 - Shawl small – 70 pcs
 - Shawl big – 74 pcs
 - Table runner – 60 pcs
 - Assorted bags – 158 pcs

Coin purse – 94 pcs
 Placemat – 136 pcs
 Wine holder – 67 pcs
 Sling bags – 394 pcs
 Bag pack – 10 pcs
 Carpet – 4 pcs

- Total Sales - P1,153,151.00

- I. Manlilikha Ng Bayan Weaving Association/Lumabaan Weavers and Cotton Producers Cooperative Brgy. Lumabaan, Bibica, Pinili, Ilocos Norte
- Product lines - Inabel products – coin purse, shawl, dress, bags, hats
 - Raw materials used - Cotton Conducted Basic Handloom Weaving on August 22-26, 2022 with 17 participants composed of 10 Female- Adult, new aspirants to become weavers, 2 resource persons (1 F Adult and 1 F SC) and 5 weavers who also assisted the 10 new trainees (3 F adult and 2 F SC)
 - Two weavers participated in the World Tours and Travel Council Global Summit last April 20-23, 2022 organized by Department of Tourism.
 - Production
 - Pillowcase – 7 pcs
 - Vanity Set – 4 pcs
 - Belt bag – 5 pcs
 - Cellphone case – 29 pcs
 - Wrist bag – 3 pcs
 - Coin purse – 35 pcs
 - Facemask – 20 pcs
 - Shawl – 15 pcs
 - Sling bag – 5 pcs
 - Produced seven (7) yards of woven cloth

- J. Patnongon Multi-Purpose Cooperative Brgy. Padang, Patnongon, Antique
- Product lines - Poly-cotton cloths, pure cotton cloths (proposed product)
 - Raw materials used - Cotton and polyester
 - Participated in the Antique Trade and Tourism Fair last April 27, 2022
 - Conducted basic and advanced training on handloom weaving for skills development. A total of fifteen (15) participants attended the training.
 - Production

Poly-cotton shawls – 383 pcs
 Poly-cotton cloth – 3 m
 Handkerchief – 169 pcs
 Barong 3 m – 50 pcs
 Table runner – 6 pcs
 Cloth 3 m – 4 pcs
 Cloth– 6.5 meters
 Pillowcase – 7 pcs
 Vanity Set – 4 pcs
 Belt bag – 5 pcs
 Cellphone case – 29 pcs
 Wrist bag – 3 pcs
 Coin purse – 35 pcs

Facemask – 20 pcs
 Shawl – 55 pcs
 Asstd. Shawls– 75 pcs
 Sling bag – 5 pcs

- Total Sales - P68,450.00

Support to Operations

The agency conducted the Management Review on September 5-9, 2022 in the Development Academy of the Philippines (DAP). The said activity is one of the requirements of the ISO 9001:2015 certification maintenance. It was participated in by the Regional Directors, Regional Planning Officers, Division Chiefs and the Planning Division Staff. In this meeting, the accomplishments, issues & concerns, risks opportunities were tackled.

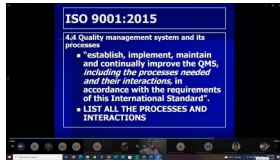
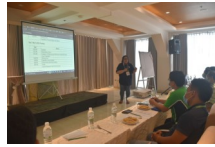
Eight stakeholders' consultations were also conducted in eight different regional offices. Among the participants are the fibercrop farmers, LGU representatives and other industry players. The agency also conducted a public consultation on National Agriculture and Fisheries Modernization and Industrialization Plan (NAFMIP) 2021-2030.

The Planning Division with the help of the Regional Planning Officers conducted field monitoring activities, as of September 2022 there were 36 monitoring activities conducted.

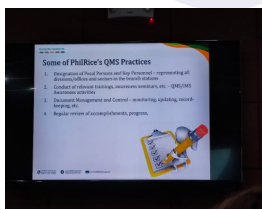
To continuously capacitate the Planning Staff and Regional Planning Officers, a training on Effective Presentation Skills and Techniques on March 11-17, 2022. This activity was done in collaboration with the Philippine Statistical Research and Training Institute (PSTRI).

Implementation of Quality Management System

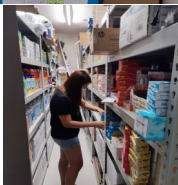
The agency acquired its ISO Certification last November 2021. To continuously implement the QMS, different activities were conducted. QMS cascading and coaching sessions were done before the conduct of internal quality audit, this also served as a QMS orientation for the newly hired personnel. The internal quality audit was conducted face to face in all offices from the central office down to the regional offices and regional satellite office. IQ Audit was conducted in preparation for the surveillance audit of the third party auditor in November 2022. It was observed from the results of the IQ Audit that there was a significant decrease in the number of non-compliances in all offices.



Aside from the above mentioned activities, PhilFIDA initiated to have a benchmarking on the best practices of other institutions in relation to QMS. Bench marking was done with the Philippine Carabao Center (PCC), Philippine Rice Research Institute (PhilRice) and the University of Rizal Systems (URS)



The agency has also conducted several activities for 2022, one of which is the implementation of the 5S. PhilFIDA personnel rendered extra time for 5S activities.



PhilFIDA also joined the 2022 National Women's Month Celebration as well as the Suicide Awareness Month. A 2-day webinar was conducted regarding the suicide awareness. It was participated in by all the staff of PhilFIDA including the regional staff.

