

Application Submittal Checklist

The following items are required for submittal of the grant application. Please verify and check off that the items have been included in the application packet.

- 1) Certificate of Good Standing (If the Applicant is an Organization)
- 2) Declaration Statement
- 3) Verify that grant shall be used for a public purpose
- 4) Background and Summary
- 5) Service Summary and Outcomes
- 6) Budget
 - a. Budget request by source of funds ([Link](#))
 - b. Personnel salaries and wages ([Link](#))
 - c. Equipment and motor vehicles ([Link](#))
 - d. Capital project details ([Link](#))
 - e. Government contracts, grants, and grants in aid ([Link](#))
- 7) Experience and Capability
- 8) Personnel: Project Organization and Staffing


AUTHORIZED SIGNATURE

STEPHANIE A. WHALEN
PRINT NAME AND TITLE

1-16-19
DATE

**DECLARATION STATEMENT OF
APPLICANTS FOR GRANTS PURSUANT TO
CHAPTER 42F, HAWAII REVISIED STATUTES**

The undersigned authorized representative of the applicant certifies the following:


- 1) The applicant meets and will comply with all of the following standards for the award of grants pursuant to Section 42F-103, Hawaii Revised Statutes:
 - a) Is licensed or accredited, in accordance with federal, state, or county statutes, rules, or ordinances, to conduct the activities or provide the services for which a grant is awarded;
 - b) Complies with all applicable federal and state laws prohibiting discrimination against any person on the basis of race, color, national origin, religion, creed, sex, age, sexual orientation, or disability;
 - c) Agrees not to use state funds for entertainment or lobbying activities; and
 - d) Allows the state agency to which funds for the grant were appropriated for expenditure, legislative committees and their staff, and the auditor full access to their records, reports, files, and other related documents and information for purposes of monitoring, measuring the effectiveness, and ensuring the proper expenditure of the grant.

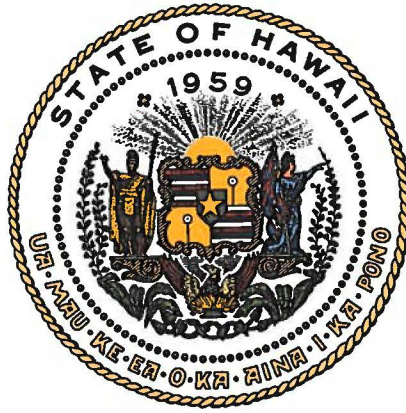
- 2) If the applicant is an organization, the applicant meets the following requirements pursuant to Section 42F-103, Hawaii Revised Statutes:
 - a) Is incorporated under the laws of the State; and
 - b) Has bylaws or policies that describe the manner in which the activities or services for which a grant is awarded shall be conducted or provided.

- 3) If the applicant is a non-profit organization, it meets the following requirements pursuant to Section 42F-103, Hawaii Revised Statutes:
 - a) Is determined and designated to be a non-profit organization by the Internal Revenue Service; and
 - b) Has a governing board whose members have no material conflict of interest and serve without compensation.

Pursuant to Section 42F-103, Hawaii Revised Statutes, for grants used for the acquisition of land, when the organization discontinues the activities or services on the land acquired for which the grant was awarded and disposes of the land in fee simple or by lease, the organization shall negotiate with the expending agency for a lump sum or installment repayment to the State of the amount of the grant used for the acquisition of the land.

Further, the undersigned authorized representative certifies that this statement is true and correct to the best of the applicant's knowledge.

| | |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------|
| <u>Hawaii Agriculture Research Center</u> (Typed Name of Individual or Organization) | |
| <u></u> (Signature) | <u>1-16-19</u> (Date) |
| <u>Stephanie Whalen</u> (Typed Name) | <u>Executive Director</u> (Title) |



Department of Commerce and Consumer Affairs

CERTIFICATE OF GOOD STANDING

I, the undersigned Director of Commerce and Consumer Affairs of the State of Hawaii, do hereby certify that

HAWAII AGRICULTURE RESEARCH CENTER

was incorporated under the laws of Hawaii on 08/08/1978 ; that it is an existing nonprofit corporation; and that, as far as the records of this Department reveal, has complied with all of the provisions of the Hawaii Nonprofit Corporations Act, regulating domestic nonprofit corporations.



IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Department of Commerce and Consumer Affairs, at Honolulu, Hawaii.

Dated: January 16, 2019

Director of Commerce and Consumer Affairs

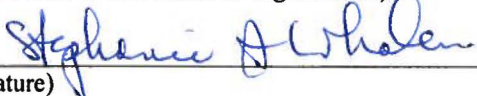
PUBLIC PURPOSE

The requested grant will be used for a public purpose pursuant to Section 42F-102, Hawaii Revised Statutes.

The Hawaii Agriculture Research Center (HARC) requests a grant in order to improve the overall benefits to the people of Hawaii by providing increased diversified agriculture and economic opportunity in the state. The grant will be used to support HARC plant propagation services in providing a currently unavailable crop for farmers to plant and value-added processors to utilize. In addition, the requested funds will support HARC staff to conduct research and development and technology transfer to Hawaii farmers. Hawaii farmers across the state are the primary target group for the requested grant. HARC requests \$50,000 to complete the project.

Further, the undersigned authorized representative certifies that this statement is true and correct to the best of the applicant's knowledge.

Hawaii Agriculture Research Center
(Typed Name of Individual or Organization)

 (Signature) 1-16-19 (Date)

Stephanie Whalen (Typed Name) Executive Director (Title)

**THE THIRTIETH LEGISLATURE
APPLICATION FOR GRANTS
CHAPTER 42F, HAWAII REVISED STATUTES**

Type of Grant Request:

Operating Capital

Legal Name of Requesting Organization or Individual: Db:

Hawaii Agriculture Research Center

Amount of State Funds Requested: \$ 50,000

Brief Description of Request (Please attach word document to back of page if extra space is needed):

The Hawaii Agriculture Research Center (HARC) requests a grant in order to improve the overall benefits to the people of Hawaii by providing increased diversified agriculture and economic opportunity in the state. The grant will be used to support HARC plant propagation services in providing a currently unavailable crop for farmers to plant and value-added processors to utilize. In addition, the requested funds will support HARC staff to conduct research and development and technology transfer to Hawaii farmers. Hawaii farmers across the state are the primary target group for the requested grant.

Amount of Other Funds Available:

State: \$ n/a
Federal: \$ n/a
County: \$ n/a
Private/Other: \$ n/a

Total amount of State Grants Received in the Past 5 Fiscal Years:

\$ 475,080

Unrestricted Assets:

\$ 299,255

New Service (Presently Does Not Exist): Existing Service (Presently in Operation):

Type of Business Entity:

501(C)(3) Non Profit Corporation
 Other Non Profit
 Other

Mailing Address:

PO Box 100

City:

Kunia

State:

HI

Zip:

96759

Contact Person for Matters Involving this Application

Name:
Tyler Jones

Title:
Assistant Director

Email:
tjones@harc-hspa.com

Phone:
808-927-7508

Federal Tax ID#:

State Tax ID#


Authorized Signature

Stephanie Whalen, Executive Director

Name and Title

1-16-19
Date Signed

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II. Background and Summary

1. Description of the Applicant's Background

The Hawaii Agriculture Research Center (HARC) is a private, nonprofit organization (501c3) supporting diversified agriculture in Hawaii through scientific research, technology transfer and business development. Stephanie Whalen is the Executive Director of HARC and has been closely involved in Hawaii's agricultural industry for many years. Mrs. Whalen led the transition of HARC from the sugarcane industry funded, Hawaii Sugar Planters' Association (HSPA), to its current status with expertise and close relationships in most aspects of Hawaii's diversified agriculture industry. In addition, Mrs. Whalen has overseen the conversion of Del Monte pineapple acreage and camp to a vibrant agricultural complex and Kunia Village housing for low income farm workers. HARC has a long track record of successful projects in collaboration with local, state and federal agencies, universities and private industry. HARC's diverse expertise in a wide range of agricultural subjects provides a valuable resource for Hawaii's farmers in a rapidly changing agricultural environment.

2. Goals and Objectives

The primary goal of this project is to enable the production of a novel crop and manufacturing business in Hawaii through research and development on a close relative of taro, *Xanthosoma sagittifolium*. There is significant market demand for value added products made from taro such as chips, flour, starch and leafy greens. The current demand from Hawaii based processing companies exceeds the local supply and taro is currently imported to meet this shortage. The proposed project will seek to give local farmers a new alternative to meet this demand and provide economic opportunity to the state. *Xanthosoma* is grown in dryland conditions and does not require the limited land area available for lo'i freshwater ponds. One cultivar of *Xanthosoma sagittifolium*, has shown to have higher nutritional value than either taro, cassava or potato (Amanze, 2009; Falade and Okafor, 2013). Its corms also have good flavor, high production potential and are a rich carbohydrate source with fine starch grains more suitable for food processing (Falade and Okafor, 2013). Its similarity to taro, higher yield, improved nutrition and processing traits make it an ideal candidate for Hawaii farmers. There is land available and small farmers looking for a profitable crop. There is a substantial unmet market for chips and other value-added products that could be developed for *Xanthosoma*. Hawaii Business Group, Inc. (HBG), Mr. Peter Kam, President, is positioned to begin production of chips and is experienced in production and marketing. Development of *Xanthosoma* as a new crop with a ready market will improve and expand small farm acreage and profitability and improve the economic viability of rural populations in Hawaii.

Objective 1: Send *Xanthosoma* and Chinese taro corms to FQ Lab for nutritional analysis.

Objective 2: Develop an efficient shoot tip micropropagation method for *Xanthosoma* and produce field-ready plants for field-testing and distribution to interested farmers. Chinese taro (*Colocasia esculenta*) plants will also be produced to compare with *Xanthosoma* in the field plantings.

Objective 3: Install field plantings at HARC in Kunia and UH CTAHR in Waimanalo.

Objective 4: Send samples of *Xanthosoma* and Chinese taro corms to processors for feedback.

Objective 5: Host field days with interested growers to highlight the new crop and enable technology transfer to farmers.

3. Public purpose and need to be served

As large commercial agricultural production of sugarcane and pineapple decreased in the state, many agricultural workers and their families have struggled to survive. Many have tried to become independent small farmers. Although large amounts of produce are imported into the state, these small farmers still find it difficult to remain profitable. The introduction of a new crop to supply a ready market for a value-added product will open up new possibilities for small farmers in the state.

"Hawaii's farmers continue to face tight profit margins while struggling with many challenges, including natural disasters, unpredictable weather, a tight labor pool, continued urban encroachment on ag-zoned land, increasing competition for water, and rising water rates" (Hawaii Farm Bureau, August 2018 Newsletter).

4. Target population

There are approximately 100 taro growers and at least 3 Hawaii local snack chip manufacturers that will be the initial beneficiaries of the project. USDA Agriculture Statistics reports that in Hawaii small farms of less than 50 acres greatly outnumber large farms of more than 50 acres. In 2012, the latest year that records are available, small farms in the state numbered over 5500, while all others numbered only 378. Small farms with sales of less than \$25,000 per year predominate (4211) as compared to farms with sales of over \$25,000 (994). These small farmers are an additional target population as well as a number of potential farmers that would be willing to lease acreage if a profitable crop were available with assistance in best cropping methods and readily available planting material to begin planting.

5. Geographic

The project has statewide implications as all inhabited islands have suitable growing areas. Counting existing farms of less than 50 acres, the total acreage would be 275,000 acres.

III. Service Summary and Outcomes

1. Scope of work, tasks and responsibilities

Development of the most efficient micropropagation method will be carried out in the HARC micropropagation laboratory at Kunia under the supervision of Dr. Maureen Fitch. Field trials of the micropropagated plants will be installed by HARC and CTAHR personnel at HARC Kunia and at the UH Waimanalo field station. Technician and field labor personnel will be involved in all the work.

2. Timeline

- A: Send *Xanthosoma* corms for nutritional analysis: Months 1-4
- B: Development of micropropagation method and production of *Xanthosoma* and Chinese taro plantlets: Months 1 - 12
- C: Installation of field plantings: Months 3-6

D: Data collection and analysis of results: Months 9-12

E: Distribution of plants and technology transfer to farmers: Months 6-12

3. Quality assurance and Evaluation Plans

HARC has long, successful history of R&D on a wide range of crops. HARC utilizes an internal review process to ensure proper quality control during plant propagation, and is partnering with the University of Hawaii to host a field planting in a different growing environment. An external lab will be used to evaluate the nutritional content. Samples of the crop are to be sent to various manufacturers in Hawaii to receive feedback on suitability for value added processing. HARC hires a third party auditor annually for financial compliance.

4. Measure of effectiveness

Reports will be made to the legislature describing the success of the micropropagation method developed in terms of efficiency and quality of plantlets produced. The total number of field ready plantlets produced during the grant time period will be reported. The field trials location and date of installation will be reported with an explanation of the procedure and field plots layout. The data collected and analyzed will be reported with the results and discussion of their usefulness and application to small farms in Hawaii.

BUDGET REQUEST BY SOURCE OF FUNDS

Period: July 1, 2019 to June 30, 2020

App Hawaii Agriculture Research Center

| BUDGET CATEGORIES | Total State Funds Requested (a) | Total Federal Funds Requested (b) | Total County Funds Requested (c) | Total Private/Other Funds Requested (d) |
|-----------------------------------------|------------------------------------|--------------------------------------------------------------------------|-------------------------------------|--------------------------------------------|
| A. PERSONNEL COST | | | | |
| 1. Salaries | 30,150 | | | |
| 2. Payroll Taxes & Assessments | 2,850 | | | |
| 3. Fringe Benefits | 9,800 | | | |
| TOTAL PERSONNEL COST | 42,800 | | | |
| B. OTHER CURRENT EXPENSES | | | | |
| 1. Airfare, Inter-Island | 500 | | | |
| 2. Insurance | 500 | | | |
| 3. Lease/Rental of Equipment | | | | |
| 4. Lease/Rental of Space | | | | |
| 5. Staff Training | 500 | | | |
| 6. Supplies | 4,500 | | | |
| 7. Telecommunication | 200 | | | |
| 8. Utilities | 1,000 | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
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| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |
| TOTAL OTHER CURRENT EXPENSES | 7,200 | | | |
| C. EQUIPMENT PURCHASES | | | | |
| D. MOTOR VEHICLE PURCHASES | | | | |
| E. CAPITAL | | | | |
| TOTAL (A+B+C+D+E) | 50,000 | | | |
| SOURCES OF FUNDING | | Budget Prepared By: | | |
| (a) Total State Funds Requested | 50,000 | Tyler Jones 808-927-7508 | | |
| (b) Total Federal Funds Requested | 0 | Name (Please type or print) Phone | | |
| (c) Total County Funds Requested | 0 | Stephanie Whalen 1-16-19 | | |
| (d) Total Private/Other Funds Requested | 0 | Signature of Authorized Official Date | | |
| TOTAL BUDGET | 50,000 | Stephanie Whalen, Executive Director | | |
| | | Name and Title (Please type or print) | | |

BUDGET JUSTIFICATION - PERSONNEL SALARIES AND WAGES

Period: July 1, 2019 to June 30, 2020

Applicant: Hawaii Agriculture Research Center

| POSITION TITLE | FULL TIME EQUIVALENT | ANNUAL SALARY A | % OF TIME ALLOCATED TO GRANT REQUEST B | TOTAL STATE FUNDS REQUESTED (A x B) |
|------------------------------|----------------------|-----------------|----------------------------------------|-------------------------------------|
| Assistant Director, Research | 0.05FTE | \$75,000.00 | 5.00% | \$ 3,750.00 |
| Research Associate I | 0.2FTE | \$45,500.00 | 20.00% | \$ 9,100.00 |
| Research Associate II | 0.2FTE | \$45,250.00 | 20.00% | \$ 9,050.00 |
| Research Assistant | 0.25FTE | \$33,000.00 | 25.00% | \$ 8,250.00 |
| | | | | \$ - |
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| | | | | \$ - |
| TOTAL: | | | | 30,150.00 |

JUSTIFICATION/COMMENTS:

The requested funds are to support the HARC staff wages for completion of activities described in the proposal.

IV. Financial

1. *See Enclosed Budget Forms*

2. *Quarterly Funding Needs*

| Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Total Grant |
|-----------|-----------|-----------|-----------|-------------|
| \$12,250 | \$12,250 | \$12,250 | \$12,250 | \$50,000 |

3. *No other funding sources are requested at this time.*

4. *HARC has not applied for or received any tax credits in the past three years and does not anticipate receiving any in the foreseeable future.*

5. *Government contracts, grants and grants in aid received by HARC*

A: Federal:

USDA:

The USDA, Agriculture Research Service has provided HARC financial support for research and development support the USDA ARS mission. HARC received a total support over the previous three years of \$1,230,147 from USDA.

B: State of Hawaii:

HARC has received competitive grants and contracts from the State of Hawaii totaling \$475,080 during the past three years.

C: County:

The County of Maui has provided financial support for HARC's forestry program on an annual basis for the past three years. Total amount provided over previous three years is \$114,223.

6. As of December 31, 2018, HARC had unrestricted current assets of \$299,255

V. Experience and Capability

1. *Necessary Skills and Experience*

HARC has micropropagated over 30 different taro cultivars and numerous other crop species. Poi, chip, starch, and ornamental taro cultivars have so far been propagated and given or sold to growers for field planting and taste testing. Recently HARC initiated a small scale research project on *Xanthosoma* micropropagation, and preliminary results showed that micropropagation system could be developed using current taro micropropagation method and the efficiency of multiplication and quality of plantlets could be improved by optimizing the method. The potential for taro production increase in the state is vast, and has been shown to have great local sales potential for a unique value-added product with a large and expanding market for future sales. HARC staff has extensive experience in field trials in a wide range of crops such as cacao, coffee, sugarcane, forage grasses, and numerous vegetable crops. HARC's

diversity of professional staff including a geneticist, agronomist and pathologist provides significant value to the project and ensures sufficient capability to address any unforeseen issues.

2. Facilities and Equipment

HARC has a standard plant tissue culture laboratory to conduct the micropropagation, including a medium preparation room containing an autoclave, washing area, glass wares, a pH meter, and weighing balances and tissue culture rooms containing laminar hoods, bio-safety hoods, incubators and shakers etc. The laboratory provides well-controlled temperature, humidity, air circulation, and light quality and duration. HARC has approximately 180 acres of actively farmed land on Oahu between its Kunia and Maunawili Farms. Both sites have all the requisite vehicles, tractors, irrigation and other standard farm equipment needed for the field plantings.

VI. Personnel: Project Organization and Staffing

1. Proposed staffing, qualifications, supervision and training

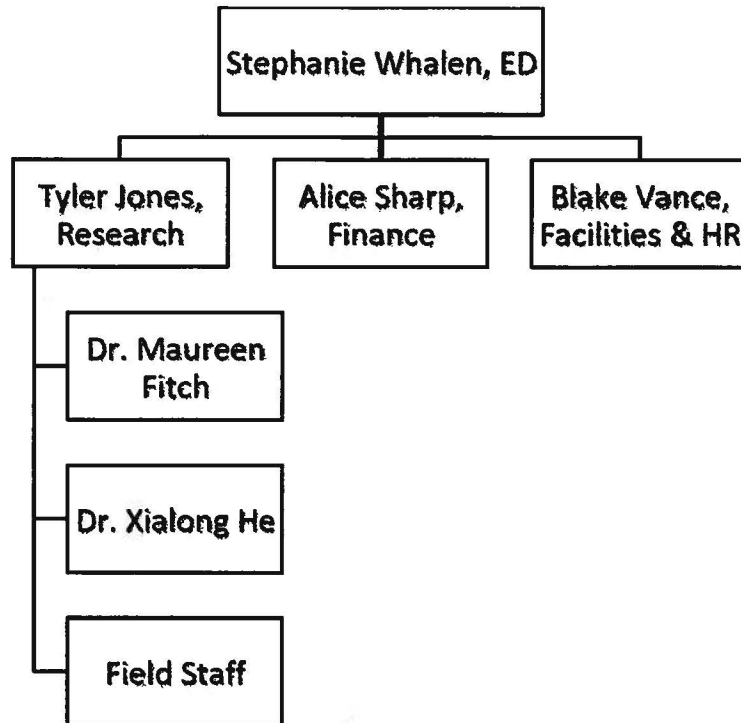
Tyler Jones, Assistant Director of Research, MS, MBA: Tyler Jones has over a decade of experience in conducting field trials on a wide range of new crops across the state of Hawaii. Tyler will work with the HARC Farm managers to install, monitor and report on the field trials. Through his education, training and experience, Tyler has proven an effective team leader, supervisor and trainer for complex projects that require a range of specialty expertise.

Maureen Fitch, Research Associate, PhD: Dr. Fitch has over 30 years of micropropagation experience on tropical crops in Hawaii. She has successfully developed methods for propagating a range of crops and has proven to be an effective supervisor/trainer of research technicians.

Xialong He, PhD: Dr. He has been working under Dr. Fitch for several years at HARC and has significant experience in micropropagation of taro and its relatives, including *Xanthosoma*. Dr. He has also successfully completed farmer workshops and outreach events to transfer technology to Hawaii farmers.

Field Staff: HARC has numerous field staff that have significant experience in planting research trials on a wide range of crops. The existing experience provides significant value to the proposed project as little additional training is needed.

3. *Organizational Chart*



4. *Compensation*

The three highest paid employees at HARC are three Assistant Directors

- Assistant Director 1: \$86,520
- Assistant Directors 2 and 3: \$75,000

VII. Other

1. *HARC has no pending litigation or outstanding judgements.*
2. *No special licensures or accreditation is necessary to complete the project.*
3. *No grant funds will be used to support or benefit a sectarian or non-sectarian private educational institution.*
4. *Future sustainability of the project will rely on private funding.*



COOPERATIVE EXTENSION

UNIVERSITY OF HAWAII AT MĀNOA
COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES

January 15, 2019

Stephanie Whalen
Hawaii Agricultural Research Center
P.O. Box 100,
Kunia, HI 96759

Dear Ms. Whalen,

I am pleased to submit this letter of support and applaud your efforts to promote and preserve agriculture in the State of Hawaii, I wish to express and extend my support of your GIA project, "Propagation of Taro Relatives for the Manufacture of New Snack Chips, Leafy Greens, and Other Value-added Products" to cultivate taro as a replacement crop for sugarcane and pineapple.

Taro (*Colocasia esculenta*) has numerous production related issues which affects the long-term sustainability and advancement of this important industry in Hawaii. I have collaborated closely with the Hawaii Agriculture Research Center (HARC) in the past in developing good agricultural practices and pest mitigation solutions to help Hawaii's farmers. I look forward to working with them again in the future.

I believe funding of this GIA project, "Propagation of Taro Relatives for the Manufacture of New Snack Chips, Leafy Greens, and Other Value-added Products" has tremendous potential for Hawaii's diversified agriculture industry. It also has the promise of expanding on the good reputation of Hawaii grown, value added products sold here locally and across the globe.

I serve as a county extension agent with the University of Hawaii, College of Tropical Agriculture and Human Resources (UH CTAHR), Department of Plant and Environmental Protection Sciences (PEPS). I also serve as the statewide coordinator of the Local & Immigrant Farmer Education Program (LIFE) and co-coordinator for the Western SARE Professional Development Program and Sustainable and Organic Agriculture Program (SOAP).

Your project is in line with our efforts towards revitalization of agriculture in this State, I strongly support grant funding for your project. If I can be of further assistance, please do not hesitate to contact me directly.

Sincerely,

A handwritten signature in black ink, appearing to read "Jari S. K. Sugano".

Jari S. K. Sugano, Extension Agent

O'AHU COOPERATIVE EXTENSION

Wahiawa Cooperative Extension Office

910 California Ave. / Wahiawa, HI 96786-2124

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