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UH study of Ma'o Farms shows interns reaping health benefits

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Radishes are prepped for distribution at the processing shed at Ma'o Organic Farms. The farm is a social enterprise that serves restaurants, farmers markets and supermarkets, while employing youths and assisting in their education.

Ma'o Organic Farms is a thriving 18-year-old social enterprise, producing clean food sustainably while providing educational and employment opportunities for young adults in its Leeward coast community. The farm's food, grown, harvested and processed by its young workforce, is served in popular restaurants and sold at supermarkets and farmers markets. Its youth leadership programs provide college tuition waivers along with work.

That's plenty for one organization to deliver, but in fact its farm and youth programs fuel a deeper goal: to raise the health, economy and resilience of its community, comprising one of the largest Native Hawaiian populations on Oahu.

An ongoing study of the farm's interns seems to be proving the approach: Two years in, results show that 60 percent have significantly reduced their risk of Type 2 diabetes. Researchers attribute the results to farming aspects, exercise and nutrition.

Alika Maunakea, a biomedical researcher of epigenetics at the John A. Burns School of Medicine, said interns' social networks, such as friends and family, also included in the study, have shown improvement as well.

"It indicates that participants are eating healthier," Maunakea said. "We're still assessing the data, but through last year's interns and their social networks, it shows that in terms of diabetes care, Ma'o directly saved \$120,000 in health care costs."

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The medical school has teamed up with UH's Economic Research Organization to explore how aina (land)-based practices and consumption of farm produce affect the development of Type 2 diabetes. Participants' body-mass index, blood pressure and blood sugar are monitored, as well as their microbiomes, bacteria that live in the human gut. Microbiomes can range from beneficial to detrimental.

The results, based on changes in participants' microbiome composition, reflect an increase in the type of bacteria associated with a decreased risk of diabetes, due to a diet high in fiber.

"Data shows that aina-based programs that put people back on the land using a Hawaiian cultural perspective — to live in an ecosystem that's healthier for the environment and for the people — demonstrate clear economic and health benefits," Maunakea said.

Maunakea, nephew of Ma'o founder Kukui Maunakea-Forth, is Hawaii's sole researcher of epigenetics, the study of how factors such as environment interact with genes.

"Think of computer software. The hardware is genetics; the software instructs the hardware on what to do. Epigenetics is the mechanism that interprets the influence of environment on how cells will behave," he said.

THE STUDY also indicates success on another level: achieving goals using both traditional practices and contemporary western tools.

"In Waianae historically, there has been a strong renaissance of returning to the land. We're also growing people in returning them to the land," said Kamuela Enos, Ma'o's director of social enterprise. "The next generation of activism can't just be about protesting development. People need jobs, and this is how we develop on our own terms as a native and rural community.

"Money coming into Waianae to aid poverty wasn't moving the needle. We needed community intervention within the community to solve causal factors, so we united arable lands and youth."

Ma'o is a nonprofit funded by grants and revenue from the farm. Its founders, Gary and Kukui Maunakea-Forth, combined his finance background and farming experience with her intimate knowledge of the community as a member of the well-respected Maunakea family, a Nanakuli homestead family.

LAUNCHED IN 2013, Ma'o's youth leadership programs have young adults, ages 17 to 24, running the daily operations of the farm. Interns work there Mondays, Wednesdays and Fridays and go to college on Tuesdays and Thursdays. They receive both a monthly stipend and tuition waiver. Besides farm work, interns work with staff to set and meet sales goals. Enos said the disparity between their work and academic lives, and their home lives, can be striking.

"The first year, they learn how to run the farm and go to college. The second year, they lead other students. They're stepping into graduated rules of leadership while living in Waianae, navigating both academics and, in many cases, poverty at home," he said. "We believe what they're taught here helps them be agents of change in the community."

Since the youth leadership training began, 107 interns have earned associate degrees, 29 have earned bachelor's degrees and one earned a master's degree and is teaching in Waianae.

Enos said when Ma'o started 18 years ago, the destiny of the Leeward coast wasn't in the hands of the community. He characterized the choices for land use there, made by people outside the community, as "environmental racism."

"When others dictate the best and highest use of the land here, they put in a dump. When we decide, we farm," he said.

That 24-acre diversified farm produces 2 tons of food weekly, including salad and cooking greens, root vegetables, herbs and fruit, comprising more than 60 varieties of produce.

"This is what we think agriculture should look like — locally grown food for local consumption. It's how our ancestors grew food in our valley," said Enos, noting that Ma'o sells its products within the community at an affordable price.

On Tuesdays and Thursdays, when interns are at school, the farm serves as an educational site to visitors. "It provides revenue stream, and this educational program is administered and taught by a woman who came through our program," said Enos.

Products served and sold in places outside the Leeward coast are also a means for creating awareness, he said.

"It takes every last person to have a vibrant food system. Urban communities are absolutely vital to our success. It's where the capital is, it's where politics take place. An educated consumer is powerful."