

BREADFRUIT AGROFORESTRY, TIME-TESTED PRODUCTION

Agroforestry refers to farming that integrates trees, shrubs, and other long-lived plants with crops and/or animals in ways that provide economic, environmental, and social benefits. The benefits can be realized in many ways simultaneously, including greater and more diverse productivity, reduction of economic and environmental risks, soil improvements, subsistence and cultural functions, and long-term forest for future generations.

Traditional breadfruit agroforestry systems of the Pacific Islands, which are considered time-tested models of sustainability, have been cultivated for millennia. The addition of modern agroforestry techniques and a rich selection of crops makes agroforestry an attractive approach for innovative producers who are ready for the challenges and opportunities of a diversified cropping system. Although more attention must be paid to management in agroforestry, the rewards can also be much greater than in monoculture—higher total yield and profit, a comprehensive crop portfolio, and enhancements to the soil and environment.



Breadfruit has been grown in agroforestry configurations for millennia throughout the Pacific region. This young Samoan agroforest integrates other fruit, medicinal, and timber crops together with breadfruit. With proper management, all the crops thrive together and the total productivity is higher than for a planting of any one of the crops grown alone.

Benefits

There are many ways that producers can benefit from growing breadfruit in agroforestry economically, environmentally, and socially.

- The productivity of any one crop in agroforestry may be less than a single-crop planting of that crop on the same area, however, the total productivity (com-

bined yield of all the crops growing together) can exceed that of any single-crop planting by 10–60%.

- Short-term crops are grown in the space between long-term crops, leading to income streams beginning several years before the breadfruit trees are producing income.
- Breadfruit agroforestry can provide a wide range of environmental services that address soil and water resource concerns such as erosion control, improvement of soil health, and wind shelter.
- Diverse agroforestry systems have been shown to be more resistant to pests and diseases than single-crop plantings.
- Agroforestry has been shown to be resilient to weather extremes both economically and environmentally.
- Multistory agroforestry has been shown to sequester carbon from the atmosphere more effectively than other land uses.
- Growing multiple crops provides a basis for community self-sufficiency by increasing local food security and enhancing preparedness in case of a major interruption of food distribution.
- Diversified local crop production creates opportunities for innovative product development.

Complementary crops

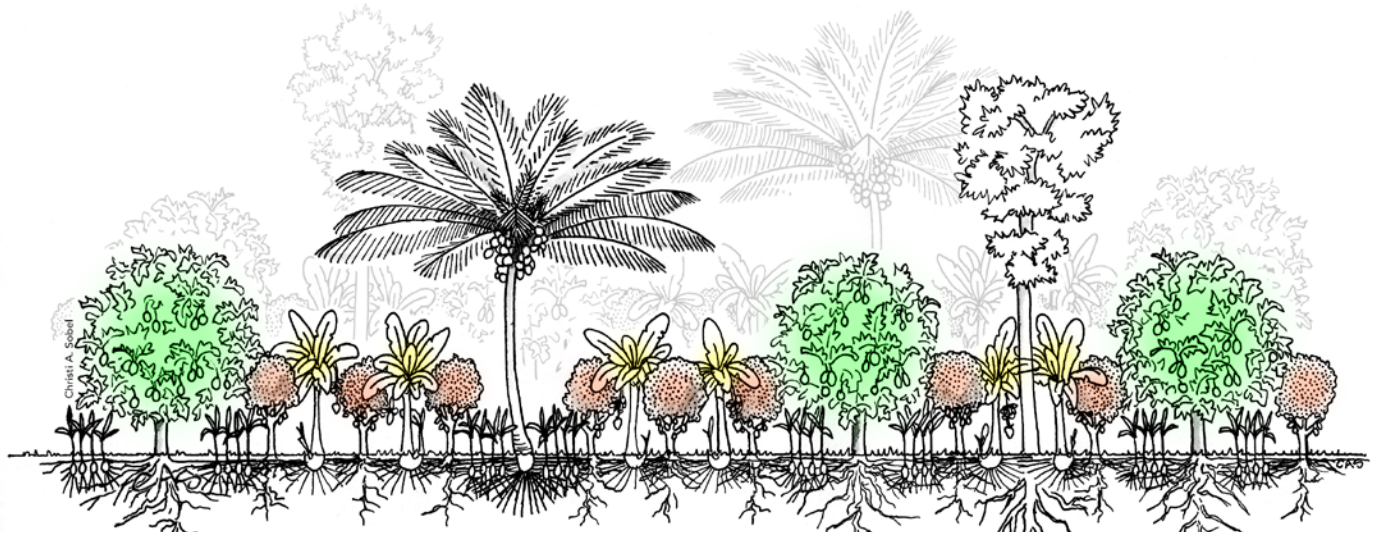
A wide variety of annual and perennial crops can be grown together with breadfruit. In agroforests of the Pacific Islands, traditional crops grown together with breadfruit include taro, banana, sugarcane, coconut, and many others. Today, dozens of crops and varieties can be considered. This opens up opportunities for farmers to expand their crop portfolio and markets, while reducing the risks of price variations in the marketplace.

Crops that can be grown with breadfruit include

- Short term: cassava, ginger, taro, turmeric, vegetables
- Medium term: banana, papaya, pineapple
- Long term: spices such as black pepper, vanilla, and cardamon; fruit and nut trees such as citrus, avocado, and lychee; timber trees such as mahogany and rosewood.

Increasing profitability

With good planning, the suite of crops in a multistory breadfruit agroforest can be leveraged to provide several



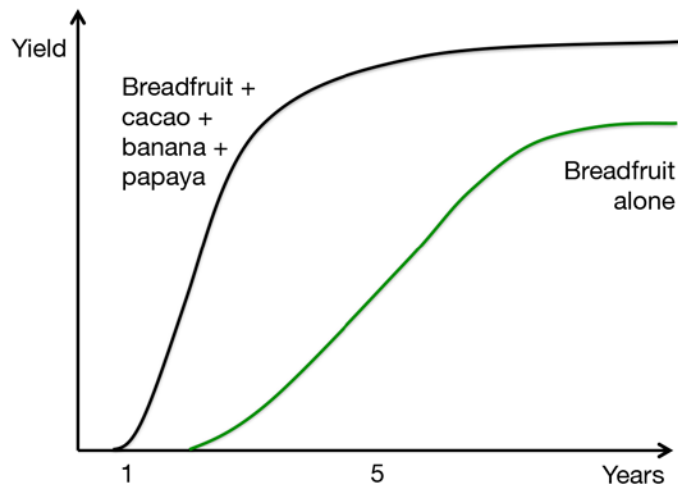
A modern multistory agroforest offers many options for farmers in terms of short, medium, and long term crops. Even high-value, but long-term timber can be included, an investment for future generations. When well implemented, profitability can be increased significantly, while the risks inherent to production, both economic and environmental, can be mitigated.

advantages from cost and marketing perspectives. These advantages include

- Expanding sales to existing customers.
- Expanding customer base.
- Sharing postharvest handling and distribution infrastructure (aka “enterprise stacking”).
- More efficient use of labor and facilities.
- Processed products.
- Expand food choices for home consumption.

Regenerative organic agroforestry

Recognizing the risks of the degradation of soils and environmental services due to agriculture, there is increasing



A single-crop planting of breadfruit will have lower total yield and takes longer to pay back the initial investment as compared with a multistory agroforest.

interest in agricultural practices that regenerate soil and biodiversity. Regenerative agriculture is a term used to describe systems that go beyond only sustaining the status quo (“sustainable”) to those that improve agricultural conditions over time. Regarding regenerative agricultural systems, the Rodale Institute reports, “Regenerative organic agriculture is marked by tendencies towards closed nutrient loops, greater diversity in the biological community, fewer annuals and more perennials, and greater reliance on internal rather than external resources.” Since these characteristics reflect those of agroforestry, “regenerative organic agroforestry” is a natural extension of the more general practice of regenerative organic agriculture. Breadfruit is a prime candidate for use in and demonstration of regenerative organic agroforestry because it has successfully been grown in agroforests for millennia with numerous beneficial outcomes akin to those targeted by regenerative organic agriculture

Further reading

This introduction is based on the 64-page book *Breadfruit Agroforestry Guide: Planning and implementation of regenerative organic methods* by Craig R. Elevitch and Diane Ragone. Copies of this book can be purchased from online sellers or downloaded as a pdf file from www.breadfruit.org and www.breadfruit.info.

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