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ASPARAGUS GROWN IN HAWAI'I

Introduction

Hawaii's agriculture in recent years has become more diversified as two major crops – sugarcane and pineapple – have downsized. The state and its farm industry could benefit from local production of vegetables and greens to replace those supplied by imports. For these reasons, the project team hoped to adapt asparagus, a temperate crop, to Hawaii's subtropical environment by selecting suitable varieties and determining suitable cultural practices.

Asparagus has several advantages:

- It is a perennial crop with a dense root mat providing good ground cover and reducing erosion.
- It is one of the few vegetables that grows well in brackish water.
- It has few pest or disease problems.

Research & Education Grant

Title: Evaluation of Asparagus as a New Commercial Crop for Hawaii

Project Number: SW96-003

Principal Investigator:

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Principal investigator Susan Schenck of the Hawaii Agriculture Research Center and cooperar farmer Milton Agadar assess asparagus plants.

- Once established, it can continue to produce for 10-15 years.
- With Hawaii's 12-month growing season, asparagus produces two crops a year, with sequential harvest schedules for a continuous supply. Instead of a winter dormancy period, growth is arrested by withholding irrigation to allow ferns to die back.

Under subtropical conditions, a question is whether good production could continue for many years before replanting is necessary.

Objectives

1. Establish the appropriate irrigation and fertilizer practices
2. Determine plant density for commercial production
3. Manage pests and dis-

eases with minimum pesticides

4. Select the best asparagus cultivars
5. Determine the cost of production, yields and profitability
6. Disseminate this information to Hawaii's farm community

Procedures

Eight different all-male varieties were planted in a half-acre plot on Milton Agadar's farm: three New Jersey varieties, Jersey Gem, Jersey General and Jersey Giant, and five California varieties, Atlas, Apollo, Purple Passion, Grande and UC 157.

Seeds were started in seedling trays in commercial potting soil and transplanted in a randomized complete

...continued on page 2



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- *profitable farms and ranches*
- *a healthy environment*
- *strong families and communities.*

The Western Region, one of four SARE regions nationwide, is administered through Utah State University.

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block with 12 replications per cultivar. Planting was in four 10-foot rows per plot with 5 feet between rows and 1 foot between plants in rows. Rows were covered with polyethylene mulch that kept weeds in check until ferns closed in. Water was applied in a single drip line per row for 14 hours every other day. Fertilizer was applied through drip lines as 11-37-0 and liquid urea.

Ferns were allowed to grow for one year before the first harvest in December 1997. First-year yields were relatively small, but yields increased in subsequent harvests in August 1998, January 1999, and August 1999. Yield data were taken from one row of each variety plot – the rest was harvested for sale by the farmer – for numbers and weights of small, medium and large spears. In the first year, an outbreak of *Cercospora* fungus blight required treatment with Dithane fungicide, but no further disease problems were encountered.

Results

The irrigation and fertilization practices proved suitable for asparagus production in Hawai'i's subtropical environment. Instead of winter dormancy, water was withheld for about three weeks every six months, allowing ferns to die



back. When irrigation and fertilization resumed, spears sprouted and were harvested for two to three weeks before size diminished and the ferns were allowed to mature. By drying out different sections at successive intervals, continual production was maintained. After the first year, each plot yielded two harvests a year.

For each variety from each harvest, yields were averaged for these size categories in inches of diameter:

- Small = 1/4 to 3/8
- Medium = 3/8 to 5/8
- Jumbo = > 5/8
- Culls = < 1/4 (culled and not counted)

Overall, California varieties yielded the greatest (varieties

bred in California are probably better suited to the warm Hawai'i climate), with Atlas and Apollo having the highest yields. Jersey Giant consistently produced the greatest weight of small spears, which are preferred by many hotel and restaurant chefs and bring the highest price. Purple Passion produced many jumbo spears, and while its purple color is attractive to buyers, it had a higher percentage of misshapen spears.

Conclusions

The project showed Hawai'i growers cultural practices for successfully growing asparagus under subtropical conditions. The cooperating farmer has expanded production to 65 acres, and at least one grower is producing organic asparagus. Both have found markets for all they can produce. Many home gardeners attended field days, but it is not known how many are growing asparagus.

The early plantings continue to be productive after 5-10 years, although yields have not been sustained at the initial high level. While Apollo was the highest yielding cultivar, excellent new varieties have since been developed.

Diseases and pests have not been a problem, but weeds are difficult to manage between the time the ferns die back and before they reach full maturity. Cover crops planted between beds are being assessed for keeping weeds in check.

Hawai'i's high cost of production, particularly labor costs for hand harvesting, make local asparagus more expensive than that imported from Mexico and other places. But consumers seem willing to pay for the quality and freshness, and chefs especially like the spears of smaller diameter.



Schenck in the laboratory in 'Aiea.