

## Vegetable Research at the Kohala Experiment Station

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Principal Investigator, B.A. Kratky, Horticulturist  
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Vegetable experiments were initiated at the Kohala Experiment Station in 1980. Since there are often high velocity winds in the Kohala area, it was necessary to protect the vegetable crops with windbreaks. Two types of windbreaks were tested; they were a wild cane windbreak and a 55% black saran shade cloth suspended by cables. The wild cane windbreak is cheaper and simpler to establish but the wild cane competes with the crops since the roots extract water and nutrients from the soil. Therefore, a 5 foot wide windbreak will effectively cause a 10-15 foot width to become unusable to the crop. Another disadvantage of cane windbreaks is the shedding of cane trash (dead leaves, etc.) which may interfere with field operations. Saran and cable windbreaks are desirable because they use less land, do not compete with the crops for nutrients and water, and do not harbor insect pests. However, they are expensive and difficult to construct.

Heavy winds will cause more damage to tall, upright plants than to short plants. For this reason a bush type, determinate tomato cultivar and bush bean cultivars were raised rather than upright, trellis type cultivars. The other crops selected for testing also had a short growth habit.

The yield of the crops tested and a short discussion of these crops will follow. The yields obtained may be increased in future trials as we learn from experience. However, the losses from

insects and diseases and our dependence on insecticides will increase greatly in future plantings, because the experimental area was relatively isolated and does not yet contain the buildup of diseases and insects that is characteristic of an intensive farming operation. This study does not address the relevance to the Kohala area of post-harvest activities such as cooling, transporting, and marketing. Rather, this study was designed to give an idea of the potential productivity of these crops in Kohala.

## FIELD RESULTS

### Beans

A December planting of 'Brittlewax' (yellow wax pods), 'Greencrop' (green flat pods) and 'Tendercrop' (green, round pods) yielded from 39-48 lbs of salable beans/100 ft of row when the rows were spaced 20 inches apart. Since this was too close, a March planting was spaced at 30 inches. Salable yields of this trial for 'Brittlewax', 'Greencrop' and 'Tendercrop' were 77, 102 and 71 lbs/100 ft of row, respectively.

Pods of 'Greencrop' were the heaviest, 56 pods/lb compared to 77 and 68 pods/lb for 'Brittlewax' and 'Tendercrop', respectively.

Bush beans have a high labor requirement at harvest time. Bush beans are a good crop to generate income quickly since they begin to yield at about 50 days after planting. Bush beans are a relatively easy crop to grow and are a good rotation crop.

### Cantaloupe

'Ambrosia Hybrid' was planted in June, 1981 and harvested for 38 days during August and September. Cantaloupe production and quality was excellent. Each hill (150 sq. ft) yielded 12-15 melons

and the average melon size was about 6 lbs. The good weather and low rainfall contributed to a dry soil surface which resulted in very little spoilage. Melon flies were not a problem during this time.

### Carrots

'Nantes Half Long' (cylindrical 6-7 inches long), 'Spartan Bonus' (cylindrical to tapered 6-7 inches long) and 'Goldinhart' (5 inches long, 2½ inches diameter at the shoulder tapering to an abrupt stump end) were planted in December, 1980 and harvested in March, 1981. Salable yields ranged from a low of 44 lbs/100 ft of row for 'Spartan Bonus' to a high of 77 lbs/100 ft of row for 'Goldinhart.' This yield for 'Goldinhart' corresponds to about 20,000 lbs/acre. The average U.S. fresh market carrot yield is about 16,000 lb/acre. It appears that carrots have the potential to be a satisfactory winter crop for Kohala.

### Leaf lettuce

Cultivars 'Green Ice' and 'Ruby Red' were transplanted in June. Leaves were bitter and there was considerable tip burn, especially on 'Green Ice.' Future trial planting should be attempted during the winter period.

### Onions

Four trials of 'Yellow Granex' onions (Maui type onion) were made. Onions which were transplanted in December and harvested in April weighed over one pound and yielded around 150 lbs/100 ft. of row. Onions transplanted in February and harvested in May weighed about 0.6 lb and yielded around 80 lb/100 ft of row. Onions transplanted in April and May were harvested in June and July, respectively.

and gave unsatisfactory yields of less than 30 lbs/100 ft of row. The onions exhibited a sweet taste. Long day lengths cause this cultivar to prematurely bulb. The Maui type onion generally prefers a cooler climate and short day lengths for maximum quality and size.

### Pumpkins

Three mainland pumpkin cultivars were tested in a fall planting; melon flies attacked both the fruit and the vines such that no salable pumpkins were produced. Unless melon flies can be controlled, pumpkins will not be a viable crop for Kohala.

### Peppers

Cultivars "Dutch Treat", "California Wonder", and "Yolo Wonder", yielded less than 3 lbs./plant when seedlings were transplanted in February. This performance was unacceptable. "Sweet Banana", a yellow fruited cultivar, 5-6 inches long and 1-2 inches in diameter, produced 3-4 lbs./plant and attracted less aphids than the other cultivars. "Sweet Banana" may have commercial possibilities.

### Radishes

Unsatisfactory yield and quality was obtained with an April planting of cultivars "Burpee White", "Champion", and "Cherry Belle".

### Vegetable Soybeans

Trials of 'Kailua' soybeans were transplanted in December and March. The best yield obtained was 46 lbs of pods and beans/100 ft of row. This calculates to over 8000 lbs/acre. In a May-July trial, 'Kailua' outyielded two mainland cultivars 'Frostbeater' and 'Prize' by 1.8 to 4 times. Soybeans are relatively easy to grow and could be an excellent rotation crop for the Kohala area.

## Tomato

'Floramerica' is a determinate tomato cultivar which was transplanted in February and harvested for seven weeks during April and May. Tomatoes planted at 5 x 2 ft spacings yielded up to over 13 lbs salable tomatoes/hill. This calculates to over 60,000 lb/acre; the state average tomato production is 28,500 lb/acre. With a low fruit fly population, good wind protection and good weather, tomatoes could become a viable crop for this area.

## Watermelons

'Charleston Gray' and 'Crimson Sweet' watermelons yielded 2-4 watermelons/hill (10 x 15 ft spacings) weighing from 38-61 lbs/hill of salable watermelons. The state average watermelon production would correspond to 36 lbs for a similar area of 150 sq. ft. Melon flies were not a problem in this trial. The quality of the watermelons was good. 'Sugar Bush' yields were lower than the state average.

## Conclusion

Vegetable crops which grew well in the experimental plots at Kohala include bush beans, "Ambrosia Hybrid" cantaloupe in summer, carrots in winter, "Yellow Granex" onions in winter, but not in summer, "Sweet Banana" peppers, "Kailua" soybeans, "Floramerica" tomato and "Charleston Gray" and "Crimson Sweet" watermelons in summer.