



Tropentag, October 9-11, 2007, Witzenhausen

“Utilisation of diversity in land use systems:
Sustainable and organic approaches to meet human needs”

Organic Farming Research at AVRDC-The World Vegetable Center: Developing Systems for Smallholder Farmers in the Tropics

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Abstract

A six-hectare conventionally farmed research area at AVRDC was converted to an organic farm. It has been in a transition period since 2004. During the transition period, vegetable, field crops such as rice, sweet corn, and sweet potato, green manures and catch crops, banana, and tropical fruit trees are grown to increase the biodiversity of the area. Our research on organic production technologies initially focused on tomato, vegetable soybean, and cabbage. In 2006, research work started on organic sweet pepper, cucumber, and the intercropping of fruit trees with vegetables.

From 2004 to 2006, tomato trials to compare commercial organic and conventional production on six farms in Taiwan were conducted using two virus-resistant varieties developed at AVRDC. In two out of three farm pairs, mean marketable fruit yields across varieties were significantly higher on the conventionally managed farms compared to organic farms. However, one of the three organic farmers who was observed to have superior crop management skills attained not only a fruit yield comparable with his conventional counterpart, but also significantly higher fruit lycopene content and consequent higher health benefits. The use of virus-resistant tomato varieties, proper crop management, and timely application of effective biopesticides were most likely the reasons for his success. Farmers' crop management skills are an important component for successful organic farming and need to be upgraded to ensure their competitive success in relation to conventional farming.

The performance of traditional and modern tomato varieties was also evaluated on-station. The performance of one modern virus-resistant variety was outstanding, while traditional varieties that are not virus-resistant hardly produced any fruit. This confirmed that good crop management skills along with the use of superior varieties are important. The knowledge and experiences gained from our organic farming systems research in Taiwan is developing approaches that could be applied in other tropical and sub-tropical countries with many small-scale farmers who are seeking to expand their organic agriculture programs.

Keywords: Biopesticides, farmer, management skills, organic, small-holders, sub-tropics, tomato, training, tropics, variety, vegetable