

CAN SUNFLOWER BE A ROTATION CASH CROP IN SOUTHWEST TEXAS?

CARLOS J. FERNANDEZ AND MARK C. BLACK



BOTTOM LINE

Use of sunflower as a rotation cash crop in Southwest Texas where *P. omnivorum* is endemic may increase the fungus population in soil and therefore, increase disease risk for other susceptible rotation crops such as cotton, carrots, and peppers, especially when a highly susceptible variety is used.

Summary

Four confectionery sunflower varieties were evaluated at Uvalde, TX in 1995. Yield of clean seed varied widely among varieties, from 379 lbs/ac to 1134 lbs/ac. All varieties had mortality from cotton root rot caused by *Phymatotrichum omnivorum*, but incidence of disease was significantly different among varieties. The high yielding varieties CH505 and Sigco 954 showed the highest incidence of the disease. Yield exhibited by medium-seed varieties CH505 and Sigco 954 indicated a moderate economic value of sunflower as a cash crop, but in Southwest Texas where *P. omnivorum* is endemic, use of sunflower as a rotation cash crop may increase the fungus population in soil, and therefore increase the risk for other rotation cash crops susceptible to this disease such as cotton, carrots, and peppers.

Introduction

Sunflower (*Helianthus annuus*) has been considered to be a species with potential use as an alternative cash crop in Southwest Texas, particularly in rotation with other well-established summer crops such as cotton, corn, and grain sorghum. We have initiated testing of confectionery sunflower at the Texas A&M University Research & Extension Center in Uvalde to evaluate its potential productivity and the feasibility

of its inclusion as a rotational crop during the summer season.

Materials and Methods

Sunflower varieties Granada, Habad, CH505, and Sigco 954 were planted on April 26, 1995 in six-row plots 800 feet long with row spacing of 38 inches. Plot seeding rates ranging from 13,400 to 19,500 (mean of 17,000) seeds/acre. A randomized complete block design with five replications was used. Because of limited seed supply, Sigco 954 was planted only in two replications. Plots received one high volume furrow irrigation at planting time, which brought the soil profile to field capacity. No further irrigation was applied, and little supplement rainfall was received.

Cotton root rot was estimated in two areas (20 feet x 30 feet) of each plot, located 50 and 150 feet from east end of plot (the head water end of the plots) as percent plants yellowed, wilted, and dead. To rank varieties for resistance to this disease more accurately, the disease ratings were made in an area of the test where cotton root rot incidence was highest. Plots were harvested in their entire length with a 6-row combine. Plot gross weights were corrected for moisture, foreign material, and light seed to estimate clean seed yield. Significance of yield differences were determined through analysis of vari-

ance and Fisher's Protected Least Square Differences.

Results

There was a large yield difference in favor of the medium-seed varieties CH505 and Sigco 954 as compared to the large-seed varieties Granada and Habad (Table 1). Yield of clean seed of medium-seed varieties was more than twice the yield of large-seed varieties.

There were significant differences among sunflower varieties for cotton root rot ratings. Disease ratings were highest in medium-seed varieties Sigco 954 and CH505 than in the large-seed varieties Granada and Habad (Table 1).

Yield exhibited by medium-seed varieties CH505 and Sigco 954 indicated a moderate economic value of sunflower as a cash crop, but in Southwest Texas where *P. omnivorum* is endemic, use of sunflower as a rotation cash crop may increase the fungus population in soil, and therefore increase the risk for other rotation cash crops susceptible to this disease such as cotton, carrots, and peppers.

Table 1. Yield (from whole plots) of clean seed of four sunflower varieties and estimates of cotton root rot disease caused by *Phymatotrichum omnivorum* (in a portion of the site with high disease incidence) in a 1995 variety demonstration test at the Texas A&M University AREC in Uvalde.

Variety	Yield (lbs/acre)	Cotton root rot
Sigco 954	1,134	63
Ch 505	1,004	54
Habab	379	42
Granada	439	33