they seemed to be taking so long. At high summer temperatures a generation of whiteflies can develop in only 2 to 3 weeks, more rapid than any other cotton insect pest, and thus may give us a blizzard of whitefly adults that in 1981 blanketed our crops and home gardens.

OVERWINTERING: Overwintering of the adult sweetpotato whitefly is very important as it may be the major factor that determines how far north the insect can survive. This past fall was relatively warm and development of whitefly larvae took place in cotton on the few leaves that were not defoliated and on the new leaves that appeared after defoliation. The first frost at Phoenix occurred November 26 freezing the tender new leaves of cotton but the adult whiteflies were still active. During December adult whiteflies were observed on the leaves of weeds in downtown Phoenix and were found in nurseries and home gardens in January.

There is a wide range of winter weeds that appear to be favorable overwintering hosts for adult whiteflies. Dan Gerling observed all developmental stages of the sweetpotato whitefly on Malva parviflora L. in his overwintering studies in California. This appears to be a major adult overwintering host in Phoenix. Eggs are present in January but no larvae so it is unclear as to whether these plants mainly serve to allow the adults to survive to fly to young cotton plants or other hosts next spring, or whether eggs on these winter hosts will develop into new adults next spring. In any case, the abundance of whitefly adults on weeds in the southwestern desert agricultural areas in early January 1982 poses a very serious threat to cotton this coming year.

CONTROL: One of the most discouraging aspects of the sweetpotato whitefly problem is our apparent inability to successfully control it with the insecticides registered for cotton insects. This may be due in part to the long egg stage and to the inability to kill the immobile larval and pupal stages which inhabit the undersides of the leaves. Some pest control advisors are considering the use of systemic insecticides at the time the cotton is planted in an efort to combat the overwintering and first generations. Some also have found that certain combinations of insecticides are more effective than others during the season.

A tiny wasp parasite, Encarsia, is an effective parasite of the sweetpotato whitefly. It didn't seem to become very numerous during the summer, perhaps due to high temperatures or to the heavy use of insecticides. However, in October at Phoenix a month after insecticides applications stopped, parasitism of the whitefly larvae became almost complete. Preliminary examinations of the extensive cotton leaf samples collected during September and October 1981 indicate that this parasite is widely distributed in both Arizona and California.

TABLE 1. Duration in days of the egg stage and the egg to adult stage of the sweetpotato whitefly at various constant temperatures.

Temperature °F	Egg Stage	Egg to Adult
68	11.5	34.7
72.5	9.9	27.8
77	7.6	23.6
81	6.1	17.8
86	5.4	16.6

STUB COTTON SURVEY: YUMA AND MOHAVE COUNTY, ARIZONA

P. W. Borth

Summary

A questionnaire was sent to every individual on the Yuma and Mohave County farm mailing list that actually has a mailing address within those counties. The total number mailed was 344 of which 44.5% were returned. The total number of unspoiled surveys that were returned and thus reported was 138. As a group, 97.8% did not favor the growing of stub cotton. Using their experience as a guide, 98.6% of the group felt there was a correlation between the number of acres of stub cotton grown and agricultural insect problems, in general. Every individual who felt a correlation existed, thought it was a positive correlation, i.e., as stub cotton acreage increases, so do agricultural insect problems, in general.

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In preparation for 1982 program planning, a mail survey was conducted of the Yuma and Mohave County agriculturalists to verify and document their feelings toward the growing of stub cotton. The questions and instructions were worded in such a way that the entire agro-ecosystem was considered by each respondent, a feat that is frequently impossible to assess with the constraints placed on controlled, scientific experiments. For lack of an experimental design or procedure that is capable of testing all variables for all crops and disciplines, it becomes essential to use the personal, and hopefully unbiased, opinions of those people most directly involved and affected by a cropping practice as supplemental input in program planning. It is assumed that each opinion is formulated on the basis of total experience, an integration of the effects of all variables, even those that at this time are unidentified and may not be considered significant.

Integrated Pest Management programs strive to include all of the crops grown, on a year-round basis. In this regard, the survey was intended to assess the effects of stub cotton production (as judged by the participants) on agriculture in general in Yuma and Mohave County.

A total of 344 individuals were identified on the Yuma and Mohave County farm mailing list as also having a mailing address within those counties. On December 11, 1981, 344 questionnaires were mailed out; 153 (44.5%) were returned by January 14, 1982. Of those returned, 15 were designated "spoiled" and not reported in the results. Ballots were considered spoiled if the respondent did not follow the instructions, reworded the choices, or eliminated himself from the survey by not answering the questions. The results are based then on 138 unspoiled responses.

Each individual was asked how he preferred to be identified. The classifications (Grower; PCA, Independent; PCA, Agrochem Affiliation; Other) are used in Table 1 to show the responses to each question.

It was shown that in late 1981, at least 92% of the Yuma and Mohave County respondents in each classification did not favor the growing of stub cotton. Using their agricultural experience as a guide, over 98% of the group felt that the number of stub cotton acres is correlated with agricultural insect problems, in general. Of most interest, insofar as IPM program planning, is the unanimous response to question 4. If we assume that the total agricultural picture (all crops) was considered when answering this question, every respondent who saw a correlation, felt that insect problems increase as stub cotton acreage is increased.

Table 1. Tallies of Responses to Questions on Stub Cotton Survey, Yuma and Mohave County, Arizona, 1981

Question	IDENTIFICATION Grower	PCA Independent	PCA, Agrochem Affiliation	Other	GRAND TOTAL
1. How do you prefer to be identified?	87	9	14	28	138
2. Considering all the pros & cons, do you favor the growing of stub cotton?					
Yes	1(1.2%)	0(0%)	1(7.1%)	1(3.7%)	3(2.2%)
No	86(98.9%)	9(100%)	13(92.9%)	27(96.4%)	135(97.8%)
Judging from your experience, check the response that you feel is most accurate.					
3. There is a correlation between the number of acres of stub cotton and agricultural insect problems, in general. (Go to Question 4)	87(100%)	9(100%)	13(92.9%)	27(96.4%)	136(98.6%)
There is no correlation between the number of acres of stub cotton and agricultural insect problems, in general.	0(0%)	0(0%)	1(7.1%)	1(3.7%)	2(1.5%)
4. As stub cotton acreage increases, agricultural insect problems, in general, increase.	87(100%)	9(100%)	13(100%)	27(100%)	136(100%)
As stub cotton acreage increases, agricultural insect problems, in general, decrease.	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)