Stub Cotton 1978
Diseases

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All stub and their counterpart planted fields were surveyed for disease incidence at least twice a month beginning in March and terminating in November. Inspections and sample collecting increased to a 10 day interval on August 1. Whole plant samples were taken each time and examined for common diseases of cotton as well as rare ones, such as leaf crumple virus.

At initial boll opening seed cotton was sampled from eight replicated plots in each field and the seed analyzed for aflatoxin. These samples were taken from the same plants each time at ten day intervals. Approximately 1000 analysis were made.

An attempt was made to spot diseases by the use of aerial photography (infra-red and normal). Over flights were made on all fields May 15, June 15, July 17, August 30 and September 20, 1978.

Initial Findings

General Diseases--With the exception of one stub (#S-11) and one planted field (P-12) we were unable to find any evidence of the major cotton disease caused by Verticillium, Phymatotrichum and Meloidogyne (root knot nema) in the research fields. Fields S-11 and P-12 had a previous history of Phymatotrichum root rot and it appeared as suspected. There was no evidence that stubbing had any affect on spread or development of the problem. It would be advantageous to have S-11 in stub again in 1979.

Some leaf enation and distortion was noted in the long staple cotton in S-9 but examination by electron microscopy revealed no virus particles. The symptom is apparently genetic and this was confirmed by Dr. Turcotte, long staple breeder, of the U.S.D.A./S.E.A.

Examination of dead or weak stub plants early in the season revealed a root tip necrosis with a blackening of the pith. The tap root was primarily affected but no common pathogen could be isolated from the diseased tissue. It is suspected that this disorder may be related to some physiological problem not precipitated by any soil borne pathogen.

Aflatoxin--Results of aflatoxin analysis from both stub and planted fields were more interesting. On the whole there was significantly less aflatoxin (at the 5% level) formed in stub cotton than in planted (Table I). Six stub fields had significantly less aflatoxin, one was not significantly different and two had more than their planted counterpart. No cotton was available from P-8 for evaluation.

It is interesting to note that the two stub fields with higher levels of aflatoxin were located in the Gila Bend area.

Table I

Comparison of $\bar{x}$ levels of aflatoxin in cottonseed grown under stub and annual growing regimes.

Field	$\bar{x}$ Aflatoxin (ppb) Stub	Field	$\bar{x}$ Aflatoxin (ppb) Annual	
S-1	377	P-2	120	
S-3	196	P-4	49	
S-5	12	P-6	191	
S-7	275[a]	P-8	---	$t^b = -1.83$
S-9	69	P-10	63	$p = <.05$
S-11	24	P-12	273	
S-13	24	P-14	251	
S-15	19	P-16	339	
S-17	102	P-18	492	
S-19	10	P-20	24	
$\bar{x}$	92.6		204.1	

[a]Omitted from $\bar{x}$ and t test calculations. [b]Single tail t test.

Table II

Additional data gathered when collecting seed cotton samples for aflatoxin.

Field (Stub)	PBW %	Pl Std Dens. #/13'	Pl Ht in	Soil Type (%) Sd/Si/Cl	Soil Total Sol Salts ppm	Lint Yield lbs/Ac	Field (Plant)	PBW %	Pl Std Dens. #/13'	Pl Ht in	Soil Type (%) Sd/Si/Cl	Soil Total Sol Salts ppm	Lint Yield lbs/Ac
S-1	3	24	44	50/36/14	2784	2046	P-2	2	39	41	44/39/17	2752	1588
S-3	<1	18	54	52/23/25	2048	1398	P-4	<1	18	43	49/23/28	4160	1408
S-5	6	27	22	55/31/14	2785	1009	P-6	7	26	25	55/31/14	4928	617
S-7	9	26	38	70/18/12	992	1845	P-8	-	--	--	--/--/--	----	----
S-9	12	26	28	70/11/19	1696	1569	P-10	<1	30	42	62/20/18	4000	1509
S-9	11	26	24	70/11/19	----	1088*							
S-11	5	22	36	55/24/21	1504	1432	P-12	4	26	47	59/25/16	2720	647
S-13	4	16	32	53/31/16	1536	1814	P-14	7	35	40	57/26/17	1952	1214
S-15	<1	27	38	50/32/18	1184	1435	P-16	1	44	45	50/32/18	1024	803
S-17	30	27	38	58/27/15	4224	1521	P-18	16	46	29	55/28/17	8000	1306
S-19	24	21	28	52/22/26	1824	1028	P-20	26	40	32	56/22/22	2560	911
$\bar{x}$	9.6	23.6	34.7	57/26/17	2057	1510	$\bar{x}$	7.2	33.8	38.2	54/27/19	3566	1111

*Long staple yield not included in mean.