Discussion

Arizona produces agronomic and vegetable crops, but from an acreage standpoint agronomic crops dominate the state's cropland area. Cotton, alfalfa and wheat accounted for three-fourths of the irrigated acres during the period covered by this study, 1976-1980. Lettuce and cantaloupe were the principal vegetable crops during this period, averaging 47,750 acres each year and accounting for 4% of the total irrigated acres.

Arizona's cotton seed requirement averaged 11,044,000 lbs. annually during the study period. While less in terms of volume or economic value, collectively other field crops add to Arizona's seed bill in a massive way. Of these probably the greatest opportunity for Arizona planting seed production rests with alfalfa since most of the 1.1 million lbs. used each year is imported. Most of the seed for all of Arizona's field crop acreage could be produced within the state. While quantities of vegetable planting seed are small, dollar expenditures for such seed are high.

Great strides have been made in Arizona's effort to increase production of cotton planting seed. Tne state now provides planting seed for about one-third of the national acreage of this crop.

Producing hybrid corn and sorghum seed to meet the state's requirement may be possible in the future. For sorghum there are some problems, especially out-crossing with johnsongrass. Production of sudangrass seed is certainly possible, but outcrossing with weedy and other sorghum species presents the same problems as for sorghum. Planting seed needed for all the small grain acreage could easily be produced within the state.

For years, most of the world requirement of bermudagrass seed was produced in Yuma county. Arizona growers appear to have lost ground in this area, with large amounts of seed moving into the state, principally from the Imperial Valley of California. Perhaps Arizona could regain its early leadership in bermudagrass seed production.

Most of the ryegrass imported into Arizona is used for winter lawns at the lower elevations. Arizona has several irrigated valleys at the intermediate and higher elevations where ryegrass could probably be grown for seed. Use of sewage effluent offers an excellent possibility for producing ryegrass seed.

Alfalfa seed production was once a major industry in Arizona. The gross income of Arizona's farmers culd be increased about three million dollars annually if all imported alfalfa seed were produced in the state. Arizona discontinued most of its alfalfa seed production at the lower elevations several years ago. Alfalfa seed for the lower elevations could probably be produced at the intermediate and higher elevations. Research to determine practices for higher yields might help to reestablish alfalfa seed production as an important industry in Arizona.

Selection of Maturity Group of Corn for Double Cropping After Wheat at Safford, Arizona

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Summary

Five corn grain hybrids with a range in maturity requirements of from 2,200 to 2,700 growing degree days were planted July 9, 1981 after a spring wheat crop. Two hybrids with growing degree day requirements of 2,300 and 2,500 outyielded either earlier or later maturities. One early maturity grain sorghum entry yielded about half of the average grain yield of all five corn entries. Iron chlorosis affected the five corn entries to some degree but affected the single sorghum entry severely.

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Introduction

The high value of land and equipment for an Arizona farmer makes it necessary for him to keep his unit at maximum economic production. Double cropping with a field crop after wheat or barley that has been harvested in June is one way of keeping the land in production for a greater part of the year.

Most field crops attain maximum production when grown full season. Plant breeders have made available for most field crops varieties or hybrids a range of maturities. The shorter growing season available when double cropping makes it desirable to select the variety or hybrid that will best fit the specific length of growing season available.

Materials and Methods

Five corn grain hybrids with growing degree days maturity requirements from 2,200 to 2,700 units were selected for planting as a double crop after wheat harvest. One early maturity grain sorghum hybrid was entered in the test as a comparison. The names of all of these entries are listed in Table 1 with their respective growing degree days requirements supplied by the producer.

The previous crop of spring wheat (variety Indian 66) was grown on the Safford Experimental Farm near Safford in Graham County, Arizona. The wheat crop was harvested the week of June 7-11. The stubble was double ripped at 90^{o} angles and double disced. Sulphur was applied at the rate of 597 lbs per acre and urea at the rate of 90 lbs of N per acre. The seed bed was then single disced and bedded out into 40 inch beds.

A pre-irrigation of eight acre inches was applied on June 24, 1981 followed by four irrigations of four acre inches each on August 16, August 27, September 8 and September 22. A total of 24 acre inches of irrigation water was applied to grow this crop for the entire season.

The entire test was planted in moisture on July 9, 1981. Each entry was planted in a 4-row strip running the entire length of the field. All 6 entries were randomized in 4 replications. Hand applications of diazinon on July 30, lannate on August 14 and Sevin on September 12 were made for insect control. Sub-plots of 2 rows 20 feet long with typical growth and population were hand harvested on October 29, 1981 for grain yields. The hand harvested corn ears and sorghum heads were air dried to a uniform low moisture level for about 60 days before shelling and threshing respectively.

Results and Discussion

The grain yield results are presented in Table 1 along with bushel test weights and total plant heights. This test was too far from the University of Arizona to make the frequent trips necessary to obtain precise pollination dates. The growing degree days suggested by the producer of the five corn entries are presented in lieu of maturity information.

The two corn entries with growing degree day requirements of 2,500 and 2,300 ranked equally for the top yield in the test. The entry with a 2,400 growing degree day requirement yielded 14% less than the two top yielding entries. The two corn entries with the lowest and highest growing degree day requirements of 2,200 and 2,700 yielded less than the three mid-maturity entries. A later or earlier planting or an early freeze to shorten the growing season could make a difference in the results.

This corn yield of 6,100 lbs/acre under a double crop situation is superior to the Graham County crop budget figures of 4,885 lbs/acre yields county wide for grain sorghum under similar double cropping practices. This indicates that corn can be used in a double crop situation after wheat or barley in Graham County.

The wheat crop grown prior to this corn test yielded 4,500 lbs per acre. The total grain production of both wheat and corn on this land area from the fall of 1980 through the fall of 1981 came to 10,600 lbs of grain.

The grain yield for the single grain sorghum entry of 2,360 lbs/acre was less than half of the average yield for all corn entries and also less than half of the county wide expected yields for sorghum of 4,885 lbs/acre in a double crop situation. This one sorghum entry was too early in maturity to produce well and it was also very severely affected by iron chlorosis while the corn entries seemed to be only mildly affected. This sorghum entry was not very representative of the potential yield possible from sorghum.

Table 1. Agronomic Data for Corn and Sorghum Hybrids Grown as a Double Crop after Spring Wheat at Safford, Arizona, 1981.

Entry	Maturity Group	Bu. Wt. (lbs)	Plant Ht. (in.)	Yield[2/] (lbs/acre)
DeKalb XL-71 Corn	2500[1/]	58.5	96	6100
DeKalb XL-326AA Corn	2300[1/]	57.8	84	6090
DeKalb XL-67 Corn	2400[1/]	59.2	103	5240
DeKalb XL-25A Corn	2200[1/]	61.5	77	5030
DeKalb XL-74A Corn	2700[1/]	56.8	101	4440
Asgrow Dorado E Sorghum	Early	60.6	39	2360

1/Units are growing degree days (GDDs).
2/An iron chlorosis problem affected yield in all entries and was most severe in the sorghum.

Field Corn Variety Trial

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Haas Brothers Farms, Cooperator, Bonita, Arizona

Elevation: 4200 ft

Crop History:
Planted: April 17, 1981
Harvested: September 18, 1981
Seeding Rate: 31,400 plants per acre
Previous Crop: Corn
Insecticide: 1.5 lbs (A.I.) Sevin XLR per acre and 0.8 lbs (A.I.) Pounce per acre

Weed Control: 3.4 lbs/acre (A.I.) Sutan + and 1 lb/acre (A.I.) Bladex incorporated by disk prior to planting.

Fertilizer:

Source	Lbs/A	Time of Application	Lbs N/A	Lbs P_2O_5/A
18-46-0	225	Preplant	40	104
NH3	300	Preplant	250	
UN32	150	3 applications through center pivot	48	
		Total	338	104

Plot Size: 500' X 24' (eight 36" rows)