CIMMYT ANNUAL REPORT

ALGERIA 1974-1975

I. INTRODUCTION

This report summarizes the third year of the CIMMYT program in Algeria. Emphasis was continued in breeding and production research of cereals, and a program was initiated involving research on various phases of introducing annual Medicago to replace some of the fallow presently in cereal production.

Emphasis continues on training of young Algerian scientists both locally and in Mexico, Australia and Lebanon. Short travel grants have been given several Algerian agricultural officials for visits to CIMMYT center in Mexico City and to observe Medicago production in Australia.

II. CLIMATIC CONDITIONS

Rainfall during the 1973-1974 crop season was below normal in the West and East and about normal in the central region. The seasonal distribution was characterized by very dry and very wet periods as compared to average precipitation patterns.

Throughout all Algeria, the months of September, October and November were very dry. Good rainfall occurred during the last two weeks of December in most of Algeria. All of Algeria was dry throughout January and until mid-February. Heavy rainfall began in mid-February and continued in the West and Central portions of Algeria until the first week in May. In the East, rainfall amounts during these months were relatively less, and the total amounts were well below normal. At Constantine and Guelma, less than half of the 600 mm average precipitation was recorded.

Almost all of the wheat was seeded into dry soil, with emergence after rain in late December and early January. Since January was dry, growth was retarded, especially in the Eastern regions where rainfall was quite low in December. In the West and Central regions, December rain-

fall was sufficient to carry the wheat crop until rains began in February, allowing near normal development. Although the rainfall was general throughout Algeria in March and April, the amounts were less in the East which limited development, especially in the high plateau regions.

Temperatures were warmer than normal in the lower elevations during January and February. Growth of cereals was rapid and heading was about normal in these regions. However, in the high plateau regions temperatures were cold and development was later than normal.

In some regions, late April frosts caused considerable damage. Several severe hail storms in the Western high plateau region caused complete or partial lost of the wheat fields affected.

There was some damage from Siroccos, especially in the West, however, the frequency of siroccos was below normal. Most of the damage was due to drought conditions and late maturity causing severe grain shriveling and yield reduction.

Considerable loss of wheat from attacks of Stink bug occurred in some regions of the West. Fields that were treated controlled the damage 80 to 100%.

Heavy loss occurred from bird damage on the early fields. Some early fields were completely lost, especially those that headed in late February and early March.

The total area seeded with cereals in 1973-1974 was about 2,750.000 hectares or 95% of the planned production and about 13% more than in 1972-1973.

The weed problem continues to increase each year, especially the grass type species (wild oat, ryegrass, brome and Phlarius). It is difficult to estimate the average loss, since drought and other factors also contributed to the production simultaneously. However, a conservative estimate would be 20 to 25% of the production. Some fields were harvested for hay. A number of the fields for seed production were turned down

because of heavy weed infestation, especially the grasses, and had to be harvested for hay.

The 1973-1974 was the first year for the introduction of annual Medicago sp. About 2000 hectares were seeded. Results were variable. In the intermediate and low altitudes, growth was good and seed production was excellent - helped by the good April rainfall. In general, the results were very encouraging.

III. DISEASES

The only disease of major distribution in 1973-1974 was Septoria. Septoria was wide spread in the lower elevations of production. It developed in late February and continued to spread rapidly during March. Septoria was arrested in April as rainfall decreased and temperature increased. The attack was confined to the leaves with very little head infestation. Actual damage was limited, and occurred only on very well advanced fields in the higher rainfall regions. Yield loss from Septoria in 1973-1974 was the smallest since the introduction of high yielding varieties in Algeria.

Other foliar diseases were of little importance. Only traces of stem rust, leaf rust and stripe rust were found. Helminthosporium and Rynchosporium infection on barley were common, but damage was limited. Puccinia coronata heavily infested wild oats, but damage to the local varieties of oats grown was minimal.

Foot and root rots were present. Ophiobolus and Fusarium infections were common. Fusarium caused more wide spread damage than Ophiobolus. Total damage was very limited from these two diseases. The fact that these soil borne diseases are present and widely located indicates a future hazard if some effort is not directed to their control. Crop rotation management can improve this problem.

IV. PRODUCTION MANAGEMENT

Emphasis in production management shifted this year from studies on date of seeding and fertilizer management to more emphasis on weed control through crop rotation, clean fallow and introduction of annual Medicago. The advanced variety trials were continued.

The advanced variety trials included 39 varieties of wheat, 7 varieties of barley and 3 triticale varieties. These trials were planted on Domaines (state farms) at 18 locations in the different wheat producing zones. These are large plots of more than 100 m^2, replicated and planted with regular farm equipment. Fifteen locations were harvested. The yields of most promising varieties are given in tables 1, 2 and 3.

Anza was the most promising variety of bread wheat tested. It has good resistance to Septoria, excellent resistance to leaf and stripe rust, good quality and high yield. It has excellent straw strength, is 5 to 10 cm shorter than Siete Cerros, with good tillering capacity and shattering resistance. Anza was increased in two small plots and 9 quintals of seed were planted for increase in 1975.

Although some of the selections of bread wheat had excellent yield, other characteristics were less favorable. The selections Mex50 x B_{21}4-3-5-4-2, T.D.T. 64-2-M-3 and T64 2w-K338 x EDC-Koufdiat were eliminated because of poor test weight, quality and threshability. BT 908 has good yield but only fair quality and is very susceptible to stem rust.

Table 1

Average yield of bread wheat varieties for the 3 cereal zones, average of all stations, and percentage of check varieties for the 1973-1974 Production Research Program.

Variety	No. location	Algiers	Oran	Constantine	all locations	% of check
		Yield Qx/ha				
Anza	15	36.94	24.17	23.46	27.72	145
Mex50 x B_{21} II 4-3-5-4-2	6	38.96	19.32	-----	31.88	132
BT 908	5	40.32	13.44	25.98	29.20	131
TDT 64-2-M-3	5	36.82	23.80	21.24	27.99	124
T64 2w-K338 x EDC-Kouïdiat	10	37.16	18.90	17.74	25.74	123
Siete Cerros	14	36.96	19.03	19.52	24.26	121
Soltane	15	31.08	21.67	16.61	22.82	119
Zambezi	11	31.35	13.97	20.36	23.22	118
Strampelli	11	34.60	17.10	-----	23.46	116
ERA	15	31.49	18.71	17.13	21.70	113
Potam (?)	11	30.87	12.03	19.18	22.06	112
Kl Rend-Son 64 x Inia-Cno "S"	10	28.26	11.92	21.20	21.24	101
Cajeme 71	7	28.34	-----	18.92	24.30	100
°) Mahon Demias	13	25.49	15.85	16.03	17.39	100
°) Florence Aurore	3	28.69	-----	-----	28.69	100

°) Check - Varieties

Table 2

Average yield of durum varieties for the 3 cereal zones, average of all stations, and percentage of check varieties for 1973-1974 Production Research Program.

Variety	No. location	Algiers	Oran	Constantine	all locations	% of check
		Yield Qx/ha				
Capieti	7	-----	24.59	-----	24.59	172
Crane "S"-B	6	32.38	13.50	30.23	28.52	148
Anhinga II	9	36.20	16.05	20.13	24.13	143
Cisne "S"	10	35.84	13.08	18.44	21.95	141
Cocorit 71	15	30.49	21.80	15.07	22.59	139
Crane "S"	6	28.98	14.88	-----	21.93	136
INRAT 69	14	26.26	22.49	19.54	22.93	135
Quilafen	6	26.40	8.46	19.11	23.72	133
Anhinga I	10	31.36	13.33	16.39	19.97	129
Jori 69	14	23.80	18.90	19.37	20.40	120
°) Oued Zenati	15	21.36	14.23	14.62	16.23	100

°) Check - Varieties

ERA has outstanding resistance to Septoria, has good yield but has late maturity. ERA may be adapted to very early seeding and needs to be evaluated for this purpose, especiallyfor the high plateau. Soltane will replace INIA as soon as adequate seed is available.

Of the durum varieties reported in table 2, Cocorit 71 continues to yield very well. Since it is very early, it is susceptible to late frost and is not adapted to the high plateau regions. Although it is susceptible to Septoria it is more tolerant than Jori 69. Its main disadvantage is poor quality due to high percent of yellow berry. It will replace Jori when seed is available, since it has not performed very well in commercial production due to lack of disease and frost resistance.

Capieti and INRAT 69 are recommended varieties and will be put into production as soon as seed supplies are adequate. Capieti has yielded well in the Oran region. INRAT 69 is adapted to elevations below 500 meters.

Of the new durum selections, Crane "S" B, Anhinga II and Cisne "S" are the most promising. Cisne "S" has the same pedigree as Cocorit, but is later and taller with less yellow berry. It will be better adapted to the lower rainfall areas and high plateau than Cocorit. Anhinga II is susceptible to lodging, but has high yield, good quality and a desirable maturity and height. Crane "S" B is similar to Cocorit but better quality.

Table 3

Average yield of triticale and barley varieties for the 3 cereal zones, average of all stations, and percentage of check varieties for 1973-1974 Production Research Program.

Variety	No. location	Algiers	Oran	Constantine	all locations	% of check
		Yield Qx/ha				
Cinnamon	13	29.34	20.92	28.38	24.66	96°°)
V-306	13	29.73	21.43	24.99	24.54	95
PM-132	13	17.92	12.06	20.30	15.12	59
Zemyr	4	-----	37.75	28.95	33.35	145
Maguelone	4	43.46	15.90	-----	36.57	137
Aurore	6	-----	32.88	22.02	25.64	123
Ceres	10	32.61	27.32	23.94	26.17	119
Ager	9	35.74	27.44	15.46	24.89	102
°) Safda	9	31.85	18.36	20.88	21.91	---
°) Tichedrett	8	31.30	17.67	21.72	21.46	---

°) Check - Varieties
°°) % of Siete Cerros

In 1974 barley was higher yielding than wheat in most of the trials as shown in table 3. Zemyr and Maguelone were the outstanding varieties. These varieties have been continued in the trials for 1975 and should be increased for replacement of the old standard varieties.

The triticale varieties Cinnamon and V-306 were inferior to Siete Cerros in yield, however these are old varieties. Newer varieties with better test weight and yield should be introduced and tested. Many of the new selections in the breeding program look better than the two varieties that were tested. PM 132 is a forage type and had poor grain yield. It has a brittle rachis resulting in heavy spikelet shattering by the wind.

V. HERBICIDE TRIALS

Seven herbicide trials were established in the central region of Algeria. Three of the trials were applied for control of grass type weeds and four for the control of broad leaf weeds in wheat.

Weeds are the major problem limiting wheat production in Algeria. Heavy populations of both grass type and broad leaf weeds caused heavy yield losses of wheat in 1974. The heavier application of fertilizer to increase yield also favors weed development increasing the competitive effect of the weeds which reduces the efficiency of the fertilizer response on wheat. The control of the weed problem must be attacked by both cultural and chemical methods.

The preparation of a good seedbed and pre-plant tillage for weeds are an absolute necessity for weed control. The major difference between the high yields we obtain in our advanced variety trials conducted on the Domaine fields and the yield of the wheat in the same field by the Domaine has been the pre-plant seedbed preparation, with more timely herbicide application. The difference in the land preparation for the variety trials has been one or at the most two additional pre-plant tillage operations. The additional seedbed preparation helps establish

a uniform stand of wheat, destroys germinating weeds which enables the wheat to compete better with a smaller weed population that may germinate later.

The effect of early competition on wheat yields by broadleaf weeds is illustrated in table 4. Where the weeds were controlled by chemicals applied in the early tillering stage, the yield was increased an average of 7 quintals per hectare, while later control with 2, 4-D resulted in less than a 5 quintal increase. The early application of the herbicide increased the yield by more than 35% compared to the check yield with no herbicide application. Timely application by 2, 4-D is still an effective control measure for broadleaf weeds.

The ideal time for application of 2, 4-D (between end of tillering and before early boot stage) is very short, less than three weeks. Adverse weather during this growth period often further restricts application time. Increasing the length of application treatment period with chemicals like Quinorexone SP. and Oxytril M will make it possible to have more effective herbicide control of the broadleaf weeds.

Three trials were established for the selective control of grass type weeds with herbicides in wheat. All applications were made when the grass weeds were in the 1 to 3 leaf stage under dry soil conditions. No rainfall occurred for more than 30 days after application. Since the chemicals used need to be absorbed by the roots, there was no movement of the chemical into the soil until after the grassy weeds had become resistant and very little control was observed. At heading time there was no difference between control and treated plots for grass weed control. No harvest data was collected as yield difference would only reflect variable grass population not associated with the herbicide application.

The treatment with Suffix for wild oats did not give as good results this year. All applications were made at six liters per hectare, compared to 7.5 liters last year. In general, the wild oats were stunted and

retarded, but some survived and produced seed. Complete control was obtained in 1973 compared to partial control in 1974. Testing will continue at different rates of Suffix. Low density of wild oats in the test areas resulted in no significant yield increase in the Suffix plots.

Table 4

Yield of Strampelli wheat and weed control observed at El Asnam with application by commercial sprayer.

Herbicide	Wheat Stage of Growth	Control Broad Leaf Weeds	Yield Qx/ha	Increase over Check
Quinorexone sp.	4 leaf-1st tiller	99	27.69	7.74
Actril	"	70	27.35	7.40
Troptone	"	60	26.76	6.81
Oxytril M	"	99	26.57	6.62
Buctril M	"	80	25.39	5.44
2, 4-D	End of tillering	95	24.70	4.75
Check	-	0	19.95	-
C.V. : 11.36%				
L.S.D. 05 : 4.93 Qx/ha				

VI. MEDICAGO STUDIES

Medicago variety trials were established in all of the major wheat regions in 1974. Five varieties were planted in most of the trials. Harbinger and Jemalong appear to be well adapted over most of Algeria. Tornfield was early and gave less growth than the first two. Paragosa produced good growth and seed set. Snail developed rapidly especially in the drier areas, probably due to the larger seed. All of the varieties set good seed yields. The ability to reseed after wheat has to be determined in the 1976 crop year.

One of the factors which became evident with the Medicago plantings in 1974 is the high incidence of native Medicago in the wheat area. Many of the Medicago plantings had a high incidence of volunteer Medicago. Often the natural medic was more aggressive than the planted medic. We observed several fields of well established native Medicago. In many fields the native Medicago could be established in a rotation with the addition of phosphate to encourage growth and seed production.

One of the major handicaps toward establishing a Medicago wheat rotation observed in 1974 was the difficulty to control the grazing on the Medicago seedings for adequate weed control and good seed set of the medic. Since there are no fenced fields, all of the pasturing of livestock has to be done by shepards. Lack of water near the medic plantings is a handicap to controlled grazing by livestock. These problems will have to be solved to obtain the maximum benefit from Medicago wheat rotation.

Rotation experiments with Medicago were established in all three regions. These rotations included wheat, Medicago and a hay forage crop of vetch and cereal. 1975 will to be the first year of results after Medicago.

Tillage management experiments were established in each region of Algeria. Clean fallow is being compared to conventional fallow with pasturing. The yields from these trials will be obtained in 1975.

VII. SEED PRODUCTION

In 1974 CIMMYT was given the responsability to improve the seed production of the early generations of wheat seed increase. The program was carried out in the region of Constantine under F. Flouin's leadership. Seed was produced for the first three generations of increase of 23 different varieties of cereals.

The program was carried out on eight domaines and the experimental station at El Kroub. All operations of seeding, weed control, roguing and harvesting were overseen. Seed cleaning was done by OAIC with the supervision of the Projet Cereales at the El Kroub station.

The program included the training of four technicians in seed production during part of the period and would have been more effective if there had been more people available for training. One of the most important benefits from the program was the demonstration that good seed can be produced even under the adverse weather conditions that prevailed. The training of the domaine personnel in good wheat production procedures was also accomplished.

The production from the third generation increase of bread wheat averaged 15.22 Qx/ha, durum wheat 15.26 Qx/ha and barley averaged 27.21 Qx/ha. This compares to the regional average of about 5 Qx/ha for Constantine region. The increase in production was the result of better seed bed preparation, timely seeding and weed control. Rainfall for the region was 320 mm, less than one half of normal. These yield results confirm the importance of good management for wheat production.

VIII. VARIETAL IMPROVEMENT SECTION

The major cereal growing zone in northern Algeria represented by a band of approximately 100 kilometers in width has six cereal research stations. There are two stations in each of the 3 regions classified on the basis of altitude.

These are as follows:

	Altitude (meters)	Average annual rainfall (millimeters)
1) Plain or littoral zone		
a) Algiers (Central)	59	762
b) Guelma (East)	270	677
2) Hilly or Sub-littoral zone		
a) Sidi-bel-Abbes (West)	486	395
b) Constantine (East)	600	594
3) High Plateau		
a) Ain-el-Hadjar (West)	950	430
b) Sétif (East)	1081	469

The three eastern stations (Guelma, Constantine, Sétif) received less than half of their normal annual rainfall during the 1973-1974 crop season. However, spring distribution was adequate to realize yields of 1.5-3.0 tons under good management. The drought stress and lack of late rainfall favored the earlier maturing varieties in both the screening nurseries and yield trials.

In contrast to the eastern region, the central and western regions received average annual rainfall amounts and although distribution was irregular, crop development was very good. Some shriveling was experienced in the West due to arrival of siroccos prior to maturity.

During the 1972-1973 crop season, the major emphasis in the crossing program was toward new durum wheats with a broader genetic base.

For lack of more disease resistant and better adapted durum lines and varieties, the variety Jori, although susceptible to Septoria and leaf rust, has been grown commercially for the past two years. The Mexican variety Cocorit 71 and Tunisian variety INRAT 69 are being multiplied for commercial production.

The commercially grown high yielding varieties of bread wheat are mainly Siete Cerros, Strampelli and Inia 66, however Soltane is being multiplied toward replacing Inia 66. The major advantages of Soltane over Inia 66 are much higher level of resistance to Septoria, better tillering ability and a longer vegetative cycle which provides good general adaption and stability of production.

1. BREAD WHEATS

Although the immediate region of Algiers is not a major cereal zone, its high annual rainfall provides optimum conditions for measuring yield potential and disease resistance. The results of the superior bread wheat lines from eleven-1st year and four-2nd year micro-yield trials are given in table 5. All of these lines had higher yields and lower Septoria readings in their respective trials than the average of the two best check varieties - Soltane and Strampelli. These lines also performed well at the other regional stations in the East and West. Four lines and varieties mentioned specifically are:

a) Inia - Tob x Np CM 746-5I-0I-OBK which ranked 1st at 3 stations and 3rd on the fourth station;
b) Bb"S" x CC-Inia 30521-20M-2Mch-2Mch-OMch-OBK ranking 1st at all 3 stations tested;
c) Anza or Mexicani which ranked at or near the top in all trials, and
d) Mexicano 1481 which was always near the top-yielders. The latter, however, has very soft grain and will probably be eliminated on the basis of quality.

This list of advanced lines are a collection of Septoria resistant genotypes that were selected under heavy infestations across North Africa. The pedigrees commonly indicate selections from Marrakech (MK) or Merchouche (Mch), Morocco; Beja (Bj), Tunis (TU) and Manouba (MB), Tunisia and Baraki (BK) (Algiers), Algeria. In some instances the lines came through screening nurseries or segregating material directly from Mexico (Y, M, T).

The advanced lines and varieties in table 6. are some of the best Septoria resistant bread wheats selected from the different screening nurseries during the 1973-1974 crop season. Many of these varieties have also been reported as resistant in other countries with heavy Septoria infestations. There were a total of 9 sister lines with Septoria readings of 5-6 selected from the cross $(Cno\text{-}7C)^2 \times CC\text{-}Tob$ CM-1679-1M-4Y-2M-1Y-500M-0Y-0BK.

The strong emphasis by CIMMYT during the past 7 years in developing genotypes with resistance to Septoria tritici has been the key to the large number of advanced lines available with resistance and yielding ability.

Table 5. Characteristics of the Superior Bread Wheat Lines in 1st and 2nd Year Yield Trials at the Central Research Station - Algiers, Algeria 1973-1974

Genotype and pedigree	Yield t/ha	% of check[1])	grain classif.	days from germination to heading	height cms	% yellow berry	Septoria tritici
We x Bb-Nor/Cj CM-11438-A-4Y-OBK	7.4	115	1R	130	115	10	5
(LR64[2]- Son 64/Tob-HD832 x Cno"S") Bb4A CM-8245-E-8M-2Y-OBK	7.0	109	1R°)	132	115	--	4°)
Inia-Tob x Np CM-746-5I-0I-OBK	7.6	118	1R	123	105	30	4-5
Tapp-Son 64 x NP/Cno "S" - Inia "S" 34002-2Mch-4MK-OMch-OBK	7.7	102	1B(t)	125	95	60	5
HD832-Nor/Cno"S"- Cal x Nad CM-5618-G-7Y-OM-OMch -OBK	7.8	103	2R	129	110	50	4°)
Mex1481 x Tob-8156/Tob-Cno"S" x 7C CM-5891-A-7Y-OM-OMch-OBK	7.6	100	2B	125	100	30	5
Bb-Nar x Cno"S"- 7C CM-1586-OM-1Mch-OMch-OBK	7.9	104	1RC	121	110	50	4
CC-Inia x Inia"S"/NP 876 30845-6Mch-6Mch-OMch-OBK	7.7	102	2B°)	125	105	--	4°)

Table 5. (contd.)

Genotype and pedigree	Yield t/ha	% of check [1])	grain classif.	days from germination to heading	height cms	% yellow berry	Septoria tritici
CC-Inia x Inia"S"/NP 876 30845-7Mch-7Mch-OMch-OBK	8.0	106	2B°)	128	105	--	4°)
Pato(B) x CC-Inia CM-1021-10MB-2BK-OBK	7.3	104	3B	124	95	80	5°)
Pato(B) x Tor CM-1022-1MB-2BK-OBK	7.1	101	2B	127	100	60	4°)
Bb-Pato x Cno"S"-7C CM-2473-4MB-1BK-OBK	6.5	102	1R°)	131	105	10	5
Son 64-Tzpp x Nai/Cno"S" 30906-1Bj-2Bj-1BK-OBK	6.6	104	2R	145	115	60	4°)
Bb"S" x CC-Inia 30521-20M-2Mch-2Mch-OMch-OBK	6.9	106	1R	127	110	20	6
Pato x Cno"S"[2]-Tob 66 30524-8M-1Mch-1Mch-OMch-OBK	6.7	103	2R	129	100	20	5
CC-Inia/Cno x El Gau-Son 64 30565-20M-2Mch-3Mch-OMch-OBK	6.6	102	2R	128	100	10	6
CC-Inia x Bb"S" 30566-9M-2Mch-5Mch-OMch-OBK	6.9	106	2R	131	95	10	7
[(U-Sk x San P)]Mara x Cno"S"-Inia"S" 31356-2M-1Mch-2Mch-OMch-OBK	7.0	101	2R	121	95	50	6

Table 5. (contd.)

Genotype and pedigree	Yield t/ha	% of check [1]	grain classif.	days from germination to heading	height cms	% yellow berry	Septoria tritici
Cno"S"/Tzpp-Son 64 x Np 63 27842-37Y-1M-1Mch-OMch-OBK	7.5	108	1B°)	125	105	20	4
Son-Knott* 2 x Gallo 30922-12TU-1MB-3BK-OBK	7.1	103	2B	148	115	80	4
Pato(B)-Inia CM-1021-1MB-100BK-OBK	7.6	108	2B+R	129	100	80	5
Cno-Inia (K1 Rend-Son 64[2] x Inia/Cno) II-35255-5Y-1M-1Y-OM-OBK	6.5	108	1RC	120	90	20	6
Bb(Son 64-An 64 x Nad/Jar"S") II-34795-5Y-1M-3Y-CM-OBK	6.6	110	1RC	125	95	20	5
Sparrow "S" CM-2182-5M-1Y-1M-OY-OBK	6.2	108	2RC	123	100	60	5
[(Un-S11 x San P/Mara) Son 64-Pur] Cno"S"-Inia"S"	6.5	109	2RC	128	100	20	6
Np-Tob"S" x 8156(R) 28071-7M-3Y-1M-OY-OBK	6.9	105	2B	126	100	--	4
(Son 64 x Tzpp-Nai/Np) x (LR 64 x Tzpp-An$_E$)/Cno 24313-12R-3M-IT-OBK	6.4	106	2R	123	95	30	7

Table 5. (contd.)

Genotype and pedigree	Yield t/ha	% of check [1])	grain classif.	days from germination to heading	height cms	% yellow berry	Septoria tritici
Anza	7.0	109	2R	134	95	50	3
Soltane (average all trials)	6.4	100	2R	125	105	50	5
Strampelli "	6.8		2R(t)	140	110	80	3
Siete Cerros	6.2		2B	134	105	--	8

[1]) The check is an average of the best varieties - Soltane and Strampelli - within each individual yield trial.

Table 6. Characteristics of some excellent Septoria tritici resistant bread wheat lines and varieties under heavy attack in Algiers, Algeria 1973-1974

Variety or Line	grain classif.	height (cms)	% yellow berry	% shriveling	Septoria tritici
Yr-Cal CM-6173-7M-1Y-3M-OY-OBK	2R	105	----	30	5++
RR68-WW15/Ji"S" x Cno-No66 CM-12272-N-1Y-1M-OY-OBK	2R+	105	20	--	5++
RR68-WW15/Bj"S"-Cn^{2} x Bon CM-12273-A-2Y-2M-OY-OBK	2R	85	50	--	6
RR68-WW15/Bj"S"-Cn x Bon CM-12273-A-2Y-7M-OY-OBK	2R	95	30	--	4++
UN105 = (LR-N10 B-An$_{E}^{3}$)^{2}Pj62-Gb56^{4} x Tzpp-Nai60	2B+(+R)	90	--	--	5+
[(Y48 x K58-N/Fr-KAD)] Gb Coutiches	1B(t)	110	30	--	5+
(Cno-7C)^{2}x CC-Tob 1/ CM-1679-1M-4Y-2M-1Y-500M-OY-OBK	2R	100	10	10	5
Np63-Tob"S" x 8156(R) 28071-7M-3Y-5M-1Y-OM-OBK	2B	80	--	20	5
Fletcher	3R	110	--	40	3+

Variety or Line	grain classif.	height (cms)	% of yellow berry	% shriveling	Septoria tritici
Vg8881(Fn-Th^3 x II-44-29/Th^2) N018-3P-6P-1P-0Y-0BK	3R	100	--	30	5
Romany Code/70 = 12	2RC	115	50	--	3++
Irenerio	2R	80	20	50	3+
Emeck 132	2R + 2B+	85	--	10	5
## 1959	2R	100	30	20	5
PI 29300	2R	105	--	50	3
Tob-B Man x Bb 25998-5B-3J-10IJ-4Y-1M-0Y-0BK	1B+	90	--	--	6
Nova Prata	1R long	115	--	20	5

1/ There were 8 sisters selected with Septoria readings of 5 and 6.

2. DURUM WHEAT

Although large quantities of durum wheat breeding lines have been observed and selected in the Algerian program during the past 3 years, the emphasis on generating new genetic diversity through the crossing program has only begun during the present crop season.
The locally grown varieties, although very tall and susceptible to rusts, have excellent grain, some Septoria tolerance and general adaptation to the rainfed cereal zones of Algeria. These varieties are being widely crossed with the higher yielding, short straw types from other countries.

Some of the best durum lines from the 1st and 2nd year micro-yield trials are given in table 7.
Although most of the lines are direct selections from CIMMYT Screening Nurseries, the first entry, D 70-94, is a Tunisian cross and the second a CIMMYT cross using a Tunisian F_3 plant having Septoria tritici resistance under heavy infestation in Algiers.
Continued emphasis will be placed on diversifying the genotypes in the durum wheats. The regional disease and insect screening nurseries and exchange of breeding material between countries has begun to assemble the better sources of resistance for Septoria and the rusts which are the most pressing needs in Algeria and North Africa.

3. BARLEY

The barley area in Algeria is mainly restricted to the dryer regions in the south. Two local varieties, Saïda and Tichedrett are well-adapted and have a yield potential of 4.0 tons under good management condition. The most pressing need in the barley crop is increased disease resistance for Rhyncosporium, Helminthosporium, Powdery Mildew and leaf rust.

Three varieties and lines of 2 row barley yielding well at 4 stations were Zemyr, Esperance x Sv Mari and Selection 168. The best 6 row

Table 7. Characteristics of the Superior Durum Wheat lines in 1st and 2nd Year Yield Trials at the Central Research Station - Algiers, Algeria 1973-1974

Genotype and pedigree	Yield t/ha	check yield %	grain classif.	Days from germination to heading	height (cms)	% yellow berry	Septoria tritici
D70-94 = D. 69. 44 x D69. 41	6.4	104	1A + R	142	100	30	4
Cr"S"-F_3 Tun x AA"S"/Fg"S" CM-10200-2BK-OBK	5.9	96	2A	135	95	50	4
Jo"S"-Cr"S" x Gs"S"-AA"S" CM-9902-5M-2Y-OBK	6.2	113	1A	134	95	10	6
Gav"S" - Pg"S" CM-10142-39M-OY-OBK	5.7	104	2A	135	100	10	5
By_{II} - Tc^5 x Gs"S" CM-55-50M-2Y-6M-OY-OBK	5.8	105	1A	134	100	--	5
Gll"S" x T. dic vernum-Gll"S" CM-86-1M-2Y-6M-OY-OBK	5.3	96	1A	126	90	--	8
21563-AA"S" D-27625-5M-2Y-2M-2Y-OM-OBK	6.0	101	1A	130	90	20	4
Cocorit 71	5.6	100	2A	122	95		7
INRAT 69	5.6	---	1A	136	120		6
Capeiti	2.9	52	2A	135	120		7
Didi 17	4.0	71	1A	151	135		5

barleys were cross 7028 x 2759, Arivat x Athenais, Bernice, Ager, Astrix and Maguelone. You will note that most of these varieties and lines orginated in France. A newly named French variety, Robur, was found resistant to all diseases, has good agronomic and grain type. It was multiplied for inclusion in yield trials during the coming season.

4. TRITICALES

The triticale program started with a screening nursery and yield trial during 1971-1972 and has now expanded to several screening nurseries, yield trials and three generations of segregating material distributed widely on all stations both high plateau and the plains area.

The screening nurseries and segregating lines are being severely selected for good grain types and many promising lines are being advanced to yield trials. One particular cross that yields well and has good grain is Maya II - Arm "S". The triticale nurseries will be more widely distributed during the coming year.

IX. TRAINING

The training program continues to advance with the following numbers sent outside Algeria during the past year:

Location	Nos.
CIMMYT-Breeding and Pathology	3
CIMMYT-Quality Lab	1
CIMMYT-Production	5
Australia-Medicago	2
Lebanon-Grain legumes	2

The names, field of training and duration of training are presented in table 8.

Also listed are five grants presented for consulting missions, attending conference or visits to other countries to study improved techniques relative to existing programs. Continuous emphasis must be placed on training and consulting missions to properly equip the Algerian cereal institute with well-informed and qualified scientists.

Table 8. CIMMYT sponsored trainees, consultants and government officials during the contract year September 1973 to September 1974.

Recipient	Field of training or study	Departure	Return
Lamari, Lakhdar	CIMMYT-Durum Breeding	Febr. 3, 1974	Oct. 30, 1974
Khelfi, Ahmed	CIMMYT-Triticale Breeding	"	"
Bouzerzour, Hamena	CIMMYT-Plant Pathology	"	"
Ait Idir, Idir	CIMMYT-Cereal Technology	March 13, 1974	Aug. 20, 1974
Ameur, Mohamed	CIMMYT-Production	Oct. 30, 1973	July 1, 1974
Boukhedimi, Mohamed	" "	"	"
Zeghida, Ali	" "	"	"
Mostefa-Kara, Abdelkafi	" "	"	"
Ait Amer Meziane, Aomar	" "	"	"
Adem, Lakhdar	a) Australia-Medicago	August 22, 1974	Dec. 15, 1974
	b) Begin M.Sc. program-Waite Institute	Dec. 16, 1974	-------
Bouazza, Lakhdar	Australia-Medicago	Aug. 22, 1974	Dec. 15, 1974
Ould Said, Hocine	Lebanon-grain legumes	March 17, 1974	Aug. 16, 1974
Nait Dahmane, Toufik	" " "	"	"
Carter, Edward Dr.	Australian Consultant to Algeria for Medicago	March 18, 1974	April 28, 1974

Recipient	Field of training or study	Departure	Return
Lakhdar Chaouch, Lakhdar	Participant at 2nd Regional Workshop-Ankara, Turkey	May 4, 1974	May 13, 1974
Laddada, Mohamed	" " "	"	"
Boukli, Nourredine (General Secretary for Agriculture)	Australian Visit-Medicago USA-visit-date palm diseases Mexico-visit CIMMYT	Aug. 20, 1974	Sept. 14, 1974
Hadra, Nourredine (Director of Cereal Project)	Australian visit-Medicago	Aug. 18, 1974	Sept. 10, 1974