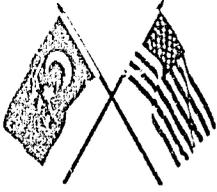


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# Participant

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## *Journal*



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# FOREWORD

This issue of the *Participant Journal* is among the most important we have published. It recounts events which can—and will—obliterate the difficult past. It heralds stunning vistas of the future.

A man in Tarsus decided to grow a dream. He planted a seed of hope and harvested a crop which is the future; he began alone. It is often that a reform begins in the mind of one man. Today 101 farmers in Çukurova have followed him. And all Turkey is watching as the dream comes true—as this green wonder burgeons into gold.

Soon, because of the vision of these men of Çukurova, Turkey can join the ranks of the countries crusading against hunger. Now there is no doubt that in just a few years she will harvest much more wheat than even her own fast-expanding population will need. Then the Turkish farmer who has learned to help himself can also help assuage the hunger of others.

The clock of progress cannot be turned back so long as there are such men as these farmers of Çukurova. But how fast this clock will advance will depend on all Turks—not only on these Çukurova pioneers, but on farmers in the most remote and neglected regions of the land. What is essential is not merely individual effort, but national effort. What is imperative is that progressive men work with and for all men of Turkey in this great enterprise.

Many of these Çukurova farmers who are changing the path of Kismet—the pre-judgment of fate—were heroes of the War of Independence.

They did not, then, meekly wait for help. They got together, attacked, and liberated Çukurova from the invaders. Today they have again begun a revolution, but with plowshares instead of guns.

They are convinced that poverty and ignorance are not natural for people whose faith is rooted in their own land. They believe this land they bled to save will repay them—and all Turkey—in golden harvest. But, just as in a military revolution, the strength and dedication of the leaders must be supported by the courage and conviction of the people. The skilled must train the less skilled; those who have obtained know-how must train those who have not; the progressive must inspire others to equal energy and zeal. Then "progressive" will become a national characteristic, and not just a solitary adjective to be prefixed to a small minority.

What has happened in Çukurova is no temporary panacea. It is the beginning of a national program that cannot—must not—fail. It is the beginning of a mammoth change which is not only physical but psychological and philosophical. It is an awakening from slumberous lethargy and semi-grasped theory to down-to-earth reality. It is as if the end of a long corridor of darkness emerges on a man-made monument, designed as a golden sheaf of wheat, and inscribed, "The Past is the Past—the Present is the Future."

THE EDITOR

# HARVEST



"I want to thank you on behalf of Turkey."

These few simple words said by Bahri Dağdaş, Minister of Agriculture, on June 2, to all assembled on a Çukurova field, where the harvesting of Mexican wheat was being carried out, were the culmination of a dream, and the beginning of a reform and a revolution.

Earlier in the day the Minister was met at Adana airport by an enthusiastic crowd—two Çukurova governors, scores of Çukurova farmers, most of the agricultural technicians of the Çukurova region, USAID's deputy and assistant directors, newsmen and photographers. The governor of Mersin presented the minister with a bouquet of Mexican wheat.

Then, on the fields of the Tarsus farmer who was the first to bring Mexican wheat to Turkey, Minister Dağdaş witnessed the harvesting of 500 kilograms of Sonora 64 wheat from one decare, and 550 kilograms from one decare of Lerma Roja—at least three times the average harvest this year from fields seeded with local variety wheat.

Minister Dağdaş told the farmers of Çukurova: "I always said that this country had the potential to feed not 30 but 100 million people. You farmers of Çukurova have proved it."

*A Minister in the field. Before the combine went into the field in Tarsus Minister of Agriculture Babri Dağdaş cut the first wheat that is making history in Turkey. For other pictures of Mexican wheat harvesting in Çukurova see page 76.*





*Tarım Bakanı Babri Dağdaş  
USAID  
Türkiye Misyon Başkanı  
James P. Grant ile beraber.*

## **YENİLGİYE UĞRAMAYACAK OLAN YENİ BİR DEVİRİM**

*Yazan:  
Babri Dağdaş  
Tarım Bakanı*

**B**ugünü yaşamakta olan bizler için; artık geçmişi bırakıp, geleceğin yaşantısına girdiğimizi birdenbire kavramak hayli güç bir iştir. Keza 101 Türk çiftçisinin kendisine akademik ve teknik yolla sağlanan imkan sayesinde, siyaset adamlarımızın ve gelmiş geçmiş önderlerimizin nesiller boyunca arzu ettikleri reformu kısa bir zaman içinde başarı ile tahakkuk yoluna koymuş olmalarını anlamak bir hayli zordur. Bu misal bize Türk çiftçisinin yaratıcılık gücünün ne kadar yüksek olduğunu göstermektedir. Çiftçimize iyi yol gösterildiği takdirde başaramayacağı bir zorluk tasavvur edilemez. Hatta zaman zaman Türk çiftçisinin yanımda ve ilerimizde olduğunu her an müşahede etmek mümkündür.

Filhakika Çukurova'da geçen seneden beri cereyan etmekte olan ve diğer bölgelere de intikal ettirilmiş bir olay, sessiz zirai bir devrim karakterini göstermektedir. Bu devrimin gayesi aç olan insanları doyurmak suretiyle ızdıraplarını gidermekten ibarettir.

Bir başlangıç olarak gözükken bu devrim, gelecek nesillerce olaylar serin kanlılıkla gözden geçirildiği takdirde önemli bir mana taşımakta olduğu anlaşılacaktır. Bizim neslimiz ise bugün gelişmekte olan bu devrimin sadece yenilgiye uğramaması ve mutlaka kazanılması hakikatini savunan bir kuşaktır.

Esasen inancımız odur ki bu devrim mutlaka başarı ile sonuçlanacaktır.

Çukurova çiftçisi ne yapmıştır? Bir yıl önce başka bir yerden tedarik edilmiş bulunan az miktarda (Sonora 64) ve Lerma Roja adlı buğday çeşidini ekmiş ve bundan 500 kilo kadar mahsul alınabileceğini ilgi ve hayretle müşahede etmiştir. Bu müşahede Çukurova çiftçisini kamçulamış ve Tarım Bakanlığının uzağı gören teşebbüsü ile, bu çeşit buğdaydan 60 ton tohumluk temin olunarak 101 çiftçi tarlasında geniş olarak ekilmiş ve bununla dönüme verimin ortalama olarak 400 kiloya kadar çıkarılma imkanının mevcut olduğu görülmüştür. Bu bölge çiftçileri tarafından öteden beri ekilmekte bulunan Floransa buğday çeşidinden dekara ortalama 140 Kg. verim alınabilmektedir. Yapılan iş yalnız bir çeşit getirme meselesi değildir. Aynı çiftçiler (Sonora 64) buğday çeşidini ettikleri tarlaların beher dekarına 12 kilo saf azot (60 kilo amonyum sülfat karşılığı) kullanmışlardır. Bu suretle buğday ziraatında gübre kullanmayı adet edinmişlerdir. Yerli buğday çeşitlerinde bu miktar gübrenin kullanılması halinde ekin yatmakta ve Sonora 64 ise sapları sağlam olduğundan yatmamakta ve bunun sonucu olarak da 2-3 misli fazla mahsul vermektedir. Bununla da yetinilmeyip tarlalar tesviye edilmiş, iyi bir tohum yatağı hazırlanmış ve tohum mibzerle ekilmek suretiyle, tohumdan yüzde 100 tasarruf sağlanmıştır.

Meksika'dan getirilmiş bulunan Sonora 64 ve benzeri çeşitler Rockefeller vakfiyesi tarafından 1944 yılında kurularak 1962'de sonuçlarını vermeğe başlamış bulunan Meksika Milli Hububat Araştırma Enstitüsü tarafından islah edilmişlerdir.

Bu çeşitler Meksika'nın kuru ikliminde sulu ve gübreli şartlarında başarı ile yetiştirildikleri halde Türkiye'nin 600 mm. yıllık yağışı olan

Akdeniz, Ege ve Marmara Bölgelerinde başarı ile yetistirilmiş ve aynı verim sağlanmıştır. Bu da gösteriyor ki Yakın Doğuda yapılacak olan buğday araştırma merkezi için, her türlü ekolojiyi bünyesinde bulunduran Türkiye'nin en ideal namzet olması tabiidir.

Diğer önemli nokta Çukurova'da yapılan bu çalışmalar sayesinde, Türkiye'nin ve hatta insanlığın başlıca gıda maddesini teşkil eden buğday üretiminde alınan bu tedbirler sayesinde tarihi bir değişiklik yaratılmıştır. Bu değişiklik Türkiye'nin geleceğini emniyet altına almayı sağlayacağından, bu devrim anıldığı zaman tarım uzmanları ile beraber Çukurova çiftçisi daima haklı olarak yad edilecektir.

Bu çalışmaların ışığı altında ve 1966 yılında ekimi yapılan 60 ton buğday tohumluğunun gerek çiftçi tarlalarında ve gerekse müesseselerdeki benzer çeşitlerle yapılan müşahedeler sonunda bu tip buğdayların, memleketimizin Akdeniz, Ege ve Marmara bölgelerinde iyi bir verim sağlayacakları anlaşılmış bulunmakta ve bu bölgelerin tohumluk ihtiyacını karşılamak maksadıyla, 20 bin ton tohumluğun ithal olunarak ektilmesi planlanmıştır.

Tarım Bakanlığı uzmanlarınca bölgelerde tertiplenmiş bulunan tarla günleri ve eğitimler, çiftçinin yakın ilgisini sağlamış ve tohumluk talebini arttırmıştır.

Türk çiftçisinin çoğunun toprağı fakir ve kıraç araziden ibarettir. Bu kabil toprakları süren ve işleyen çiftçi ancak geçimini sağlayabilmekte, geçmişin yarattığı tahribatla ayakta durabilmek için büyük bir çaba içerisinde boğulmuş bir vaziyettedir. Bir çokları potansiyel kelimesini belki de ömürleri boyunca duymamışlardır. Ekserisi suni gübrenin kendilerine ne şekilde faydalı olabileceğinden habersiz olmakla beraber böyle bir şeyin mevcut olduğundan dahi malumatları yoktur. Ancak suni gübrenin faydasını anlamış ve öğrenmiş olanlar dahi bunu temin edememek sıkıntısı içindedir. Türk çiftçisinin sahip olduğu toprak bir çok medeniyetlerin doğup üzerinde geliştiğı ve ziraat yaptığı bir toprak olması dolayısıyla yorgun düşmüştür. Hemen hemen insanlığın tarihi ile beraber sömürülmüş ve karşılığında hiç bir şey verilmemiştir. Bir kısım Türk çiftçisi bu toprağın gözleri önünde ölmekte olduğunu idrak edememekte, bir kısmı ise çaresizlik içinde ne yapacağını bilememektedir. Türk çiftçisinin çehresi tetkik edildiğı zaman diğer memleket çiftçilerinde olduğu gibi içine kapanık, kuşkulu bir ruh haleti içinde olduğunu sezmemek mümkündür.

Bütün bunlar acı olmakla beraber birer gerçektir. Bir ameliyat acıtmakla beraber yarayı aynı zamanda iyi eder. Geçmişte olanları düzeltmek elbette mümkün değildir. Fakat geleceği değiştirmek ve yön vermek pekala mümkündür. İlerlemenin birinci düşmanı sefalettir. O halde ilerlemek için her şeyden önce sefaletin yok edilmesi gerekmektedir.

Modernleşmek için, modernleşmeğe karşı dikilen sosyal, psikolojik ve fiziki nitelikteki tüm dirençleri gidermek zorunluğu vardır. Fakir çiftçinin acil ihtiyaçlarının karşılanması zamanı gelmiştir. Çiftçinin başlıca ihtiyaçları üretim araçları, tohumluk, damızlık, gübre ve kredi gibi imkanların çiftçinin emrine amade kılması ve bunların kullanılması ve elde olunan ürünün değerlendirilmesi zarureti vardır. Çiftçinin eski itiyatlarının zincirinden çekip kurtarmak ve üretme imkanlarını sağlamak bugün için bize düşmektedir. Çiftçinin sahip olduğu kıraç topraklar sulama ve muhafaza tedbirleri ile mümbit hale getirilmelidir. Çiftçilikten sağlanan gelir ancak şahsi geçim seviyesinden kurtarılarak, ticari bir seviyeye getirilmelidir. Çiftçi toplumunun insan gibi yaşaması sağlanmalı, unutulmuş bir kitle hâleden daima hatırlarda tutulan bir toplum haline getirilmek ve bu suretle kendi kendine yeter hale gelmelerine en kısa zamanda bütün imkanlarla yardım edilmelidir.

Bugünün Türk çiftçisi babalarından ve dedelerinden çok daha ümit verici durumdadır. Bugünün çiftçisinin elinde hür dünyanın kınamadan arzedebileceği bir teknoloji mevcuttur. Ancak şu husus unutulmamalıdır ki nüfus artışını karşılayabilecek oranda devamlı bir gelişme sağlanıncaya kadar, eğitim görmüş tarımcı elemanlarımızın ve sahip olduğumuz modern müesseselerin bir hayli artırılmasına ihtiyaç olacaktır.

Bugün fakirlik ve açlığa karşı bir zafer kazanabilmemiz için davranışlarımızda bir değişiklik yapmamız ve Çukurova'da tarım uzmanlarının rehberliğinde ve çiftçilerin yardımı ile sağlanan başarının Türkiye'nin diğer bölgelerinde de sağlanması gerekmektedir. Ancak bundan sonra beklenen büyük değişiklikler yaratılmış ve hedefe yaklaşılmış olacaktır. Bu olağanüstü oranda artmış olan buğday verimi Türkiye'nin bütün manzarasını değiştirecek ve memleketin iktisadi durumu dünyanın iktisaden gelişmiş memleketleri ile aynı seviyeye gelmiş olacaktır.

Bugün bizlere lazım olan şey özlenen bu değişikliğin vüsatının millet çapında anlaşılmasıdır. Yarın bizlere lazım olacak şey düne dönmenin artık imkansız olduğu hakikatinin milletçe idrak edilmesi hususudur.

# A REVOLUTION THAT

Only our children will be able to assess the scope of this wheat revolution with the cool judgment of people viewing great events in retrospect. We today know only that it is a revolution that must not fail. It cannot fail.

*FARMER MEHMET CAN ELİYEŞİL.*



*A man in Tarsus decided to grow a dream. He planted a seed of hope and harvested a crop which is the future.*

# CANNOT FAIL

*By Babri Dağdaş  
Minister of Agriculture*

(Translation of the preceding article)

It is difficult for us who live today to comprehend that all of a sudden, we have left the past and entered the future. It is likewise difficult to comprehend how 101 farmers, with the help of agricultural technicians, have in a short time managed to substantiate a reform sought by our politicians and past leaders for generations. This example once more shows us the immensity of the creative capacity of the Turkish farmer. There can be no hurdle he cannot overcome if and when he is shown the right direction. We often see the Turkish farmer working on our side, and now we also see him way ahead of us.

What began in Çukurova one year ago and radiated to other sectors has now taken on the characteristics of a silent revolution. The goal of this revolution is to obtain food for those who are hungry and thus still their sufferings.

Only when this revolution—which now seems just a beginning—is reviewed by our children (who will be able to employ the cool judgment of people viewing great events in retrospect) will its full magnitude become evident. The duty of our generation is to see that this developing reform, this humane revolution, does not fail. It is a revolution that must not, that cannot fail. This is a revolution we all firmly believe in. It must succeed.

What have the Çukurova farmers done? With surprise and wonder they have seen that from the small amount of Sonora 64 and Lerma Roja seeds that they had managed to obtain they could harvest nearly 500 kilograms per decare. The astonishing revelation whipped them into action, and with the far-seeing help from the Ministry of Agriculture 60 tons of these Mexican wheat varieties were imported as seed and were planted on the fields of 101 Çukurova farmers.



*İzzettin Özgiray, President, Chamber of Agriculture, Adana. Following Mehmet Can Eliyeşil, Özgiray led 101 Çukurova farmers in the wheat reform which promises to become one of the biggest things that happened in Turkey.*

This year we have all witnessed that these wheats can average 400 kilograms per-decare on the right type of land, while the average crop obtained from the local Florenza variety averages 140 kilograms.

Is that all? No. These farmers have used 12 kilograms of pure nitrogen (counterpart of 60 kilograms of ammonium sulphate) per decare on the fields on which they planted Sonora 64 wheat. For these farmers, using fertilizer in wheat cultivation has thus become a MUST. Local wheat varieties would lodge if comparable amounts of fertilizers were used. The stems of Sonora 64 are stronger and shorter at the time of harvesting and therefore do not lodge. Thus through heavy application of fertilizer it has become possible to reap double or even triple amounts from one decare seeded to Mexican wheat as compared to one decare of the local variety.

Is this all? No. Land used for Mexican wheat is being levelled to prepare a good seed bed. Then, through the use of seed-drills for planting, a 100 percent saving of seeds is also obtained.

The Sonora 64 and other varieties of seeds brought in from Mexico have been bred by the Mexican National Cereal Breeding Institute, which

was formed with the aid of the Rockefeller Foundation in 1944 and which began producing these varieties in 1962.

The wheats utilized in dry conditions in Mexico with necessary irrigation and fertilizer practices have been used in Turkey's 600 mm. rainfall areas in the Mediterranean, Aegean and Marmara regions, with identical crop results. This shows that for the wheat research center which will be created in the Near East, Turkey is the ideal candidate, as Turkey has all types of ecological conditions necessary for such research.

Equally important is that these Çukurova farmers have initiated a historic transformation in Turkey's major agricultural product—wheat. This transformation constitutes a guarantee of the future for Turkey. And in later years the farmers and the agricultural technicians who car-

*Kaya Tosun, Director of Agriculture Research Station of Tarsus, and USAID Participant, who was one of Turkish Government specialists sent to Mexico to select 20,000 tons of Mexican wheat seeds, inspecting SONORA 64 trial wheat plot at Tarsus Station.*



ried out this revolution will always be remembered with gratitude by all the Turkish people.

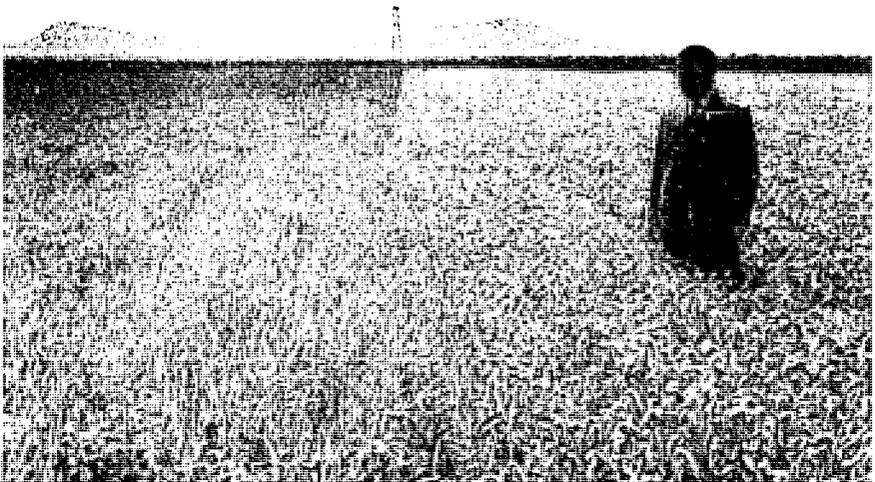
Following extensive research and observation of results on the fields of the Çukurova farmers, it became evident that these Mexican varieties would give good results in the Mediterranean, Aegean and Marmara regions, and a decision was made to import 20,000 tons of these varieties to be used as seed this fall in these regions.

The field days, demonstrations, and other communication activities of the Ministry of Agriculture have aroused the farmers to demand the new seed.

Most of Turkey's farmers have poor and barren land. They themselves are poor. Those who till and cultivate such land are subsistence farmers, stifled by the brute struggle for existence, by the waste of the past. Many of them have never heard the word "potential." Many not only do not know how artificial fertilizer could help them, they do not even know it exists. Many of those who have learned the benefits of fertilizer do not possess the material means to obtain this essential input.

Their is tired land, raped for centuries, used before recorded history. The land has served humanity, and never has humanity served it. Some farmers do not even realize that their land is dying under their feet. Others, realizing this calamity, face their fate helplessly and apathetically.

*Naki Çağutay, Assistant Technical Agricultural Director of Adana province, and USAID participant, inspecting SONORA 64 wheat field adjacent to the native variety.*



They have the faces of poor farmers all over the world—a brooding suspicion and hostility in their eyes.

All this is the truth. Like surgery, truth may hurt, but it also cures. We cannot correct what has been done, but we certainly can change what can be done. Unnecessary misery is the greatest barrier to development. In order to improve, this barrier has to be surmounted. Misery is the enemy to be eliminated.

If modernization is to come to Turkey, the social, psychological, and physical resistance to it must first be overcome. Then we must come to the help of the poor farmers. We must make available to them the necessary tools and equipment, the seeds they need, the fertilizer, the credit they must have if they are to become farmers who are an asset to themselves and to their nation. It is our duty to liberate them from their old bonds and habits. The lands of these poor farmers must be irrigated, levelled if need be, cultivated—they must be saved. Only in this way can these farmers be raised from a subsistence level to a commercial level. They must be helped to live like human beings; to become the remembered people, not the forgotten people; they must be helped to become people who can help themselves.

Turkish farmers today are in a much more propitious position than were their fathers and their forefathers. They have at their disposal all the technology the free world offers them—and offers ungrudgingly. But we must all realize that before sustained growth is possible, at rates that can substantially outstrip our population growth, a considerable expansion must take place in the number of our trained men and modern institutions.

Only after we manage to change the attitudes of these less fortunate farmers, only when the success of the Çukurova farmers and the agricultural technicians who guided them is repeated in the other regions of Turkey, will the big change have come, and we will have neared our ultimate goal. Only then will the dramatically-increased wheat yields change the whole situation in Turkey and equate her economic status with that of the developed countries of the world.

What we need today is national realization of the magnitude of the change required. What we need tomorrow is national acceptance of the irrefutable fact that there can be no going back to yesterday.

"The only way a man can be free is to struggle to lose himself in a cause, to fight without fear and without hope of reward."

NIETSCHE



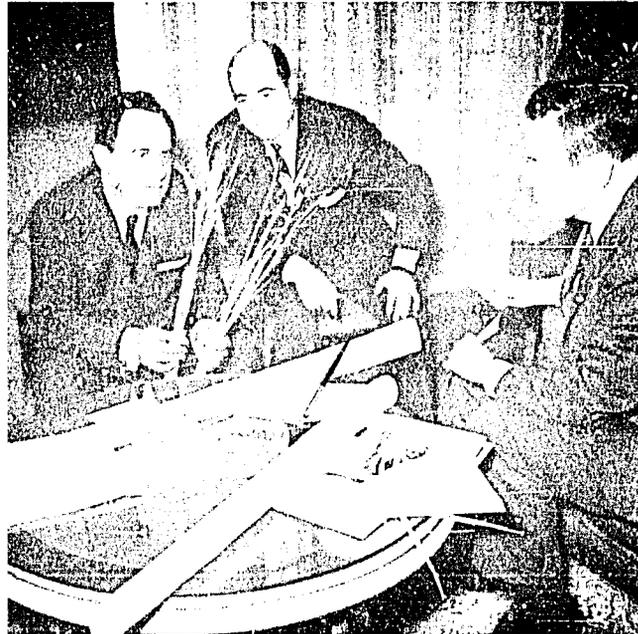
"The claim of modern industry on the brains and energy and honor and intelligence of man exceeds the claims that have ever before been made upon the intelligence and the character of man. Modern industry, if we could only encompass it within our feeble imaginations, is the instrument by which it is given us to achieve in a lifetime nearly all that mankind has struggled for in centuries of blood and sweat and futility."

HENRY R. LUCE



"The people of the world are no longer content to live in poverty, ignorance and disease. They believe—quite rightly—that in the light of modern knowledge these ancient enemies no longer need be tolerated."

LYNDON B. JOHNSON



*Cihat Bilgehan, Minister of Finance (left), Sermet Pasin, Assistant Secretary General of Ministry of Finance and James P. Grant, Director, USAID/Turkey, discussing merits of the Mexican type wheat grown by Çukurova farmers.*

# BREAK WITH THE PAST

*By James P. Grant  
Director USAID/Turkey*

**A**fter the Çukurova success, victory tomorrow in the Anatolian plateau will be no surprise. Nor will we be amazed if we soon hear of remarkable agricultural progress in the eastern provinces of Turkey.

For Turkish agriculture has broken with the past, and what happened in Çukurova is contagious.

Twenty years of American economic aid have taught us all that it is easier to rebuild what had been destroyed than to build where nothing previously existed. For instance, by 1966 the Western European countries and Japan were able to contribute as much for development of underdeveloped countries as they themselves had received under the Marshall Plan.

Now these men at Çukurova have demonstrated that Turkey soon can join the world-wide attack on hunger, disease and poverty. The motives of these 101 farmers, while practical, are certainly not solely monetary. These men have looked beyond a few seasonal harvests that could enrich themselves, and they now see that they can reap a golden future for their nation.

Turkey's unborn generations will enter a world where progress is increasingly a way of life rather than just a noticeable break with the past. They will always be indebted to the pioneer farmers of Çukurova.

But we today must realize that although successful reform can be started by only 101 men, it must be achieved by an entire nation. The Çukurova farmers are like the vanguard of an army; they have pointed the route that many must march.

It will not be easy going—this war against hunger. But in Turkey the pace is set. And how swift the transformation will be depends on the energy, the understanding and the trust given to the trained men who are pioneering to show and teach not just how to survive but how to live.

# Wheat



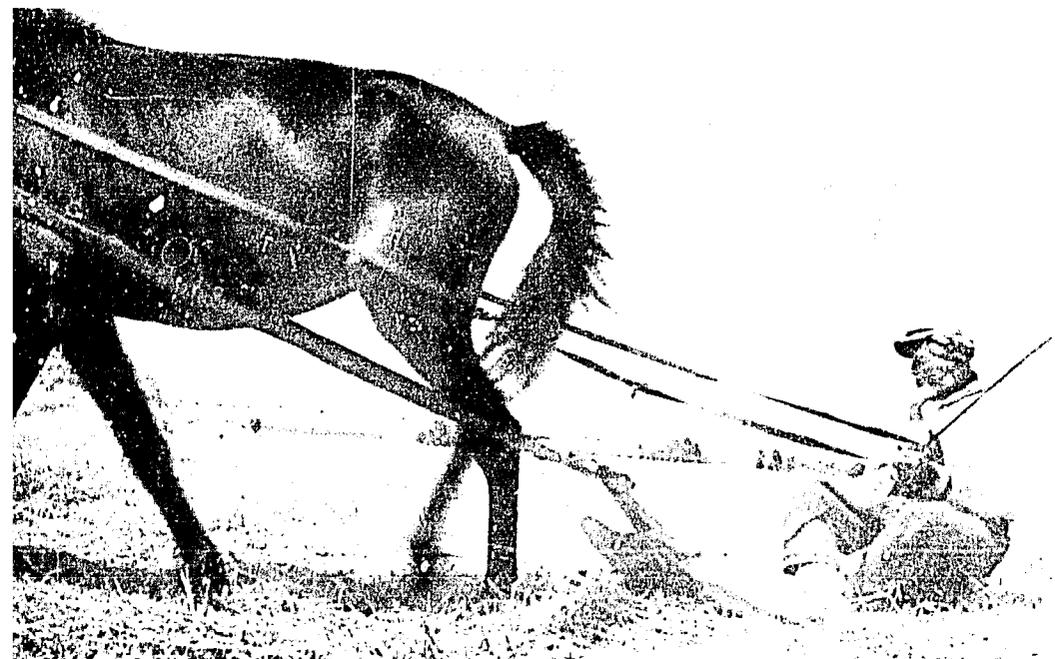
## THE PAST IS PAST

**O**ctober, 1965 – One farmer in Tarsus planted about 30 kilograms of Mexican semi-dwarf wheat he had obtained through a friend. And, figuratively, he also planted the seed of reform – the wheat reformation of Turkey. Mehmet Can Eliyeşil is a proud farmer today, not because he

helped himself but because he helped Turkey.

October, 1966 – 101 Çukurova farmers planted 60 tons of Sonora 64 semi-dwarf wheat they had managed to buy through their own resources. After they had received import permission from the Government, they

*The past is the past...*



**Turkey is on the march. She has begun  
a battle which cannot be lost.**

# THE PRESENT IS THE FUTURE

*...the present is  
the future.*



cabled their American agent to ship the seeds "from any port in the United States to any port in Turkey—but do it quickly!" For they could not wait—they were launching a revolution. Many of these farmers, or their fathers, had fought against the invaders of Çukurova following World War I, and had routed the

enemy. Now they have embattled against hunger. They are proud today, not because they have helped themselves, but because they have helped Turkey.

October, 1967—20,000 tons of Mexican wheat will have arrived in Turkey. The Turkish government requested USAID to assist in obtaining this wheat.

USAID agreed. This fall the seed will be planted by about 20,000 Turkish farmers, and Minister of Agriculture Bahri Dağdaş has predicted an increase in Turkey's wheat production of 100 percent within a comparatively short time. Bahri Dağdaş is a proud minister, not because he has helped his image as an agriculturalist, but because he has helped his nation.

October, 1968-1969 – What will be the outcome of Turkey's wheat reformation? Mexico has a population of 30 million and a higher illiteracy rate than Turkey, but in a few years she has changed from an importer of wheat to a major exporter. West Pakistan has a population of 50 million. By planting semi-dwarf wheat it was predicted she could double her wheat production in 10 years; she has done it in five. Pakistan began its wheat program with 350 tons of imported seed; Turkey is beginning with 20,000 tons. Mexico needed 20 years of research before succeeding in her revolution; Turkey has all that research data at her disposal.

Turkey is on the march. She has begun a battle which cannot be lost. The past is past. The present is the future.



## THE WORLD FOOD CRISIS

**I**t took from the beginning of time until 1840 for the world to achieve one billion population. The second billion came in 90 years – 1930. The third billion came in 30 years – 1960. We are now well on our way to the fourth.

After the year 2000 we will be multiplying as much in seven, six, even in five years. That is, if millions do not die of starvation. For it is evident today to all – the hungry, the fed and the over-fed – that soon, if we do not win the war on hunger,



the hungry will starve, the fed will be hungry and the over-fed will tremble when they think of their tomorrows.

Even now half the world goes hungry every day. Most of these hungry people live in Asia. The others will follow. When the wheat combines took to the fields in the United States this summer, the granaries of America held only two months' reserve wheat for domestic consumption and export needs.

If we—all the peoples of the world—do not do something immediate and drastic, we may face unparalleled catastrophe. For the breeders of the world are outracing the feeders. The nuclear threat is no longer the Number One menace to our future. Hunger is.

Six thousand years ago there was wheat in the world, and today, there are

still people who cultivate wheat as primitively as their ancestors did then. Fortunately others harvest many times more per decare.

When this gap of know-how has been closed—only then—people will no longer have to fear the cruel scythe of famine, will no longer see their children die because they could not eat, or see women barren because of malnourishment.

No one can succeed alone. Governments, progressive farmers, trained technicians will have to lead. They must lead with patience, unwavering decision, and firm conviction. First they will have to defeat lethargy, ignorance, the lassitude of centuries of neglect. Then only will come the victory over hunger, and their pride will be the greatest pride of all, for they will have saved humanity.



## FAMILY PLANNING — NECESSARY FOR THE WAR ON HUNGER

**B**y the end of 1972, according to the estimate proposed in 1965 by the Government of Turkey, 2,200,000 families in Turkey will be engaged in the voluntary use of family planning services. This goal will result in improving the social and economic development of Turkey's people.

In the late 1920's and early 1930's laws were passed in Turkey prohibiting both the transmittal of information concerning contraceptives and sale of them, in order to increase a population decimated by wars and epidemics during the early Twentieth Century. As a result, the popula-

tion which totalled approximately 16 million in 1935, has almost doubled in 30 years, even though many children under the age of five died each year from various illnesses.

In part because of better health care in Turkey that led to increased population, the Republic of Turkey's First Five-Year Development Plan described a new national population policy for the country. It was decided to:

- a) Repeal the laws prohibiting the dissemination of contraceptives.
- b) Educate doctors, nurses, midwives, assistants, and health officials in family planning.
- c) Add new courses to the curriculum of schools and training centers and set up new courses for personnel who had already completed their studies.
- d) Devise ways to import contraceptives at low prices, produce them in Turkey, and distribute them without charge to the needy.

With the help of the Population Council, a private non-profit organization with headquarters in New York, a study was made in the summer of 1963 of attitudes toward family planning in Turkey. Results indicated a high percentage of the Turkish population in all economic and educational strata want to space their children.

Following this:

- a) The Ministry of Health, with the assistance of USAID, initiated a Turkish demographic survey in the spring of 1965.
- b) On February 9, 1966, a USAID Trust Fund grant obligated 2.5 million TL. to assist the Ministry of Health in obtaining 50 four-wheel drive metal-sided CJ-6 jeeps for the population planning program in Turkey.

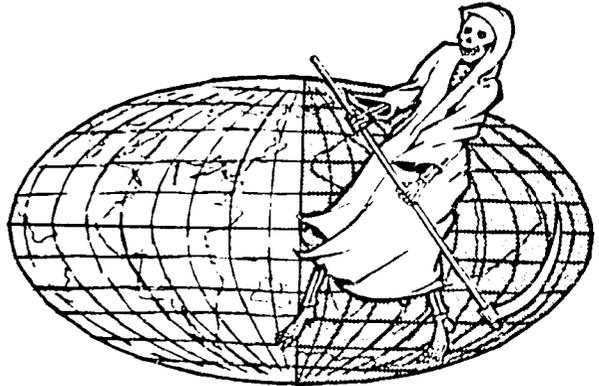
c) A USAID loan agreement signed on October 4, 1966, provided funds to a maximum of \$3.6 million to cover dollar costs of:

1. Purchasing and importing (or assembling locally) up to 1,400 one-quarter-ton jeep vehicles for use in Turkey's family planning and general rural health programs;
  2. Providing technical services and purchase of shop equipment to improve and extend the Ministry of Health's capability for maintenance and repair of these and other Ministry vehicles;
  3. Supplying technical services and educational materials necessary to establish and operate a production facility for prototype health education materials.
- d) Final agreements were reached on April 12, 1967, jointly obligating for a twelve-month period Trust Funds totalling up to 4,518,000 TL. on a reimbursable basis to support a number of key items of the family planning program. Most of these funds will be used by the Ministry of Health for payments to personnel for their family planning responsibilities over and above the responsibilities for which they receive their basic salaries.

The General Directorate of Population Planning in the Ministry of Health and the specialists of the Population Council are working in close cooperation to help inform the population of the various methods by which a family can have only the children they want. They all recognize the magnitude of the problems that confront them. But their load is lightened because of the high acceptance of the program that is felt in almost all areas of Turkey.

## THE CHALLENGE OF HUNGER

Today one half  
the world  
goes hungry.



**T**oday one half of the world goes hungry. The world population is increasing at an average of 2 percent annually, but food production is increasing at 1.5 percent. In a short 10 years that difference of half a percent can spell unparalleled disaster for millions of people.

Just this year in the Bihar province of India thousands

have died of starvation. There are 30,000 people born each day in India. Until this year Turkey has often had to import wheat to meet her needs. And Turkey's population increases by 1,000,000 annually.

Two billion decares of land is sown in wheat every year by the peoples of the world. And still half the world goes hungry.

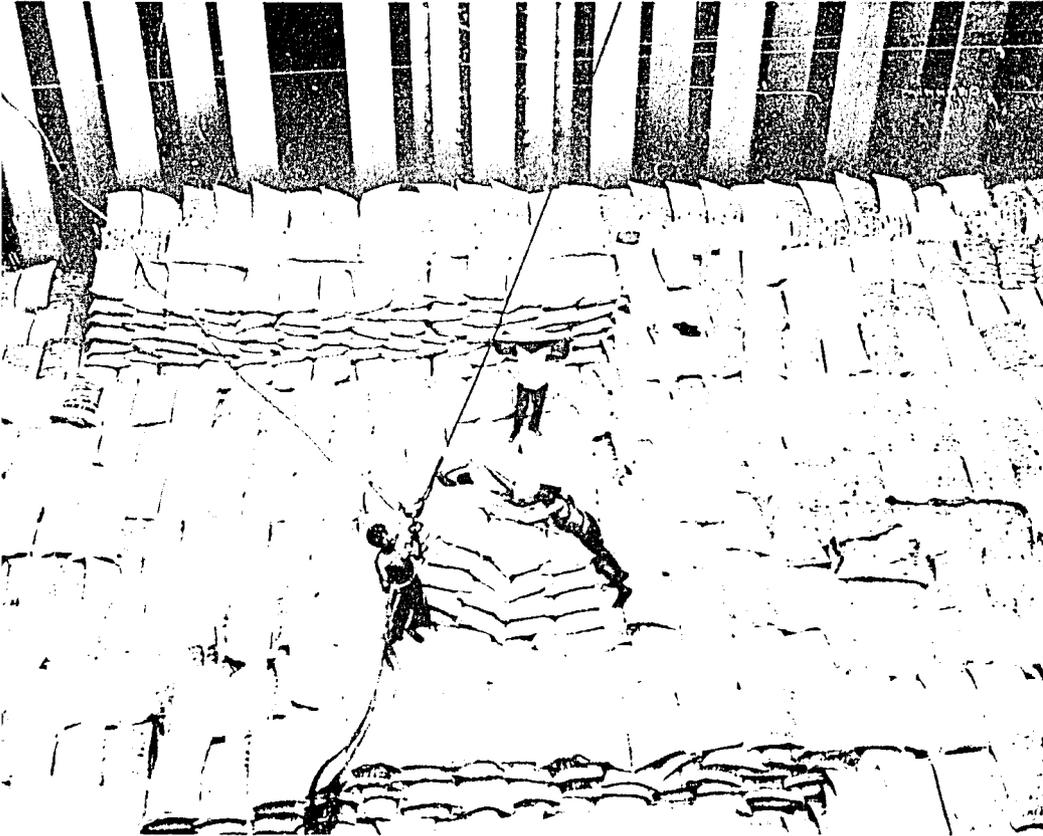
For the survival of millions of people, wheat is a basic necessity, not just an economic asset.

Today the governments, kings, leaders and dictators of the world are confronted by a stark—and ugly—truth. The number of people in the world and their food needs are growing faster than the available supply of food. But the world is not growing; the food that is needed will have to be obtained from the same land that was here mil-

lions of years ago and will still be here millions of years hence. Although farming is the primary occupation of mankind, the people in this occupation are those who need most and know least. But it is still only they who can save themselves and save the world.

Throughout history man has usually been able to expand his food production by cultivating new lands. Today, however, in most parts of the world such

*Mexican wheat for hungry India.*



new lands no longer exist. Future food increases will have to come from already-cultivated lands made far more productive. This is vastly more difficult. But it can be done. It has been done in Mexico.

Until now the developed countries have helped to feed underdeveloped nations. They are still doing so, but cannot long continue, because they can no longer spare their surpluses. In fact, many no longer have surpluses.

The developing countries must learn to reap more per decare. There is just no other solution. One hundred years ago India and Japan harvested the same amount of wheat per decare. Today India still harvests the same amount. Japan has tripled, in some places quadrupled, her production. Now Mexico has won another war against hunger.

The war on hunger is a battle that has to be fought by all nations—the developed, the developing, and the under-developed. It is not a war waged by man against man. It is a war waged by man for man. It is a war to appease the hunger of millions of living people, and of hundreds of millions as yet unborn.

## IT CAN BE DONE — MEXICO HAS DONE IT

**J**ohn Strohm, one of the most highly respected agricultural journalists in the world, recently visited here. His reason: "to see with my own eyes the wheat revolution of Turkey."

Strohm has travelled in 75 countries to observe the war on hunger. "The wheat project in Turkey is the largest of its kind ever attempted in the world, to my knowledge," he says. "This project has great significance for the entire world. This project must succeed, because failure means not only disappointment to Turkey, but to all the other developing nations of the world."

Mexico, a country of 30 million with a yearly population increase of 3 percent and a high rate of illiteracy, has waged and has won the war on hunger. John Strohm, in an article in the Reader's Digest, told the story of this victory. The following are excerpts.

"...The example of Mexico's victory over hunger is cause for hope. In 15 years, Mexican farmers have achieved what world experts said was impossible. Despite their illiteracy and low income, they have doubled their nation's food output...wheat output has been quadrupled...Never in history has a nation increased its food supply so fast."

"...The formula for the success was simple: A few Rockefeller Foundation

scientists...,\$590,000 of Rockefeller funds annually; a team of energetic young Mexican scientists; and a plan, patiently worked out by the Mexican government and the Rockefeller Foundation. The government provided land, buildings, manpower and additional money—and trusted the scientists to use them wisely.”

“...From Scarcity to Surplus. The wheat story was even more spectacular than corn (corn is the most important food crop in Mexico). In 1950 Mexico imported 427 thousand tons of wheat; last year (1965) she exported 465 thousand tons, and the government had to limit acreage to avoid surpluses.

“...Today almost 95 percent of the wheats grown in Mexico are creations of the Mexican wheat team...Many farmers grow 50 bushels of wheat per acre (340 kilograms per decare) in the irrigated northwest. 75 hushel (510 kilograms)

yields are common. Dwarfs are the latest triumph; yielding up to 115 bushels per acre (784 kilograms per decare).”

Three dates suffice to tell the dramatic change in Mexico: 1943—Mexico produced 330,000 metric tons of wheat, and imported half of the wheat it consumed. Its average yield was 65 kilograms per decare. 1956—Mexico reached self-sufficiency in wheat, with a national crop of 1,200,000 tons, an average yield of 105 kilograms per decare. 1964—Mexico exported half a million tons of wheat, from a total crop of 2.2 million tons, and its average yield had reached 227 kilograms per decare.

In 1965 Mexico again exported nearly half a million tons of wheat, while her average yield per decare reached 284 kilograms.

John Strohm calls what has happened in Mexico “the story of a victory over hunger that offers hope to all famine-threatened nations.”

*From left to right: James P. Grant, Director, USAID Turkey, John Strohm, and Alfredo Garcia, one of the developers of Mexican semi-dwarf wheat.*



# IT CAN BE DONE — PAKISTAN IS DOING IT

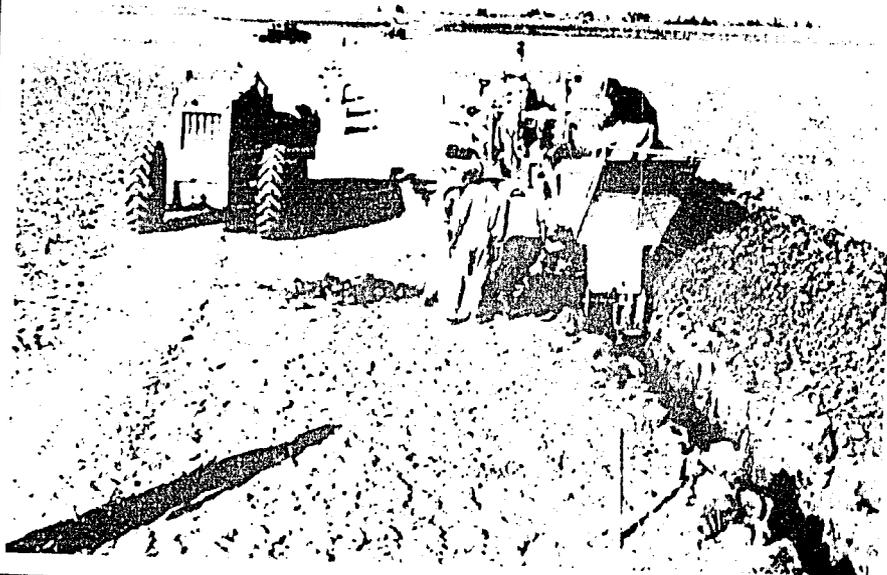
In 1965 Dr. Norman E. Borlang and Dr. Ignacio Narvaez predicted that Pakistan could increase her wheat production by 50 percent in five years and by 100 percent in eight to 10 years. Just six months later, after the importation of seed from Mexico, they changed their prediction and said that

Pakistan would double her wheat yield in five years, would be self-sufficient in 1968, and after the harvest of 1968, will go into surplus.

Dr. Borlang, a Rockefeller Foundation plant breeder of international renown, has been working in Mexico for 23 years and has acted as a wheat consultant to more than 20 developing countries in the last two decades. Dr. Narvaez is a scientist who has been associated with the Mexican wheat program for 20 years.

When their wheat program started, some officials in West Pakistan told Borlang and Narvaez: "You must be out of your minds to predict that the wheat crop can be doubled in five years; there has been no such change in a lifetime." Others said: "Agri-

*Land levelling in Pakistan.*



cultural revolutions may happen in Mexico, but they do not happen in Asia. You don't know Pakistan." Still others said: "Pakistan cultivators are illiterate, they are slow to change."

The officials were wrong. Dr. Borlang and Dr. Narvaez also were wrong. For it will not even take five years for Pakistan to double its wheat production. Pakistan has declared war on hunger and is already winning it.

In 1965 Pakistan imported 350 tons of Mexican dwarf wheat seed at a cost of \$100,000. This seed was planted on 48,000 decares of wheat land, on demonstration plots, and by individual farmers. The harvested wheat was again planted in October, 1966, for demonstration and multiplication purposes. Again one-tenth of the land planted was on 4-decare demonstration lots in 20,000 villages.

It now is estimated that following the harvesting of April-May, 1967, Pakistan will have sufficient wheat seed to plant 27 million decares of wheat land—half the total wheat land in West Pakistan. The main types used in Pakistan are the Mexican Lerma Rojo and Penjamo varieties. These varieties necessitate the use of 7 kilograms of nitrogen fertilizer and 4 kilograms of phosphate fertilizer per decare.

Tens of thousands of farmers will plant this type of wheat for the first time. No one tells or forces them to. They themselves clamor to. They have seen and they have believed. Now they want to be partners in the great revolution which, in less than five years, is transforming Pakistan from a needing nation into a self-sufficient nation; a nation that had to import wheat and soon will be in a position to export it; a nation no longer confronted with the peril of hunger; a nation that soon can help other hungry peoples.



*Preparations for land levelling in Pakistan.*

And this is the climax to the wheat reformation of Pakistan: In 1968 or 1969 the Mexican Lerma Rojo and Penjamo varieties may already be obsolete. For, in 1961, a young Pakistani scientist brought in a handful of seed from Mexico which he called Mexipak. From this handful a sturdy wheat seed has been developed which is even better adapted to Pakistani conditions than the Lerma Rojo and Penjamo varieties. Soon there will be sufficient Mexipak seeds to meet demands in Pakistan. Pakistan officials—now excited, eager and in a hurry—call Mexipak a revolution within a revolution.

Pakistan's three agricultural research institutes are making remarkable progress in breeding new dwarf varieties using one tall Pakistan parent and one short Mexican parent. Several hundred lines derived from 11 of these crosses are ready for field trials in October, 1967. From 1969 on it will be possible to release new varieties every two or three years, each one superior to its predecessor and each one the product of a dynamic breeding program carried out by the Pakistanis themselves.

# Wheat

## THE HISTORY OF WHEAT

**Wheat is believed to be the first crop grown by man.**

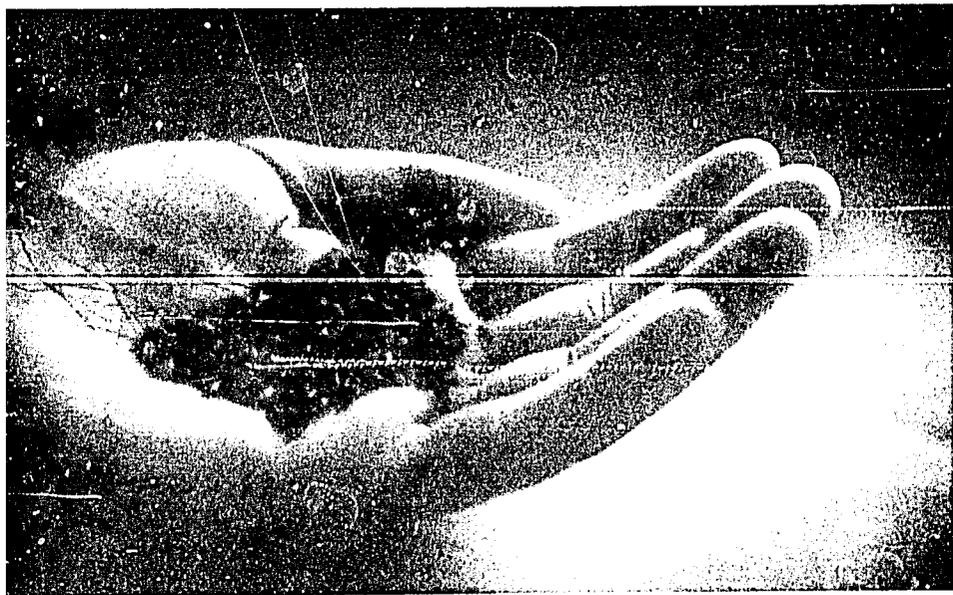
The origin of wheat is a mystery. Most 20th century biologists believe it was known prior to recorded history. They definitely know that wheat was grown at least 6000 years ago. What is also known is that there are still places in the world where wheat planting and harvesting remains as primitive as

it was 6000 years ago.

Wheat, according to the Encyclopedia Britannica, "is a grass of the Graminae family and of the genus *Triticum*. Two wild species of *Triticum* are still growing in Asia Minor and Syria... This information suggests that the *Triticum* species originated some place in the

*4000-year-old wheat from Hittite era shown by Raci Temizer, Director Ankara Hittite Museum, to Dr. Tom Jackson, soil scientist (center), and Dr. Warren E. Kronstad, plant breeder (right), visiting from Oregon State University.*





*Wheat from Asia Minor 4000 years ago...*

area from Asia Minor to Afghanistan."

Wheat is believed to be the first cereal crop grown by man. Nearly all important civilizations are considered to have been founded upon the production of it and other cereals. In order to cultivate wheat, man had to settle in permanent locations. It can be assumed that when certain groups of people stopped their nomadic life and resorted to planting cereals for their major source of food, they had time to use part of their energy for other purposes than securing

food. Thus, civilization and the cultivation of cereals probably developed simultaneously.

The evolution of wheat occurred very slowly. It was only in the first 50 years of the 20th century that broad progress in wheat culture was made. It was only then that many countries of the world went from famine to surplus. It was only then that the new world began to leave the old world behind.

Before that period, America could not produce enough wheat to feed her people. Even the settlers of Kansas, which is

today the center of one of the largest wheat areas of the world, did not grow enough wheat for their needs. Only when the proper kind of seeds, called "Turkey hard red winter," were introduced into the great plains of North America in the 1870s did the wheat revolution in America begin. Today history is reversing itself. Turkey's new wheat seeds come from the American continent.

At present wheat yields in the world fluctuate between 50 and 750 kilograms per decare. The world average is more than 135 kilograms per decare. The average in Turkey is about 100 kilograms, but there are extensive areas which often do not even return their seed.

In the coming years the history of wheat in Turkey will be written anew. It will be written by the farmers, by the government, by private enterprise. It cannot be written by only part of the people. It is a history that can be written only by all.

*...and wheat from Asia Minor today.*



# REFORM FROM THE MIDDLE

**It was a reform begun and waged by 101 successful and progressive farmers. They seeded it, they grew it, and they harvested it.**

**O**n March 30, 1967, a press conference was held at the Adana Club, Adana. The governor was there. So was the mayor of Adana. Many of the 101 farmers were there. Also there were a few foreign guests, interested observers of the great change affecting these people.

This change did not brew from the bottom – the low income groups. It was not a reform from the top – like the government's general and planned development drive. It was begun and waged by 101 successful and

progressive farmers. They seeded it, they grew it, and they harvested it.

The speaker was Izzetin Özgiray, president of the Agricultural Chamber of Adana and head of the Farmers' Union of Adana. It was Özgiray himself who, after obtaining government sanctions to import Mexican Sonora 64 wheat seed to Turkey, ordered and personally financed the 60 tons. Özgiray thanked the guests for their interest and his farmer colleagues for their cooperation. Profuse thanks went



*Farmers from all over the country came to Çukurova to watch the reform from the middle and impatiently insisted that it spread to their own sectors.*

to Mehmet Can Eliyeşil, the Tarsus farmer who a year previously had first planted Mexican wheat in Çukurova and had thus set the revolution going.

Then an elderly man arose to say, "In my 50 years of farming I have never seen such wheat." He is Niyazi Cevheribucak, a hero of the War of Independence.

"Now," said Turgut Yeğenağa, president of the Çukurova Electrical Company, and also a farmer—one of the 101—"Niyazi Bey is also a hero of our wheat

revolution."

Wherever the *Participant Journal* Team went in Çukurova, semi-dwarf wheat was the news of the day, and "tomorrow" was more important than today. Mehmet Can Eliyeşil in Tarsus set this avalanche going. And he is proud because he did it for his people. He has done more, much more. Said his foreman, Mehmet, who had placed an amulet against the evil eye in Eliyeşil's Sonora field: "Can Bey has dynamited our past and he has shown us our future."



*"In my 50 years of farming I have never seen such wheat."*

Daily throughout the year, after he had harvested his Mexican wheat, Mehmet Can Eliyeşil received telegrams, letters, telephone calls and private visits from farmers from all over the country. He was asked for seeds, for information, for hope. Seeds should be imported, he explained, and he gave all the information he could to those who sought it. To all he gave hope. "This is something big. Something that cannot fail.

Something that we farmers of Turkey, the government of Turkey, and all Turkey must not allow to fail."

All agree there is no reason it should fail. Agriculture in Turkey is capable of dynamic growth, they say, but it needs psychological leadership from the top to affirm the positive results attainable. And it needs willing changes in attitude within the rural population. Turkey is taking advantage and does

not need to wait for 20 years of research as Mexico did; nor for seeds to be multiplied before mounting a large campaign – as Pakistan did. It is beginning at the current level of technology. And for the first time in history the farmers of Turkey seem to be excited about agriculture; experts stress, however, that full success will be reached not only by current technology but by future developments in research.

The Turkish Ministry of Agriculture, through USAID, invited some leading United States specialists to study the agricultural situation in Turkey, and to make recommendations. The report was submitted to the Ministry in December, 1966. Its "Introduction and Summary of Recommendations" follows.



*Left: local Florenza wheat variety. Right: Mexican wheat variety. Both grown in Çukurova.*

*Over 250 farmers and agricultural technicians came to the Adana area on May 9th from the coastal regions of Turkey to see the Mexican wheat grown in Çukurova.*



## *Study Team's*

# INTRODUCTION AND SUMMARY OF MAJOR RECOMMENDATIONS

The pattern of agriculture that has developed in Turkey over the centuries reflects the area's wide variation in soil, water and climate. Forestry and livestock grazing occupy the mountain and the foothill areas. Wheat is the dominant crop on the low rainfall plateau, whereas the water-rich coastal regions accommodate a vast production complex of cereals, fruit, vegetables, fiber and livestock.

The Study Team is deeply impressed by the potential of Turkey's agricultural resources. Only a fraction of the output attainable is now being realized from Turkey's magnificent human, soil, water and climatic resources.

The Study Team has taken as its major goal the task of recommending the steps necessary to realize Turkey's agricultural potential. If the major recommendations of this report are carried out, the team is con-

fident that by 1969-1970, Turkey can:

- become self-sufficient in wheat;
- significantly increase meat production; and
- greatly expand fruit, vegetable, and timber exports.

The recommendations focus on:

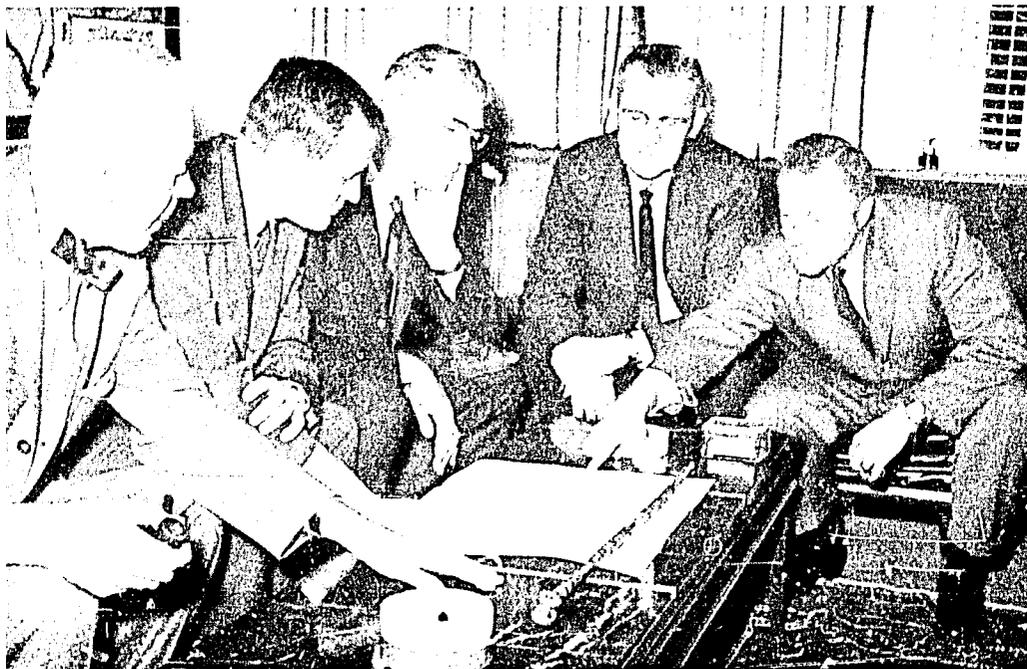
- maintenance of economic incentives to producers;
- introduction of new high-yielding seed with related practices;
- improvements in techniques of conservation of soil moisture and use of irrigation water; and
- modernization of marketing facilities and methods.

If these recommendations are carried out, Turkish agriculture will undergo a revolutionary transformation. Two programs in

particular, if undertaken on a crash basis, would lead to significant increases in production by 1969-1970: (1) the introduction of high-yielding wheat seeds which have been developed abroad during the past few years, and (2) the widespread use of new agricultural techniques, particularly with respect to water management, so that fertilizer and seeds will achieve their potential.

These two programs can be undertaken at additional costs which are modest relative to the costs of fertilizer and the construction of irrigation water structures. Turkey has already invested very large amounts of money in bringing irrigation water to the farm. Turkey is also committed to spending the funds necessary for greatly increased amounts of fertilizer. To take advantage of these in-

*From left to right: Dr. Charles Elkinton (U.S. Study Team), James P. Grant (Director, USAID/Turkey), Francis Kutish (U.S. Study Team), Dr. Orville Vogel (U.S. Study Team), Ralph N. Gleason (Chief, Food and Agriculture Division, USAID/Turkey) discussing Study Team report prepared for Turkey's Ministry of Agriculture.*



vestments, the use of the new seeds and the use of improved agricultural practices—particularly “on-farm” water use and conservation—are absolutely essential. These relatively inexpensive steps have, in other countries, more than doubled the rate of increased production being achieved from adding water and fertilizer alone. Without them the large investments which Turkey is making in water and fertilizer will produce only a fraction of their potential returns.

To carry out these programs and thus start a major revolution in Turkish agriculture will require the mobilization of the Turkish farmer. The goals of these programs cannot be obtained by Government action alone. They can only be achieved if Turkey works with the farmers in introducing them to the ways and means of bringing about a transformation in agriculture. The costs of the new efforts in seeds and farm practices are relatively small in terms of Turkish Lira or foreign exchange. However, the efforts required on the part of the Turkish government agencies will be very large. Success can only be achieved through new and cooperative efforts by such agen-

cies as the General Directorate of Agriculture, the research organizations, the marketing agencies, the Agricultural Bank and Topraksu.

The basic cropping pattern of Turkey is likely to change slowly over the next 10 to 15 years. Wheat production will continue to command the major part of the water-short plateau areas except where irrigation sources are developed which permit expanded production of sugar beet, forage and similar crops. The potential for short-run gains is greatest in the coastal and plateau areas having longer growing seasons and more water. Wheat production on the drier areas of the plateau will benefit particularly from water conservation and other improved cultural practices which help to compensate for low rainfall. Together with the use of improved varieties and the increased use of fertilizer, the progress achieved through the application of these practices will be substantial, but will tend to come about more slowly. Nevertheless, the yield of wheat even in the dry areas of Anatolia, can at least be doubled.

The Study Team's investigations have led to a large number of suggestions of all kinds

which are explained in varying degrees of detail in the chapters which follow. There are a number of major suggestions which the Team feels are sufficiently important to be of general interest. These organizational or institutional changes are necessary to achieve sharp increases in production. They are:

1. The use of special task force groups to assist farmers in adopting the new agricultural technology necessary for achieving early, rapid increases in cereals production. The work of these teams will involve several Ministries but will need direction from one central source which should be the Directorate of Agriculture.
2. The use of state farms and sugar monopoly to assist farmers in their efforts to increase cereals production through an accelerated program which would introduce new high-yielding seeds, improved cultural practices, improved water conservation and irrigation practices, expanded use of fertilizer, and up-graded livestock production techniques.
3. The use of special task force groups by Topraksu to assist farmers with the introduction of urgently needed modern water conservation and irrigation practices.
4. The expansion and upgrading of the extension service.
5. The increased availability of loans by the Agricultural Bank to farmers who are using more and/or better seed, fertilizer, and water.
6. The expansion and upgrading technically of the Agricultural Planning and Economic Research Organization of the Ministry of Agriculture to make possible urgently needed studies on domestic and foreign demand for food and fiber, and competitive position of crops and livestock.

7. The reorganization of the Ministry of Agriculture at central and provincial levels so that the Ministry can effectively provide the leadership and services which the Turkish farmers require if they are to achieve their potential.
8. A greater emphasis on private sector involvement in all phases of agricultural development, including the manufacture and supply of inputs, crop and livestock production, and marketing and processing of crop and animal products. Private initiative is especially important to the program of water conservation and use outlined in (3) above.
9. The expansion and upgrading of the new marketing services in the Ministry of Agriculture and the modernization of marketing facilities and methods to capitalize on the important export potential of fruit and vegetables in European markets.
10. The modernization of forestry extractive facilities utilizing private enterprise and establishment of a sustained yield system of timber production and a harvest in order to meet growing demand and export potential for wood and wood products.
11. The maintenance of price levels for farm products and other economic incentives to encourage farmers to invest more in fertilizer, improved varieties, and improved production methods and, thereby, to help to increase farm income.
12. The reorganization of Turkish livestock programs to attain significant gains through the increase of feed production, improved marketing, controlled range management, increased attention to better nutrition and expanded genetic improvement.

13. Continued emphasis on an integral approach to agricultural development (as typified by the pilot project in Denizli Province) which stresses coordination of the essential institutions for agricultural development at the national, regional, provincial, and sub-provincial levels,

and involves both government organizations and farmers in the planning and implementation of agricultural programs.

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(Note: The full text of the Study Team's report is available at the Ministry of Agriculture.)

*Study Team with Ministry of Agriculture staff discussing Study Team's findings.*



# REALITIES AND STATISTICS

**Wheat dominates Turkey's agriculture. Its production requires more farmers and more land than any other crop.**

**T**oday 20 percent of Turkey's people earn 57 percent of Turkey's national income. Of the majority remaining, 90 percent are farmers. And 90 percent of Turkey's exports are agricultural products—their products.

The major crop in Turkey is wheat. Turkey has a total land area of approximately 770 million decares\*, of which 160 million decares are cultivated annually. An additional 80 million decares are fallow each year, and 20 million decares are in vineyards, olives, fruits and nuts. Cereal crops are sown on about 70 percent of the cultivated land, 80 percent in wheat.

Wheat dominates Turkey's agriculture. Its production re-

quires more farmers and more land than any other crop. Wheat production is the major determinant of the rate of growth of Turkey's agriculture and, therefore, of the Turkish economy.

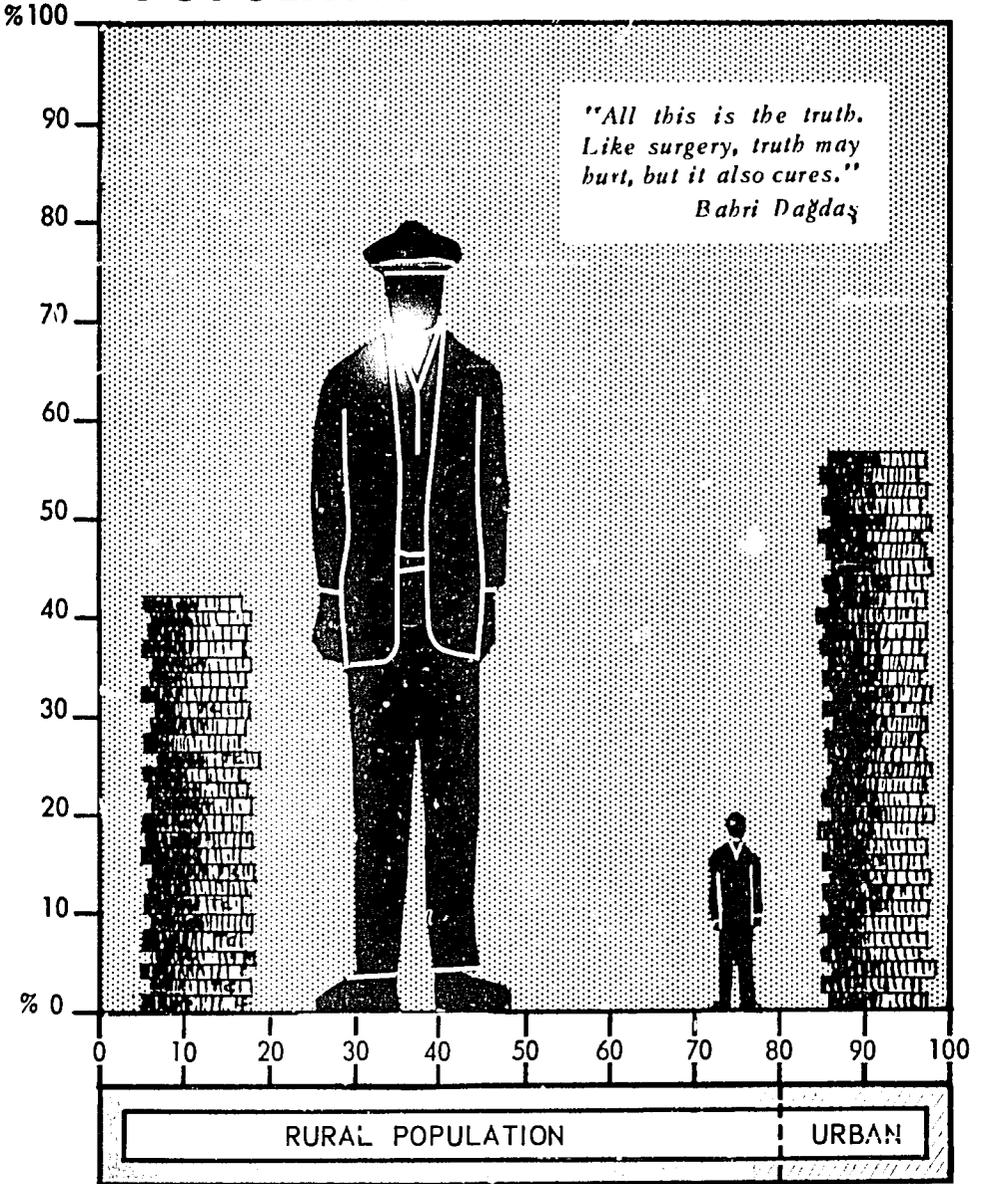
The wheat reform of Turkey began in Çukurova. But it will only have a national success when it is spread to the Central and Anatolian plateaus where 160 million decares of land are used for wheat agriculture. Half this land lies fallow each year; 80 percent of the other half is sown to wheat.

Now specialists say that farmers of these plateaus can at

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\* 1 decare =  $\frac{1}{4}$  acre  
1 hectare = 10 decares

# POPULATION SHARE OF GNP



least double their wheat production if proper agricultural practices are followed. They stress that new wheat varieties give excellent results even in the drought lands of the United States. They explain that in other developing countries wheat production has been doubled. But, this can be done only by maintaining moisture in the seed bed, use of deep-furrow drills, weed and pest control, seeding

the designated varieties and applying fertilizer properly.

In the Central and Anatolian plateaus there are 64 million decares of wheat land. Today the farmers use 18 to 20 kilograms of seed per decare. This can be reduced by half when deep-furrow drills are used. Designed to be tractor-drawn, such drills can be adapted to be drawn by horses or oxen. And they can be manufactured in

***Farmers of the Anatolian plateau  
can double their wheat production...***

*Ploughing*



*Disc-barrowing*



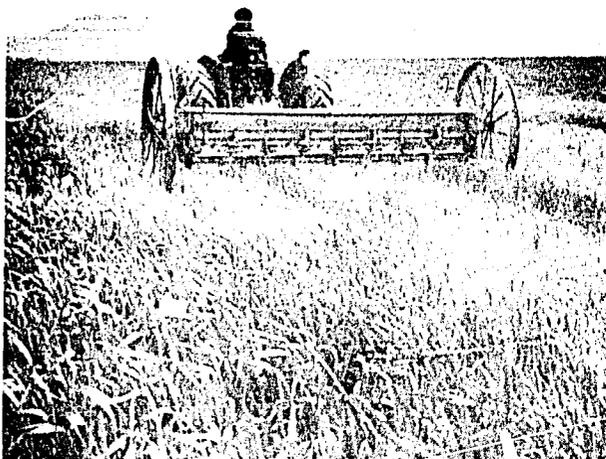
*Irrigation*



*Seeding*

*... if the necessary  
agricultural  
practices  
are followed.*

*Fertilizing*



*Pest-control*





*Threshing*

Turkey. Their use could effect a saving of 600 million kilograms of wheat seeds on the plateaus. At a minimum of 70 kuruş per-kilogram of wheat, this would constitute a saving of 420 million TL. on seed alone.

Today the average per decare wheat output in these areas is 100 kilograms. Their total production at minimum TMO purchasing price equals 3,360,000,000 TL. Doubling production would

mean doubling that figure. Even if half this additional income should go towards expenses for fertilizer and drills, the yearly increased income of the plateaus would be 1,680,000,000 TL.

Necessary expenses should not be underestimated, the specialists caution. Estimating eight kilograms per decare, there would be a requirement of 500,000 tons of single super phosphate fertilizer for the plateaus.

# FERTILIZER — THE ALLY OF WHEAT

**T**urkey's wheat reform can only be achieved with and through the availability of fertilizer. Chemical fertilizer is the most effective input for increased per-decare wheat production.

From 1955 through 1960, fertilizer use in Turkey remained relatively constant at about 20,000 tons of plant nutrients per year. But, due to more effort being placed on extension activities, fertilizer demonstrations, increased imports, and better credit facilities made available to the farmers, fertilizer consumption increased from 1964 through 1966 by more than 75,000 tons annually on a plant nutrient basis. Such a dramatic increase was primarily made possible through the Government of Turkey's import policy on fertilizer and commendable action in raising \$30 million for this program.

Current capacity to produce nitrogen fertilizer in Turkey hardly exceeds 3,000 metric tons of nitrogen. This productive capacity is scheduled to increase to approximately 120,000 tons by 1969 through the expansion of the Kutahya factory. Even before the Mexican wheat program, it was estimated that by 1970 at least 160,000 tons of nitrogen would be required. A 200,000-ton requirement was anticipated in the last year of the Second Five-Year Plan. Now it is even difficult to guess what necessary increases should be.

The total productive capacity of the Turkish phosphatic industry is less than

42,000 tons of plant nutrient. Again before the Mexican dwarf-wheat requirements were included, needs by 1972 were estimated to be 280,000 tons.

Planners realize that fulfilling wheat's fertilizer needs will be the beginning, not the end, of increased fertilizer demand. For, once the farmer learns how to use fertilizer in large amounts on wheat, the practice will quickly spread to other crops. The 250,000 Turkish farm families which cultivate sugar beets are an example. The sugar factories taught them how to use fertilizer on sugar beets, and made this fertilizer available. Now these same families use fertilizer on all their crops.

Fertilizer use is influenced not only by the agronomic demands of the crop grown, but by the economic return gained from its effective application. Increased fertilizer use in Turkey will depend on its cost to the farmer and the relative price he receives for his crop—in other words, his additional cost per decare compared with extra output he gets from his fields due to use of the fertilizer. In the Çukurova Mexican trials fertilizer has more than paid for itself.

In addition to increased fertilizer demands for the high-rainfall areas where the 20,000 tons of Mexican wheat will be grown, much more fertilizer will also be needed for the Anatolian plateau. Here on 160 million decares of land, where alternate cereal and fallow are practiced, the yield response to nitrogen fertilizer is limited, due to insufficient rainfall.

Since lack of moisture is the limiting factor on plants' ability to use nutrients, the Anatolian region can obtain the full potential from the new seed only when true summer fallow practices and deep-furrow seed drills are employed. Then last winter's moisture can be saved, like money

in the bank, for wheat planted after months of dry weather.

True summer fallow practice first involves plowing or use of sweeps while there is still moisture in the surface of the soil. Then, throughout the summer, rod weeders must be used. They not only eliminate moisture-stealing weeds but form a dust mulch that fills air pockets left from the plowing and helps reduce water loss from evaporation. Their proper use holds soil moisture close to the surface so that deep-furrow drills can plant the seed in

moist soil, where the wheat can germinate and start growing although autumn rains are yet to come.

With these methods of "saving" moisture, the effective use of fertilizer on the Anatolian plateau becomes possible—and the real potential of new wheat yields can be realized.

Mexican semi-dwarf wheat can change Turkey's economic picture in a few short years. But semi-dwarf wheat does not grow without fertilizer. For success, that ally must be present.



*Chemical fertilizer is the most effective input for increased per-hectare wheat production.*

Bahri Dagdas, Minister of Agriculture, says farmers in Turkey received 340 million TL. credits for fertilizer in 1966. This year they will receive 600 million TL. credits for fertilizer, plus 240 million TL. credits for wheat seeds, and 600 million TL. for agricultural machinery. Increased amounts of fertilizer will be essential and use of drills and other machinery would be desirable for farmers living in the 700 millimeter rainfall regions (see map page 54) where the 20,000 tons of imported seed will be cultivated.

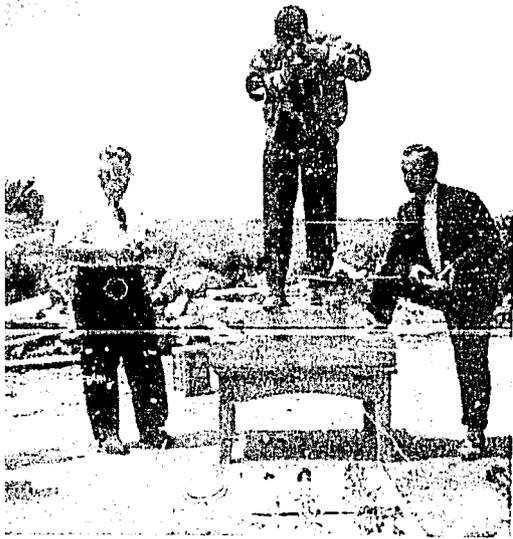
Of the 20,000 tons of imported seed, one-fourth will be sown this year under specially controlled conditions for future

seed. The remaining 15,000 tons will be grown by about 20,000 farmers in the area shown on the map. As about 7.5 kilograms of Mexican wheat seeds are used per decare, the land to be cultivated by farmers will be roughly two million decares. Nitrogen and phosphate fertilizers will be essential for this revolutionary program, for Mexican wheat demands heavy fertilization.

Agronomists expect that new seeds, increased production, and use of new systems and new machinery will inevitably be accompanied by more weeds, pests and new diseases to be overcome. Increased production of the needed insecticides will probably be easily



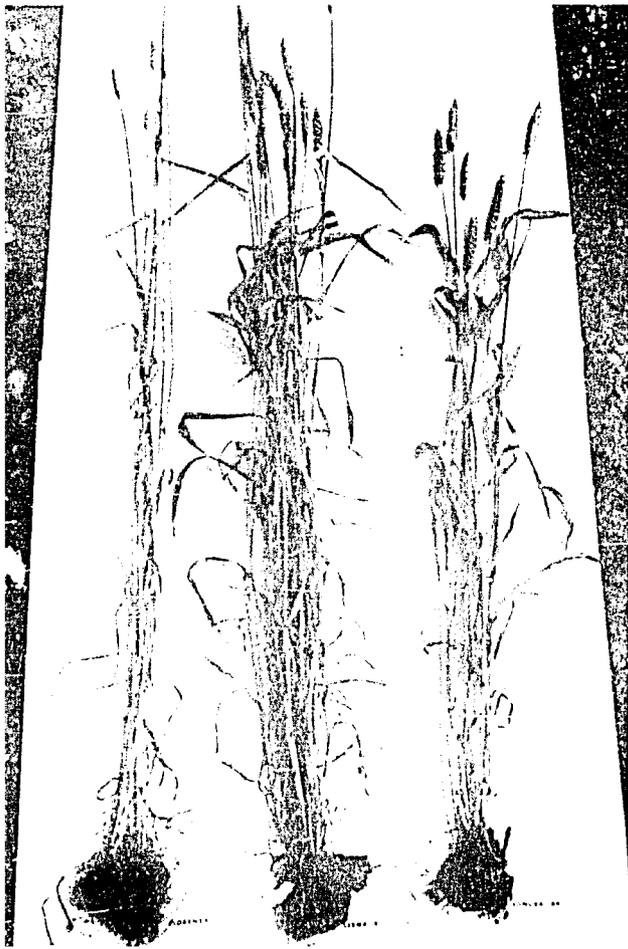
*All of Turkey wants to know about the great wheat reform. Newsreel man shooting film to show contrast between Mexican wheat on left and local variety on right.*



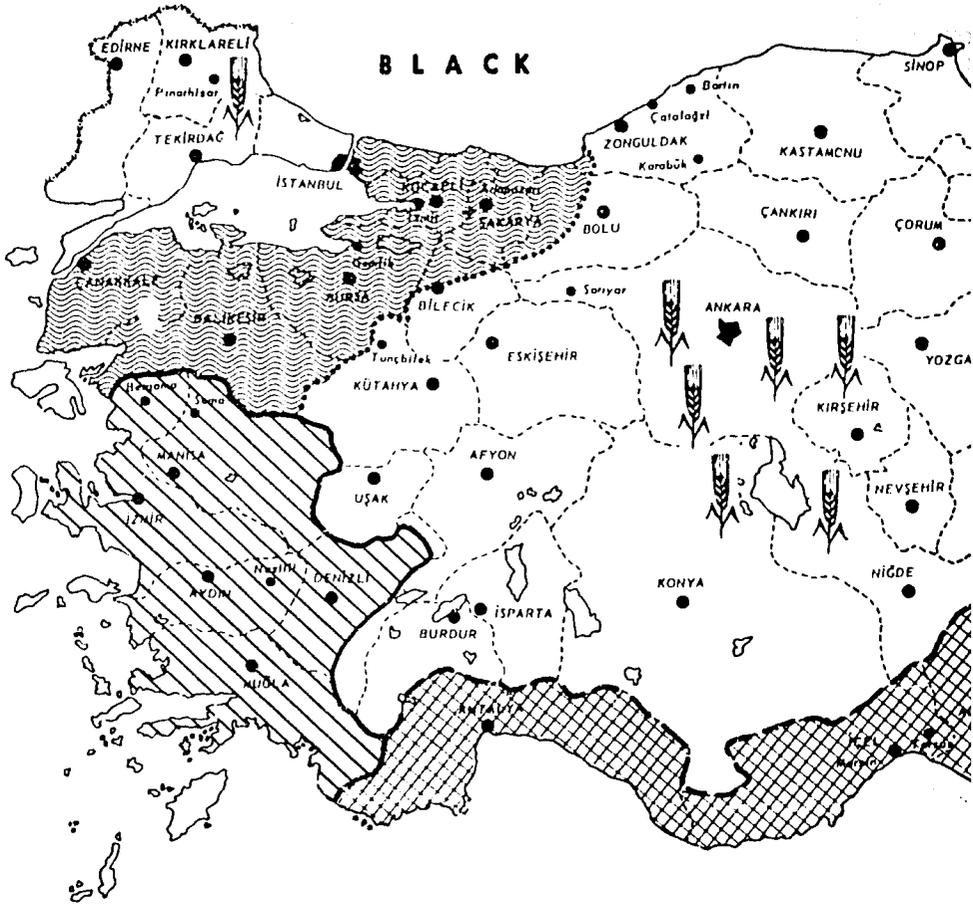
achieved by the Turkish insecticide industries, which have grown ten-fold in the last 10 years and can continue expansion. Most important and more difficult will be to bring to the farmer the information as to how these old and new pests must be dealt with, how weeds can and must be destroyed, and how modern industry can help modernize agriculture.

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*Turks and Americans work together to record...*



*...samples of three varieties of wheat now growing in the Çukurova area. Superiority of Mexican varieties is evident even before harvest.*



MARMARA

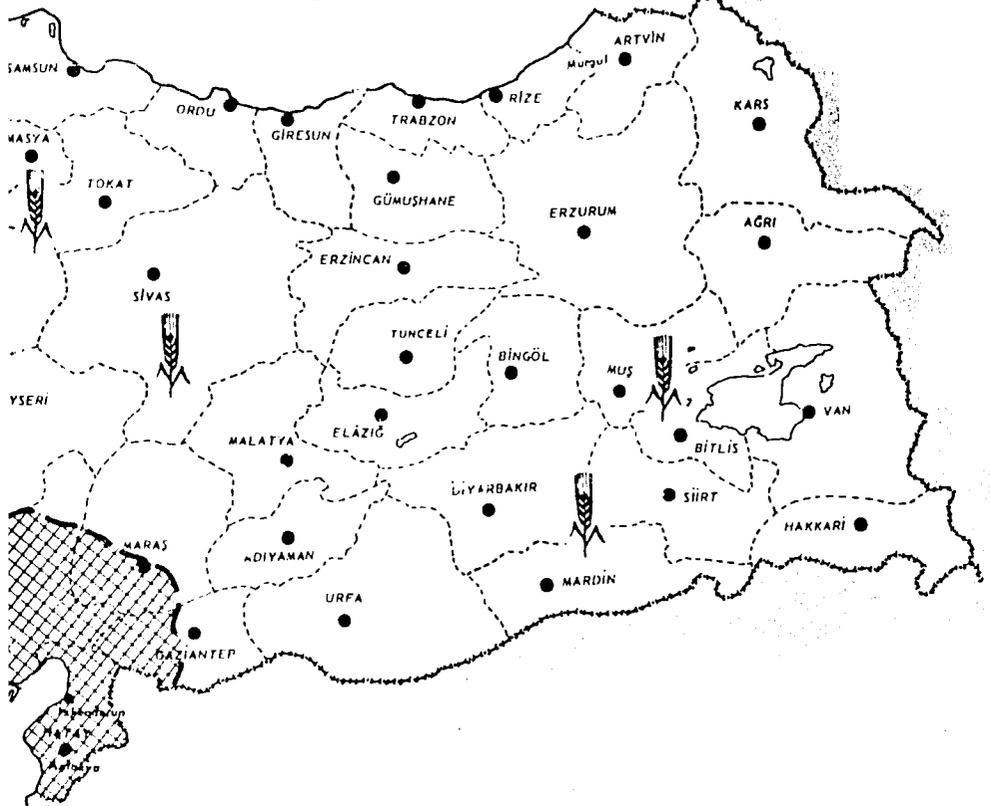


AEGEAN



MEDITERRANEAN

S E A



AREAS IN TURKEY FOR DISTRIBUTION OF  
19,600 TONS OF NEW VARIETY WHEAT SEED



400 TONS FOR DISTRIBUTION FOR STATE FARMS

# THE ENEMIES — PESTS AND WEEDS

**W**ith new seeds, new technology, and new machines Turkey's agriculture is entering a new era. There is no doubt that there will be enemies of this change. One of the most redoubtable will be the pests and weeds that endanger crops. Progress will increase these enemies. Paradoxically, it will be essential to destroy in order to improve.

Before 1950 all insecticides used in Turkey were imported. The amount was insignificant and was used exclusively on state farms and breeding stations. Early in the 1950s only one pest-control chemical factory operated in Turkey, but the number rose to eight in the 1960s.

Since the day they were built, all eight factories have been expanding — some have increased ten-fold. Their products can be compared favorably with the best in the world. No pesticides, and very little raw materials are now imported. But soon

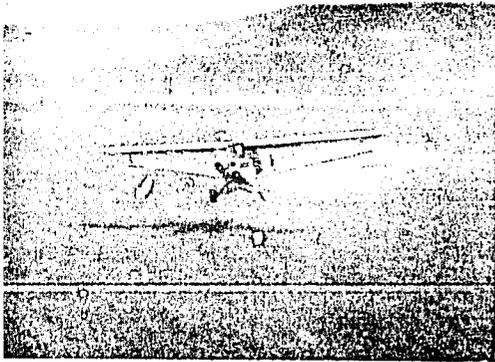
Turkey will need more and more pesticides and herbicides, especially to combat the pests and weeds that can injure the wheat to be grown from the 20,000 tons of new imported seed.

Just 20 years ago when pests ravaged wheat, when weeds starved out stalks, when bluemold ruined tobacco, when fruits were infested with worms; when locusts invaded and razed whole agricultural districts — the stricken farmers would say — "kismet" and go to the coffee shops, defeated. They did not know that such enemies could be fought and overcome. They did not know that more could be grown, and more could be saved.

There are still farmers in very remote areas who have not even heard of pest-control chemicals, let alone used them. But they have now become a very small minority. Others clamor for help when their crops are endangered, and they seek newest



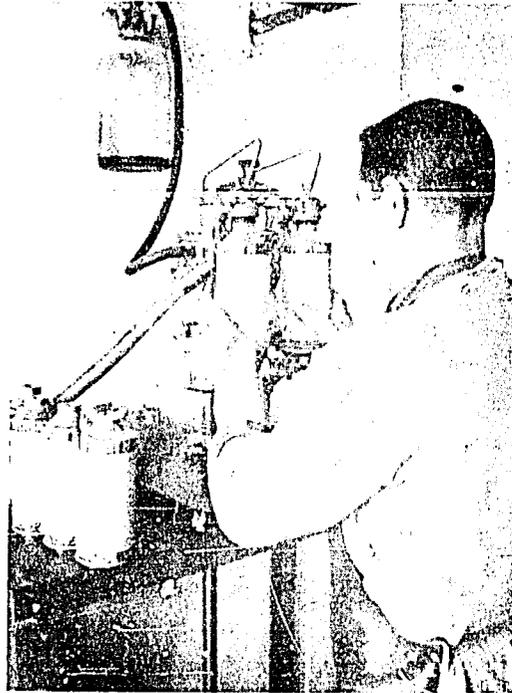
Plant diseases, insects, rodents, and weeds are eternal enemies of the farmer. The fight against them will have to be intensified, not only during Turkey's agricultural reform – but after.



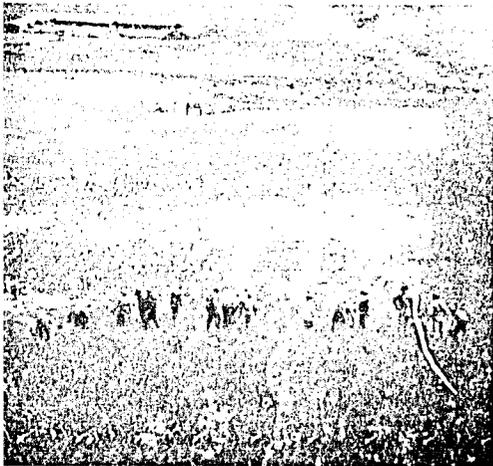
*Spraying from airplane to kill weeds.*

information and methods.

They say it is not enough to manufacture chemicals to fight agricultural pests; the Government must continue ceaselessly, through the Ministry of Agriculture research stations and institutes, to establish what remedies are needed for which problems. And this information must be sped to the farmer.



*Preparing insecticides.*



*Weeding by hand.*

# HE IS NOT ALONE

If the Turkish farmer  
does not progress,  
Turkey will never progress.



*He is the biggest thing there is in Turkey.*

Turkey's development is in its middle stage. Now the dynamics of modernization and modern technology can work wonders if they can reach the majority population—the farmers.

The farmer is ready to accept. Proof is the turmoil of interest the beginning of the wheat revolution created in Tarsus. A new awareness has come

to the farmer, an awareness that he is no longer alone with his fate. A new haste has overcome lethargy. The truth has been revealed to him—that he is on a journey of progress. The small Turkish farmer recognizes that in his very numbers he is the biggest thing there is in Turkey, and that if he does not succeed, Turkey will never succeed, and



*He is no longer alone.*



*A new awareness has come to the farmer.*



*The farmer's  
family  
is ready  
to accept  
change.*

that if he does not progress, Turkey will never progress.

Presently there are about 100 experiment stations, research institutes and experimental fields widely dispersed over Turkey. Most have been utilized for plant breeding, seed increase, seed improvement, and plant protection, with a limited amount of coordinated research

work. There is new awareness here, too, that much more will have to be done and many more men will have to be trained. It is imperative, for the progress desired and planned, to reach every farmer in every field in Turkey with all technological information and reassurance that he is not alone.

---

*They are on the journey of progress.*



## TURKISH PARTICIPANTS IN MEXICO

In mid-March, 1967, four Turkish agricultural specialists from the Ministry of Agriculture—three of them former USAID participants (see picture)—went to Mexico to select 19,600 tons of semi-dwarf seed wheat for Turkey's wheat reform. Also, 400 tons of seed including several varieties will be sent from the United States for trials on the Anatolian plateau.

Two of the specialists have now returned. The others will come after the Mexican wheat has been shipped to Turkey. The two still in Mexico were joined in April by two more Turks from the Washington Purchasing Commission—Hüseyin Kunter and M. Koçak. The latter arrivals are responsible for contracting and shipping of the wheat to be purchased in Mexico.

The seed wheat selected in Mexico for Turkey will come primarily from Hermosillo,

Guaymas, Obregon and Navajoa districts of the Mexican province of Sonora. The bulk will be from four selected varieties, although some 12 varieties of seed will be imported. The shipment will include small quantities of several new Mexican varieties for introduction and testing in Turkey's experimental stations, state farms and in some selected fields of progressive farmers.

In Mexico the Turkish agricultural specialists worked together with USAID/Turkey's Food and Agriculture Division Chief, Ralph N. Gleason, the Mexican Government/Rockefeller Foundation wheat research personnel, and the Mexican Confederation of Agricultural Union's and Associations, from whom about 17,800 tons of the wheat seeds were purchased. The remaining approximate 1,800 tons of wheat seeds were purchased from the certified seed agency of the Mexican Government.

The task of the Turks in Mexico will not be completed when the wheat seeds they have selected and purchased arrive in Turkey. The major part of their job will begin—assisting with the planting of the 20,000 tons.

*USAID participant Sadettin Demiröz (left) and Vasfi Ocaklı (right), both of the Ministry of Agriculture, selecting wheat with a prominent Mexican wheat grower.*



The Turkish farmers know now that they are living in a potentially rich land. This reality has brought a new positivism to many, but some need much encouragement to join the others on the journey of progress.

It will be a difficult job, but no reform is easy. Ministry of Agriculture extension agents will very often be confronted with staggering problems, with hurdles so great as to put the fear of defeat in them. Only when

*The journey of progress will be difficult. But no reform is easy.*





*The old and the young are moving toward a new future.*

they win their individual battles, however, can the reformation succeed. Turkey is marching toward a new future, and these men of the government know they will have to be the guides. It is they who will teach the Turkish farmer that today is yesterday's tomorrow. The great challenge for these men of the government is not only to make the farmers who are productive more productive, but to secure the creative energy of all Turkish farmers.

Over 80 percent of the farmers in Turkey farm not more

than 100 decares of land. Since they form the bulk of the farm population, it is not only when a program of progress is directed to them that one can speak of a crash program on a national scale. It is they who must be reached if a crash program is to succeed. It is they who have to be fully informed about such MUST factors as method and depth of sowing of wheat seed; type of seed to be used; time of planting; rate of seeding; use of fertilizer; irrigation and water conservation; rotation with other

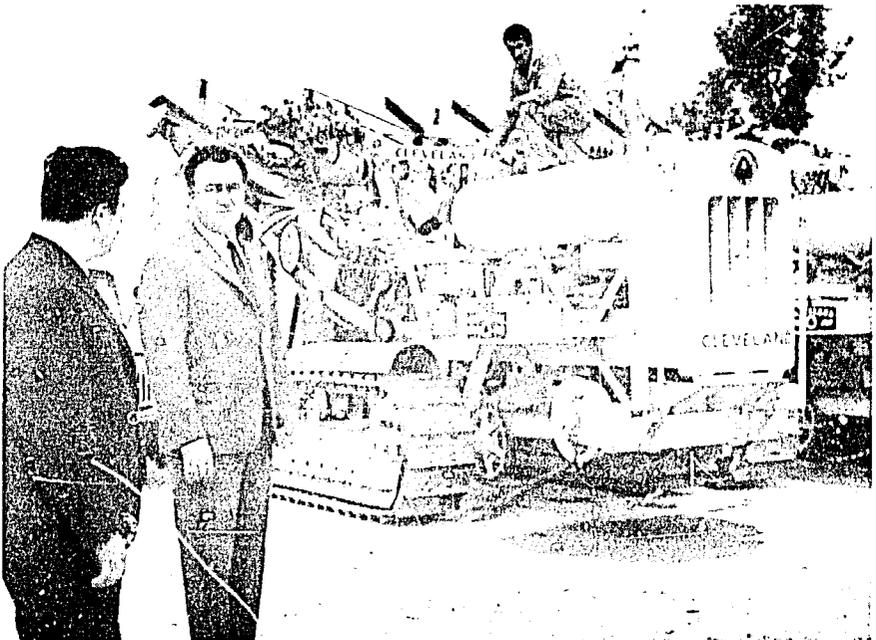
# LAND LEVELLING — THEY ALL NEED IT

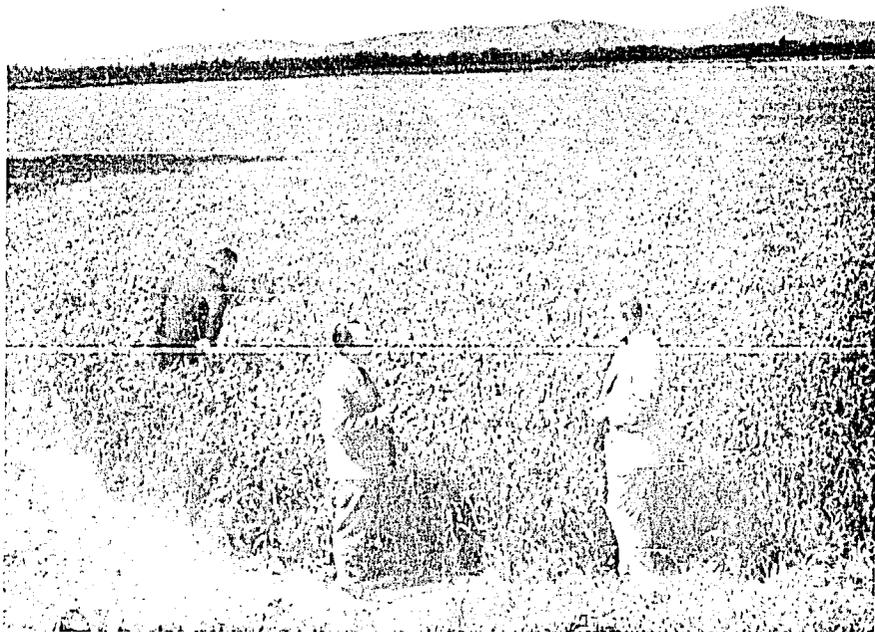
**W**ithout major change the pattern of Turkish agriculture would have continued as slowly as it has in the past centuries. Change came, however, in many respects like an instant revolution rather than a gradual evolution. But one of the most essential and most difficult changes still to be effected is that of land levelling and drainage.

Land levelling is not completely new to Turkey. Financed by a \$20 million World Bank Loan, Topraksu engineers began levelling land in 1966, for farmers in the Tarsus and Yuregir plains. That first year 38,000 decares were levelled—3,000 decares more than had been planned. "And we were late in beginning," Hanefi Soylu, the head of the Topraksu group and a 1956 USAID participant says, "because the heavy equipment we needed was late in reaching us. We plan and hope to level a further 82,000 decares this year."

The World Bank financed "Lower Seyhan Project" calls for the levelling of 1,700,000 decares of land in the Çukurova region. The first target is the levelling of 530,000 decares, and Topraksu technicians say there will be no difficulty achieving it.

*Hanefi Soylu, USAID participant and head of Topraksu land-levelling group in Adana, with chief engineer Baber Güven beside heavy land levelling equipment.*





*Lerma Rojo wheat grown in Tarsus gave excellent results because land was levelled before seeding.*

At first the farmers of Çukurova were unenthusiastic. They considered only that, as the time between harvesting and planting of cotton did not suffice for land levelling, they would have to sacrifice one year's cotton planting. They did not accept that nothing would be lost if—as it should be—they would rotate wheat with cotton. That their land was suffering, some even dying under their feet, would not make some farmers change their minds.

Now they can observe what levelling has done for their neighbors: Considerable increase per-decare in both wheat and cotton; easier irrigation and drainage. And all the expenses are paid by Topraksu, if farmers agree to plant wheat in rotation with cotton. That is Topraksu's price—to help the farmers in spite of themselves.

Now from all over Çukurova, and from both neighboring and remote provinces, come letters and telephone calls seeking technical help and information about land levelling. Farmers are beginning to hear, to believe and to see. They come to Çukurova in chartered buses, and while the large machines level the land, they sit by the fields and watch, enthralled.

Since such projects require skilled workers and much expensive heavy equipment, the work is necessarily confined at present to a relatively small area of Turkey. But the farmers now see that they all need land levelling. It not only saves land from damage and destruction, it brings dramatic increase in crop production. It must develop into an essential practice for agricultural reform in all Turkey.

crops; and use of fallow. The specific combination of inputs and techniques will, of course, be different for different areas of Turkey.

Results from the Çukurova region indicate that the technical know-how for obtaining high yields is already available within Turkey. The need is to get this knowledge across to all farming communities in the country.

When the farmer hears of an innovation, he becomes interested and seeks information about it. Considering his present and anticipated future situation, he then decides whether or not to try it. He may experiment on a small scale to determine its utility.

Demonstrations arranged by the Ministry of Agriculture's Extension Service on the farmers' fields can further the adop-

*The Ministry of Agriculture's leaders, researchers, extension agents, plant breeders, pest-control agents, plant protection specialists and communicators...*





tion process. It creates awareness within the community and interest among the farmers. In about 25 percent of the improved practices in the United States, credit for adoption was given to demonstrations.

To get the new ideas and the new methods across to the rural population the Ministry of Agriculture and other assisting government agencies will have to use all available promotional devices such as radio, outdoor advertising, newspapers, handbills, posters, motion pictures, cinema vans and exhibits, and, when it comes, television. Mass communication, group communication and even interpersonal communication will become necessary.

Importing seeds from Mexico is only the beginning, not the

*...and all the farmers—large and small—of Turkey...*

*...will have to work hand in hand.*



# LAND LEVELLING — POSSIBILITIES FOR SMALL FARMERS

**M**exican varieties of wheat are being introduced in the high rainfall areas of Turkey. Soils in high winter rainfall areas have the problem of becoming saturated with rain water unless provisions are made for ample surface drainage. In the Adana

area it has been demonstrated that proper surface drainage will increase production of local wheat varieties by 50 percent. These demonstration areas were "leveled" with small land forming equipment pulled by relatively small size farm tractors (28 H.P.).

Mehmet Can Eliyeşil, first farmer in Turkey to plant the Mexican semi-dwarf wheat, says: "I was told that I would get good results if I grew Senora wheat. That I would get better results if my land were levelled. I levelled my land with the agricultural machinery I have and my tractors. It certainly needed some manipulating but it can be done. On the fields where I planted Mexican wheat, I got good results. And on the levelled fields where I planted the local variety we have been planting for



*When small size scrapers and land planes become available, small farmers like these will also be able to level their land.*

years, I got more wheat per-decare than ever before."

The new On-Farm Water Development Project with Topraksu is based on the development, fabrication and utilization of small-type land forming equipment utilizing the various sizes of farm tractors already owned and presently being operated by Turkish farmers.

In Denizli province, five scraper-floats have been manufactured in local machine shops which utilize the smaller horsepower, three-point hitching system of Massey-Ferguson, Ford, Dexter and comparable tractors which are utilized by the hundreds in that area. Designs have been prepared for a larger three-cubic meter capacity scraper which requires medium capacity farm tractors. A land plane is the last land forming piece of equipment used to complete the land shaping operation, thereby assuring proper surface drainage and irrigation practices. A land plane is a relatively long piece of equipment with a blade that literally skims off the high spots of the fields and fills the low ones.

Fabricating prototype models of these important pieces of land forming equipment in Turkey is in process. Additionally, buck scrapers and wooden floats have been manufactured in Denizli which successfully utilize animal power for land shaping.

If all activities are implemented as anticipated, Turkey will have substantial numbers of land leveling equipment which can be operated by farmers' available power, be it animal or tractor.

By the end of 1973 there should be sufficient numbers of small size scrapers and land planes in Turkey to complete the implementation of land forming practices on approximately 50,000 hectares (125,000 acres) annually.

culmination of Turkey's wheat reform. No variety of wheat is good forever. The Ministry of Agriculture is aware of the need to continue research and breeding and introduction of new varieties. This will be a continuous job, for a seed variety which is good today may be useless tomorrow. It will be necessary to develop new seeds best adaptable to conditions in several parts of Turkey. But the task will not end then. All new information must be brought to the farmer. Agricultural research is done in the laboratory, and in the field. But its real value becomes evident only when the results reach the farmer.

This Journal tells the beginning of a story-of Turkey's wheat revolution. Achieving a "happy ending" will depend on the farmers, small and large; on the Ministry of Agriculture's leaders, researchers, extension agents, plant breeders, pest-control agents, plant protection specialists and communicators; and on private enterprise for supplying agricultural machinery, insecticides, herbicides, fertilizer and other ammunition for the war on hunger. The reform is a pluralistic struggle. For victory, all sectors must march side by side—all the way.

**MINISTRY OF AGRICULTURE**  
**STRATEGY PLAN**  
**FOR MEXICAN WHEAT PROJECT**

TYPE OF SERVICE	FINANCIAL SCOPE (in lira)	3	4	5	6	7	8	9
		MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
<b>SEED PROCUREMENT AND PREPARATIONS FOR CULTIVATION</b>	1- Seed procurements		██████████					
	2- Selection of seeds		██████████	██████████	██████████			
	3- Financing requirements		██████████					
	4- Loading and transportation				██████████	██████████		
	5- Unloading, regional ware-housing					██████████	██████████	██████████
	6- Seed-spraying							██████████
	7- Procurement of equipment				██████████	██████████	██████████	██████████
<b>SELECTION OF FARMERS</b>	1- Announcing the program on provincial level		██████████	██████████	██████████			
	2- Selection of participating farmers			██████████	██████████	██████████	██████████	██████████
	3- Enactment of agreement with farmers						██████████	██████████
	4- Distribution							██████████
<b>FERTILIZER</b>	1- Determining fertilizer requirements			██████████				
	2- Fertilizer procurement and distribution							██████████
<b>EDUCATION - EXTENSION</b>	1- On-the-job training		██████████	██████████	██████████	██████████	██████████	██████████
	2- Farmer education		██████████	██████████	██████████	██████████	██████████	██████████
	3- Procurement of personnel		██████████	██████████	██████████			
	4- Procurement of equipment			██████████	██████████			
<b>RESEARCH</b>	1- Determination of a research program			██████████	██████████			
	2- Implementation of a research program							██████████

## Activity Program for March 1967 – March 1968

10	11	12	1	2	3	RESPONSIBLE AGENCY	COOPERATING AGENCY	FOLLOW-UP AGENCY	COMMENTS	PROBLEMS TO BE SOLVED
OCT.	NOV.	DEC.	JAN.	FEB.	MARCH.					
						Min. Ag.	S.P.O.-Min. Fin. - Agbank	Gen. Dir. Agr. - Top. Of. - Donat. State F	Already purchased	
						" "				
						Min. Finance	Min. Ag. - Agbank		Purchasing gr. departed	
						Soils Products	Min. Ag.	Min. Agr.		
						S.P.O. - State Farms	Min. Ag.	" "		
						Gen. Dir. Agr.	Plant protect.	" "		
						Gen. Dir. Agr. - Don. - Agbank				
						Gen. Dir. Agr.		Min. Ag.		
						" "		" "		
						Gen. Dir. Agr. - State Farms	Agbank	" "		
						Gen. Dir. Agr. - Agbank	Donatim	" "		
						Gen. Dir. Agr.	Donatim	Min. Ag.		Timely imports of ammonium nitrate
						Agbank-Donat.	Gen. Dir. Agr.	" "		
						Gen. Dir. Agr.		Min. Ag.		
						" "				
						" "				
						Gen. Dir. Agr.				
						" "				

# DEVELOPMENT OF NEW WHEATS FOR TURKEY

*By Dr. Warren E. Kronstad\**

A plant breeder strives to adapt plants to the growing conditions of a specific area so as to obtain maximum yields. Many times, as with wheat, there are such factors as weak straw, diseases and insects, or perhaps environmental conditions such as low temperatures which place limitations on obtaining these maximum yields. Therefore the plant breeder must develop plants which are resistant to such limiting factors.

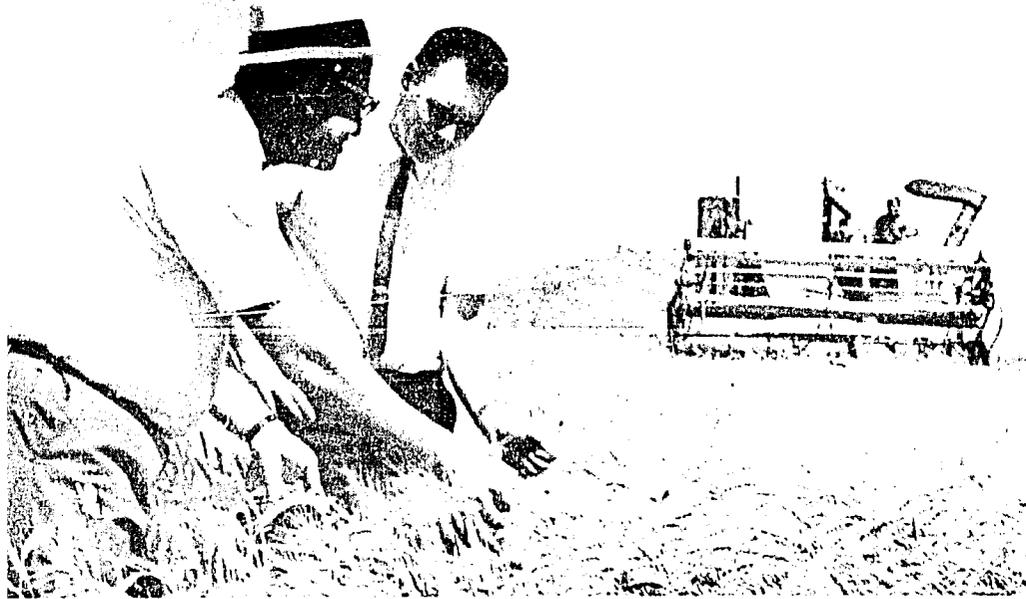
The Rockefeller Foundation working in Mexico and the plant breeders in the Pacific Northwest region of the United States following the lead of Dr. Orville Vogel\*\* have developed new wheats which are resistant to many of the limiting factors influencing grain production. One of the most important characteristics of these new wheats is that they have short, stiff straw which allows the growers to use much higher rates of fertilizer, particularly nitrogen.

If similar amounts of fertilizer were applied to standard height wheat varieties, such as the native wheats now being grown in Turkey, the wheat plants would lodge and fall to the ground prior to harvest. In addition, these new wheats are better adapted to the environments in which they are grown, allowing far greater yields to be obtained.

Turkey has taken a bold step forward in attempting to increase wheat yields by introducing large amounts of these new semi-dwarf and other improved wheat varieties from Mexico and the United States. These wheats, when grown under proper cultural practices should markedly increase wheat yields. However, before maximum yields can be obtained

\* *Dr. Warren E. Kronstad is a plant geneticist with Oregon State University. His principal area of research is wheat breeding.*

\*\* *Dr. Vogel is a world renowned wheat breeder employed by the U.S. Department of Agriculture in the State of Washington.*

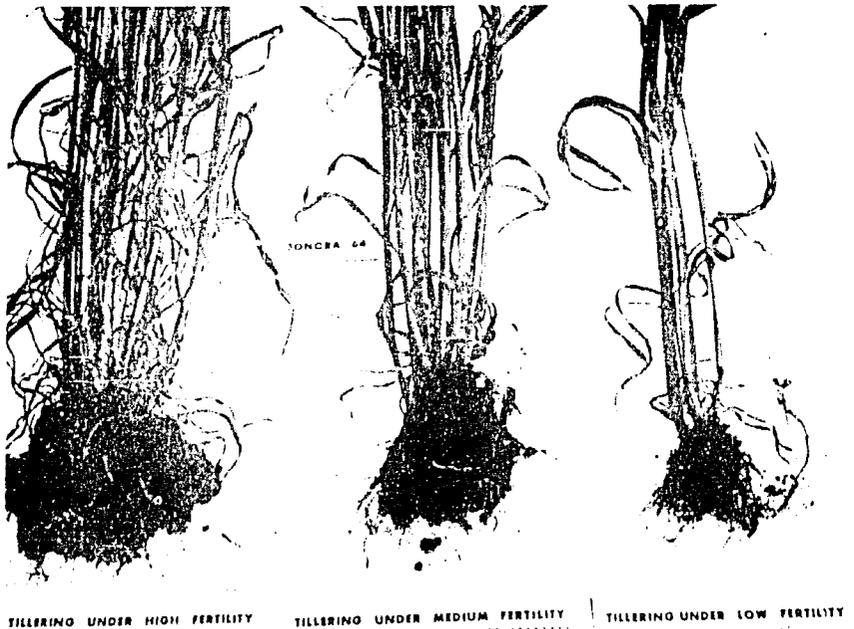
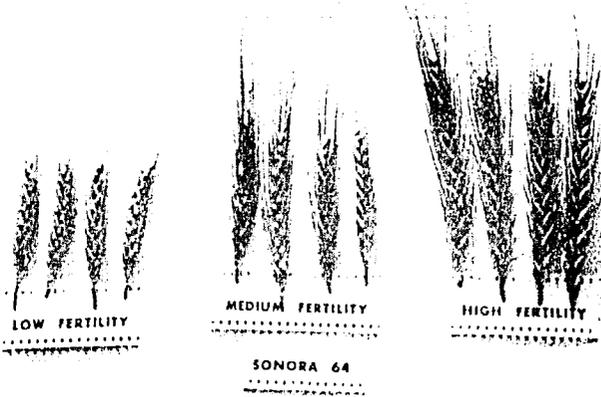


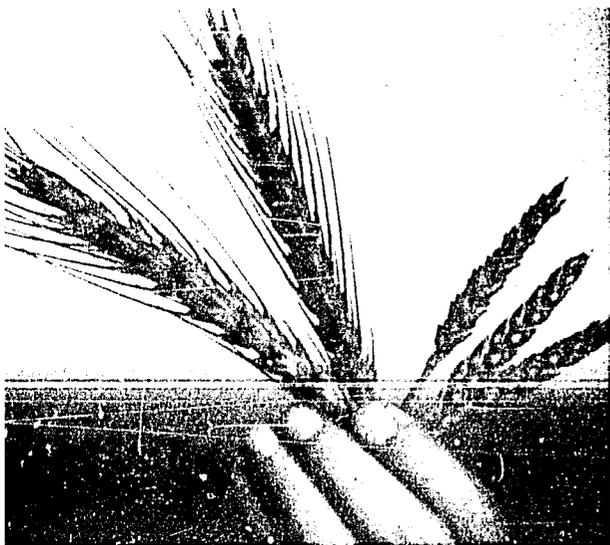
*Dr. Warren E. Kronstad (right) with Adana farmer Turgut Yeğenağ during harvesting of Mexican wheat in Adana.*

with these genetically improved wheats, a great deal of information must be obtained through research conducted in Turkey. The major objective will be to determine how well these new wheats are adapted to the conditions in this country and to determine what cultural practices will be necessary to obtain high yields. This information is particularly important since these new wheats were developed for regions where climatic conditions are similar, but not exactly like those found in Turkey.

In Turkey there are many different climatic regions varying from the mild winter and warm summers found along the Mediterranean Coast to the cold winters and warm summers observed on the Anatolian Plateau. Since a wheat variety is developed to fit a specific environment, it will be necessary to test a large number of varieties in several locations so as to determine which variety will be best adapted to a specific region. This is the reason 23 different wheat varieties are being introduced for testing.

Furthermore, the cultural practices needed to produce maximum yields in one area may be entirely different from those needed in another area. For example, along the Mediterranean coast near Adana, one of the major problems will be to remove excess moisture from the fields during the winter months. This could be a very limiting factor to the normal growth of the wheat plant, since it cannot tolerate excessive moisture. This is in direct contrast to the conditions found on the Anatolian plateau, where cultural practices will have to be employed to conserve as much moisture as possible due to the low annual rainfall.





*Picture shows two heads of Mexican wheat (left) and three heads of local Florenza variety (right).*

In addition, experiments will have to be conducted to learn more about how to manage these new wheats. Fertilizer studies will have to be designed to obtain information for such factors as when to apply the fertilizer, in what amounts, and what types of fertilizers should be used. Other studies will involve such factors as weed control, rates and dates of seeding moisture utilization and any other condition which might influence the final yield of grain. Since large quantities of these new wheats will be planted this fall, there is an air of urgency regarding such information.

Once this type of information is available and the plant breeders can determine what the limiting factors are in Turkey for these new wheats, additional improvement can be made through varietal development. Perhaps by hybridizing some of the new high yielding semi-dwarf wheats with the native wheats, a new variety can be selected from the progeny which will be high-yielding and can tolerate the high moisture conditions found in many of the coastal areas.

Certainly a continued effort to increase wheat production must be made along with progress in other segments of agriculture if a satisfactory diet is going to be provided in a world of expanding populations.

# HARVEST

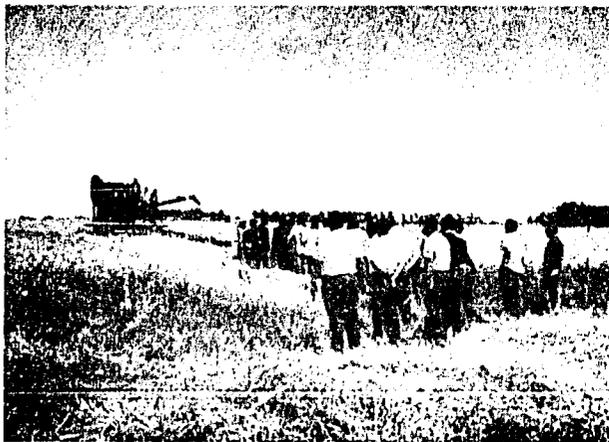


*The governor  
of Mersin met the  
Minister  
of Agriculture  
with a bouquet of  
Mexican wheat.*

*Minister, farmers and guests mingled  
in Tarsus to witness the burying of  
the past and the birth of the future.*



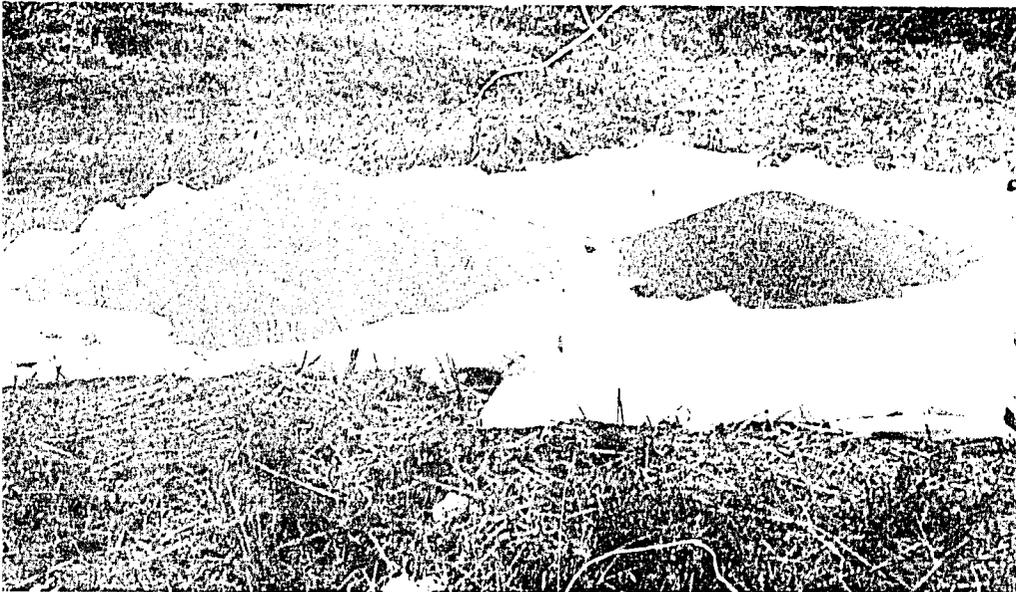
*Mexican wheat has come to Turkey. Turkey's farmers imported it and, together with Turkey's agricultural technicians, will make it the vanguard of the future.*



*The field  
harvested gave  
500 kilograms  
from one decare  
of Mexican  
wheat...*



*...as compared to a 140 kilogram average from one  
decare of local varieties. A gigantic record. The  
past is the past. The present is the future.*



As this Participant Journal went to press, Mr. James P. Grant and his family were leaving Turkey for return to USAID, Washington, D.C. Intensely interested in the wheat seed program from its inception, Mr. Grant carried with him on the airplane two preliminary copies of this Journal, plus many additional photographs to show to Washington officials the progress being achieved in agriculture in Turkey.

A highpoint of his leave-taking took place at a luncheon the previous day given in his honor by Bahri Dağdaş, Minister of Agriculture. Mr. Grant was presented with three loaves of bread-bread that had been baked from Mexican wheat which was harvested in Çukurova just four days earlier.



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