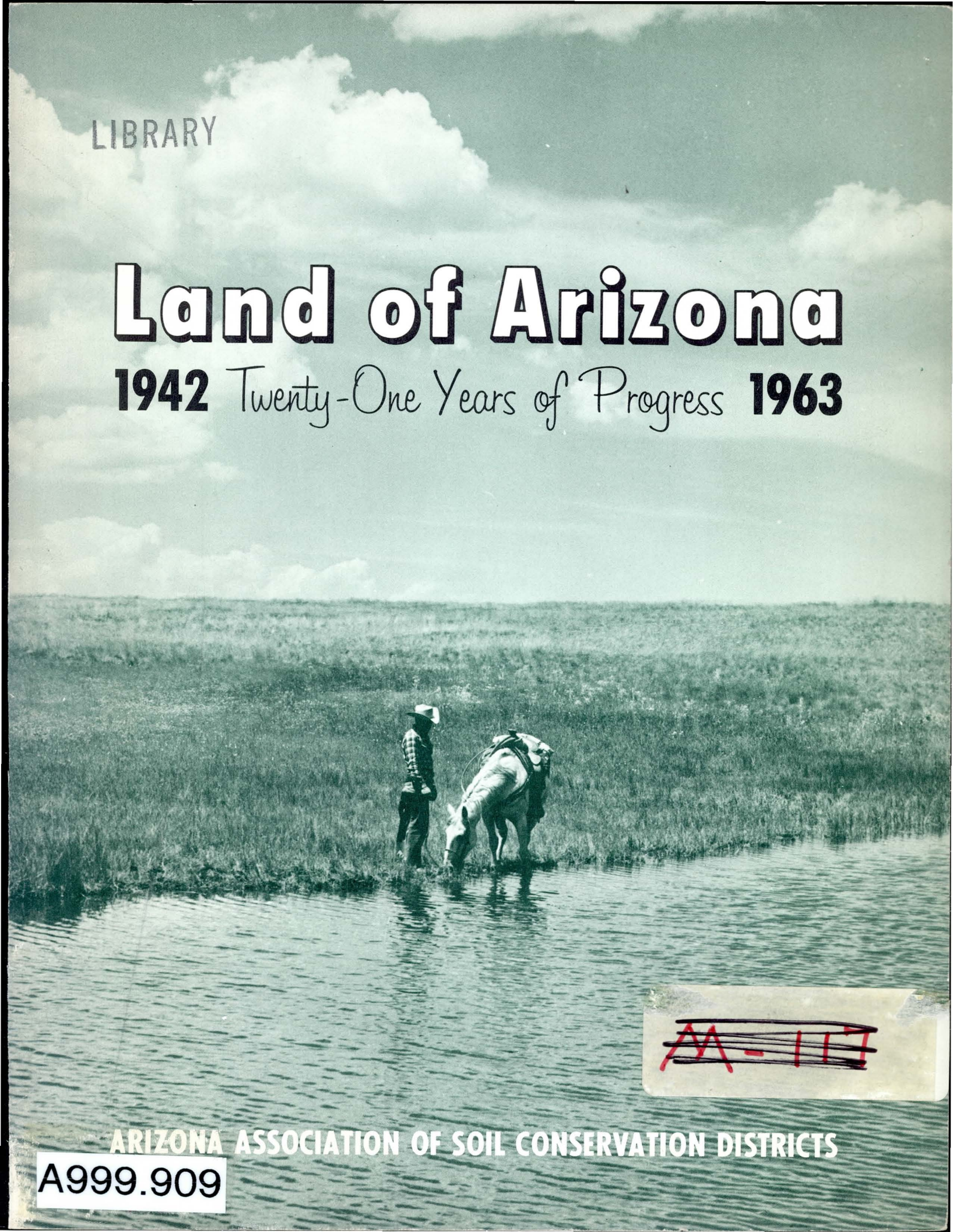
Land of Arizona

1942 Twenty-One Years of Progress 1963



ARIZONA ASSOCIATION OF SOIL CONSERVATION DISTRICTS

Report. . .

Office of The Governor
State House
Phoenix, Arizona

PAUL FANNIN
GOVERNOR

TO THE CITIZENS OF ARIZONA:

One of the most exemplary demonstrations of citizenship responsibility in our State has been made by the hundreds of farmers and ranchers who have served as Soil Conservation District Supervisors during the last twenty-one years. Arizonans today are leading a healthier, more prosperous and enjoyable life as a result of the work which is unfolded in the following pages of this report, "Land of Arizona--21 Years of Progress in Soil and Water Conservation."

The participation of the Soil Conservation Districts is a living example of citizen participation in the affairs of their government in the great tradition of a free people. Here, in forty districts we find local people working and directing the efforts both of state and federal government to the end that our precious soil may be conserved and our vital water supply developed and maintained. Each of us owes a great debt of gratitude to the far-sighted individuals who initiated this program.

Progress in the past points the way to the great task which lies ahead. Conservation, development, and wise use must be our watchwords.

Using the sound foundation which has been laid for us during the last twenty-one years of Soil Conservation District progress, we must make speedy headway toward a complete conservation and development program for all our land and water resources.

Sincerely,

Paul Fannin

Paul Fannin
Governor of Arizona

To the People

Arizona Association of Soil Conservation Districts

AFFILIATED 100% WITH THE NATIONAL ASSOCIATION

To the People of Arizona:

Our Association is very proud to report its part in stewardship of Arizona's land and water resources. The soil and water conservation and development program of our Districts is mature and successful beyond the hopes of pioneers of this movement. However, we District Supervisors recognize the enormous job remaining and gladly accept the challenge and responsibility to do our share with the thousands of District Cooperators.

We should all be grateful for the outstanding leadership and guidance of the hundreds of District Supervisors who have served and still serve. Their devotion to duty as elected officials of Arizona has necessitated personal voluntary contributions in time and money for the administrative expenses of their Districts, even though Districts are public bodies of state government.

We are hopeful that in the future State government will see its way clear to assume financial responsibility of operating the State District program as is done in other states.

We thank the various state and federal agencies that have helped Districts in soil and water conservation activities.

We sincerely appreciate the generous coverage the Arizona Highways gave the Districts in a recent issue of that magazine.

We further want to thank our congressional and state legislative leaders for the support given in making it possible to have local, self-governed Districts charged with the responsibility of safe-guarding our basic natural resources--soil and water.

Soil and water conservation knows no political party bounds--it is nonpartisan. We all take a stake in the productivity of the land and have a responsibility to it regardless of whether we live in the city or in the country.

Sincerely,

John Olsen

John Olsen
President

JO:hk

CONSERVATION • DEVELOPMENT • SELF-GOVERNMENT

Arizona Pioneer Agriculture

ABOUT THE TIME that William the Conqueror entered England in 1066, there was a flourishing farming civilization in the great valley near the confluence of the Salt and Gila rivers. These early-day Indian farmers were the Ho-Ho-Kam, a name given them by present-day Pima Indians meaning "the ancient ones" or "those who have gone."

Evidences in the Salt River Valley of old irrigation canals, Indian ruins, and artifacts indicate a population resided there of at least 100,000 people.

When Father Eusebio Francisco Kino, an Italian-born Jesuit missionary representing the King of Spain, first visited the Casa Grande ruins in 1694, he found Pima Indians growing cotton, corn, and beans in the Gila and Santa Cruz Valleys. The Ho-Ho-Kams had already left.

Arizona's First Livestock

Father Kino was the first "ranchman" to introduce domestic livestock in Arizona. To his beloved missions in Pimeria Alta he brought cattle, sheep, goats, horses, and mules from his Mexican "Haciendas."

Following Kino in the new land were Spanish immigrants who brought Andulusian cattle to southern Arizona. They settled on land given to them by the King of Spain — known today as Spanish land grants.

Cattle thrived on the nutritious grasses and shrubs growing in the mild climate of the new world. Spanish ranchers prospered from 1780 to 1820, a period of peace between the Spaniards and Indians. It was a different story after 1820 when Mexico won its independence from Spain.

Soon afterwards the Spanish soldiers, who had been protecting the settlers from the Indians, were withdrawn. By 1830 the ranches had been abandoned because of the Apaches, and the cattle were left to roam at will.

First Highway

The famed Mormon Battalion, under the leadership of Colonel P. St. George Cooke, ran into wild cattle when it journeyed across southern Arizona in 1846. Presumably, these cattle were remnants of the early Spanish ranches established at San Bernardino and Babacomari. Cooke and his men were attacked by ferocious black bulls as they approached the bottom lands along the San Pedro River. The Apache Indians had killed and eaten the gentler cows.

Thousands of cattle — mostly steers — were driven across southern Arizona from Texas to the California gold fields following the gold strike of 1849. The Texans made no attempt to settle and start ranching until Arizona became a territory in 1863. No great progress was made until the Civil War ended in 1865.

The first American to bring breeding cows into the state was William Kirkland who, in 1857, drove 200 mother cows from Mexico to his Canoa ranch 40 miles south of Tucson. In three years the Apaches had made away with all of them. Later Kirkland settled southwest of Prescott where a town and a creek are named for him.

Early Farming

Farming didn't get started to any great extent until Jack Swilling, a Confederate veteran who fought in the only Civil War skirmish on Arizona soil at Picacho north of Tucson, reworked an old Indian irrigation ditch. He brought water from Salt River and harvested his first crop in 1868 on lands that had been farmed by the Indians a half thousand years before.

The settlement was named Phoenix after the great mythical bird believed to rise from ashes in new splendor and glory every 500 years.

The next influx of farmers to Arizona was that of the Mormon pioneers from Utah who settled the Safford Valley, St. Johns, Snowflake, and Mesa from 1875 to 1880.

First Dam

A great stride in irrigation farming was made in 1911 when the Roosevelt Dam on the Salt River was dedicated. This modern masonry dam stabilized the river, minimized the devastating floods, and provided a means of storing precious water from times of plenty to use in times of scarcity.

CORN — Produces abundantly on good soil with good management . . . **Chino Valley SCD**

Land and Crops

ARIZONA, A LAND of contrasts in climate, people and agriculture, varies in elevation from near sea level at Yuma to over 12,000 feet on Humphreys Peak north of Flagstaff. Temperatures go from a minus 30 degrees in the White Mountains to over 120 degrees in the hot, southern desert areas.

Annual precipitation in the form of snow and rain is a big factor that determines the kind and amount of native vegetation. This ranges from three inches on the sparsely vegetated deserts to over 30 inches in the high, wooded mountains.

Noted "C" Items

For many years the State has been noted for five "C's" — copper, cattle, climate, cotton and citrus. To these, cowboys and cactus have been facetiously added.

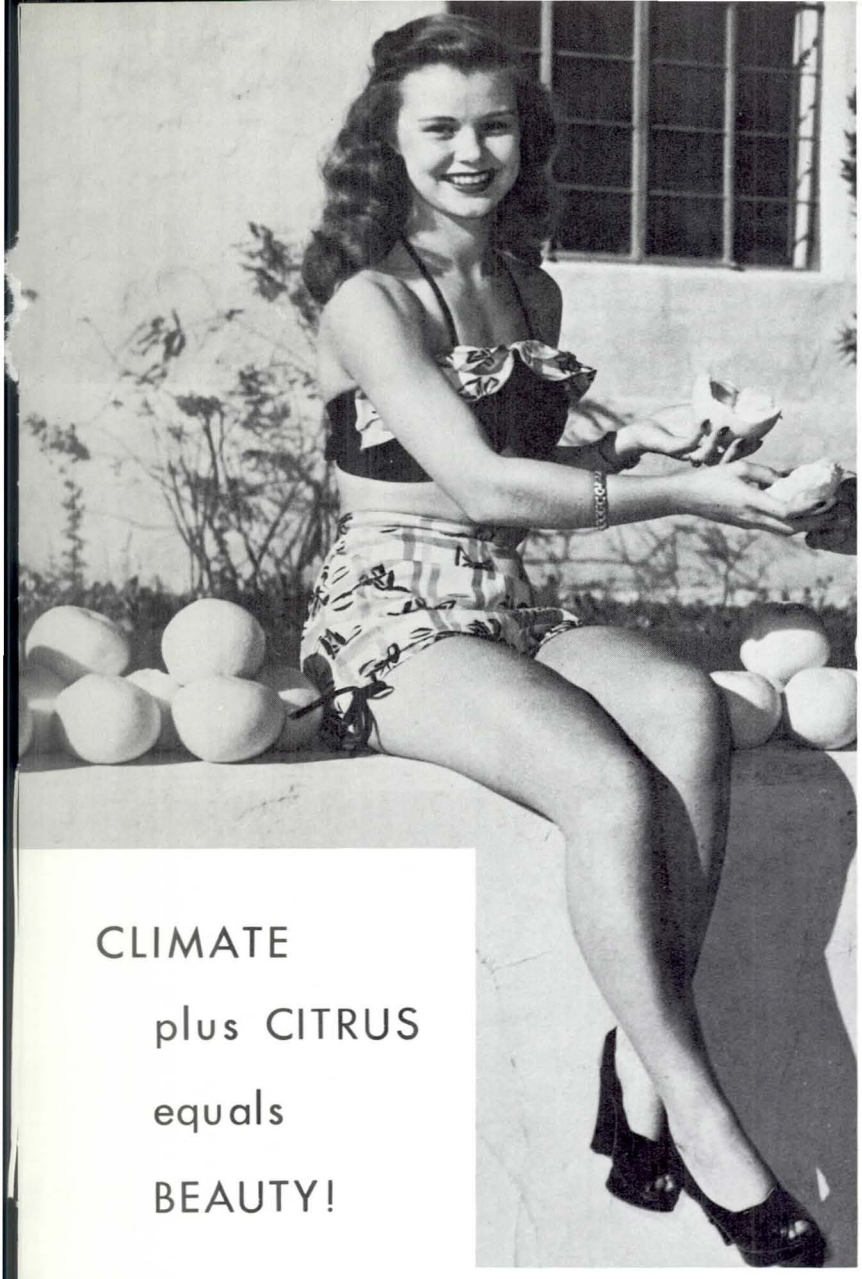
Agriculture Is Important

Income from agricultural products rose from 106 million dollars in 1942 to over 551 million in 1962. The biggest single item in 1962 — 184 million — was from the sale of cattle and calves including feed-lot animals. Next high producer was cotton at 163 million. Citrus, grapes, vegetables, and miscellaneous crops totaled 107 million.

Livestock ranges, located in Yavapai County and the Colorado Plateau in northern Arizona and Santa Cruz and Cochise Counties in the south, are among the best in the United States.

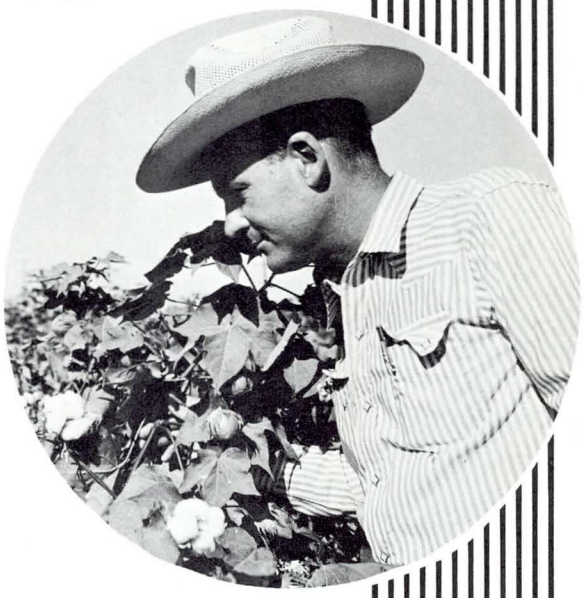
High Yields

Cotton is grown in Arizona on more than 400,000 acres with the highest average yield per acre in the world — over 1100 pounds lint cotton per acre! Some fields go as high as four bales and over per acre.



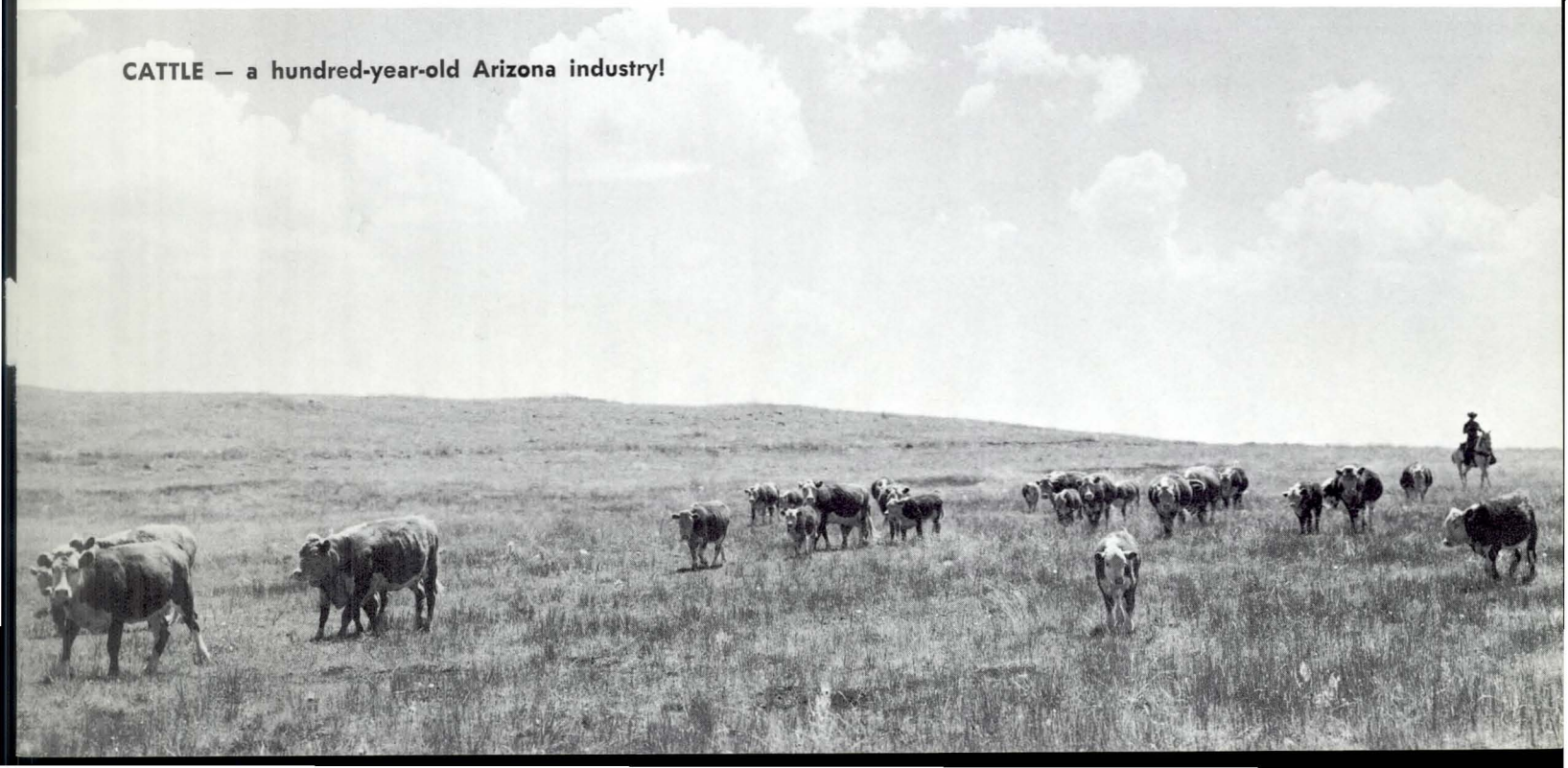
CLIMATE
plus CITRUS
equals
BEAUTY!

COTTON — King of Arizona's Farm Crops.
Buckeye-Roosevelt SCD



CABBAGE — grown by the ton

CATTLE — a hundred-year-old Arizona industry!



Citrus, an importation from the Mediterranean area, is right at home in the warm, dry locations of Maricopa and Yuma Counties. To round out the vegetables and miscellaneous crops, potatoes, onions, strawberries, pecans, and melons are grown in abundance in the irrigated valleys.

Safflower, the new, popular plant from India, is increasing in acreage because of widely expanding use of poly-unsaturated oil products of this plant. 60,000 acres were grown in 1962.

Alfalfa, small grain, corn and irrigated pastures are grown throughout the state largely as part of crop rotation systems.

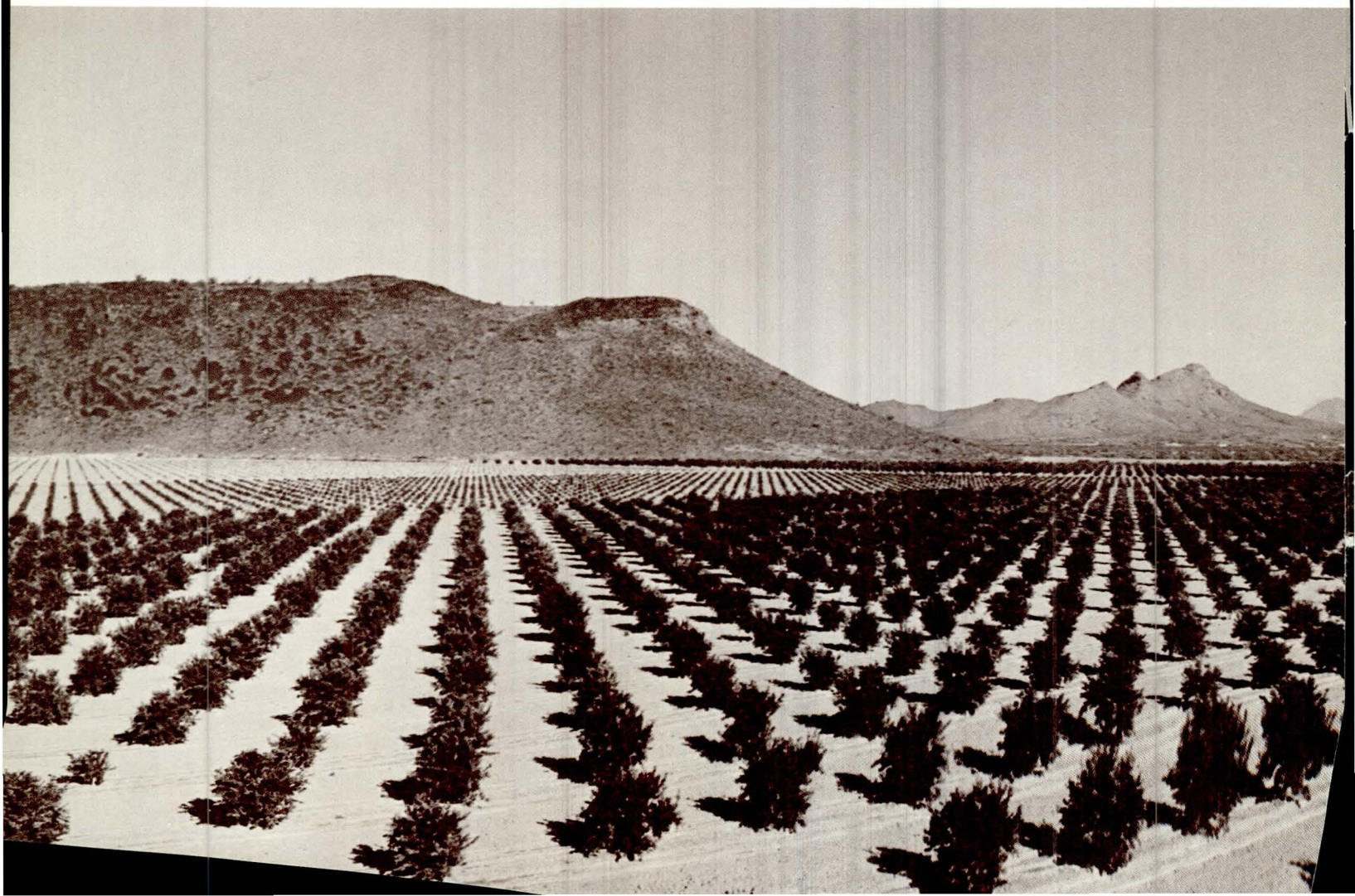
Water Is Life

Irrigation water, vital to Arizona agriculture, comes from deep wells, storage reservoirs, and direct diversions from permanent and intermittent streams. Seven million acre feet of water was used in 1962 of which 90 percent went for the production of crops. Two-thirds of Arizona's irrigation water is from pumps involving a three million acre foot annual deficit (withdrawal against recharge).

Human life has been lost and saved in the past, because of water. This resource is rapidly dwindling, especially the underground reserves.

Conservation and wise use of water is a "must" to maintain and improve the prosperity and progress of the State. Perhaps the best way to increase our supply — and cheapest in the long run — is by more efficient use of what we have through improved irrigation, domestic, and industrial water management.

Young citrus orchard where later famed Arizona Citrus will be shipped throughout the world
New River SCD



Arizona agriculture has come a long way since Father Kino's time. By using our "know-how" to the best of our ability in carrying out wise use of the land, we can do much better.

On the great expanses of grazing land, many forms of wildlife such as deer, elk, antelope, and big-horn sheep feed right along with domestic cattle and sheep.

Forest Products Worth Money

Lumbering is important in the mountainous regions on the Colorado Plateau. Forest products sold in 1962 were valued at 16 million dollars. Practically all the saw timber is grown on seven national forests and four Indian reservations.

There are several areas of merchantable timber, principally ponderosa pine, growing on scattered tracts of deeded land in Apache and Navajo Counties and in the Arizona Strip country in Mohave County, north of the mile-deep state's namesake, Grand Canyon.

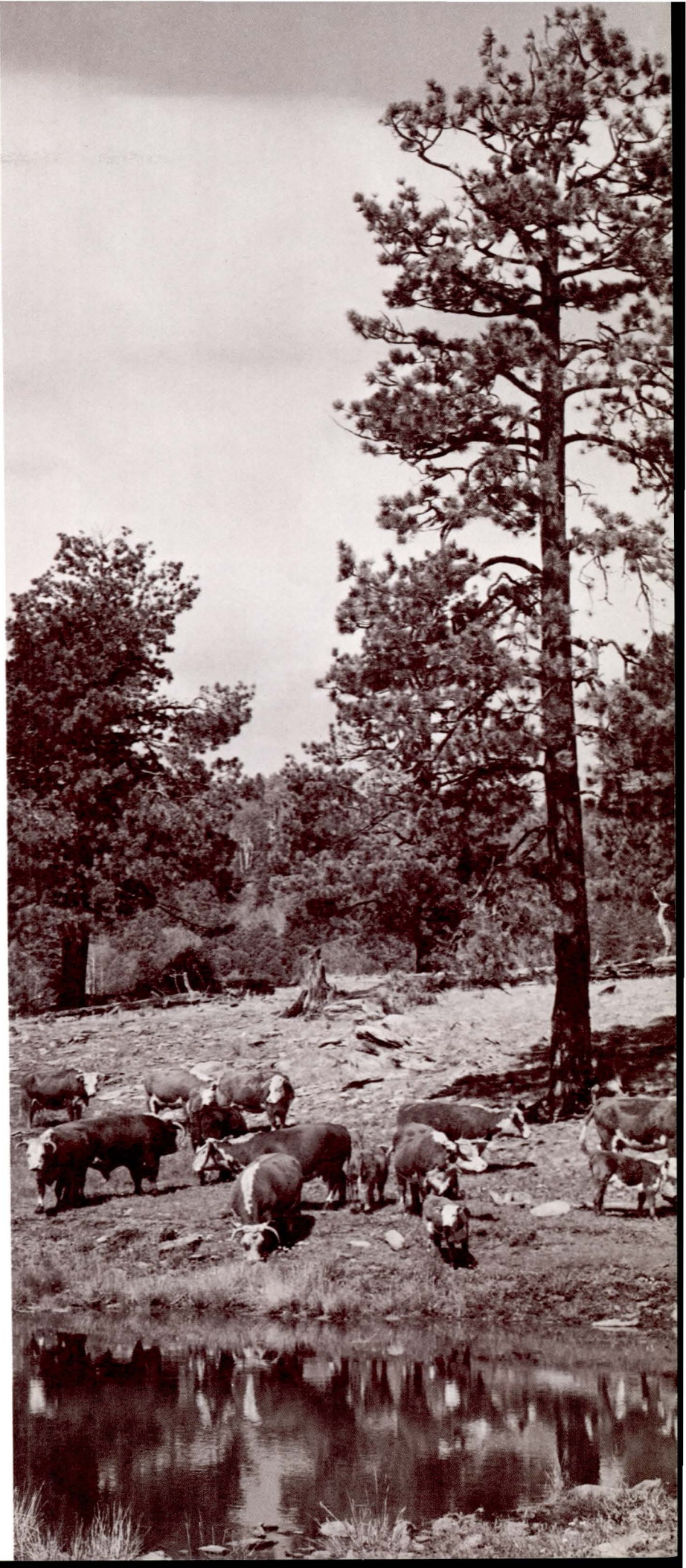
Little Dry Farming

Until recently, approximately 50,000 acres were devoted to dryland farming in Apache, Navajo and Coconino Counties. Crops grown included beans, potatoes, wheat and oats. Due to economic conditions and drouth, most of these areas have been abandoned and seeded to range grasses, principally imported species from Africa, Australia and Russia.

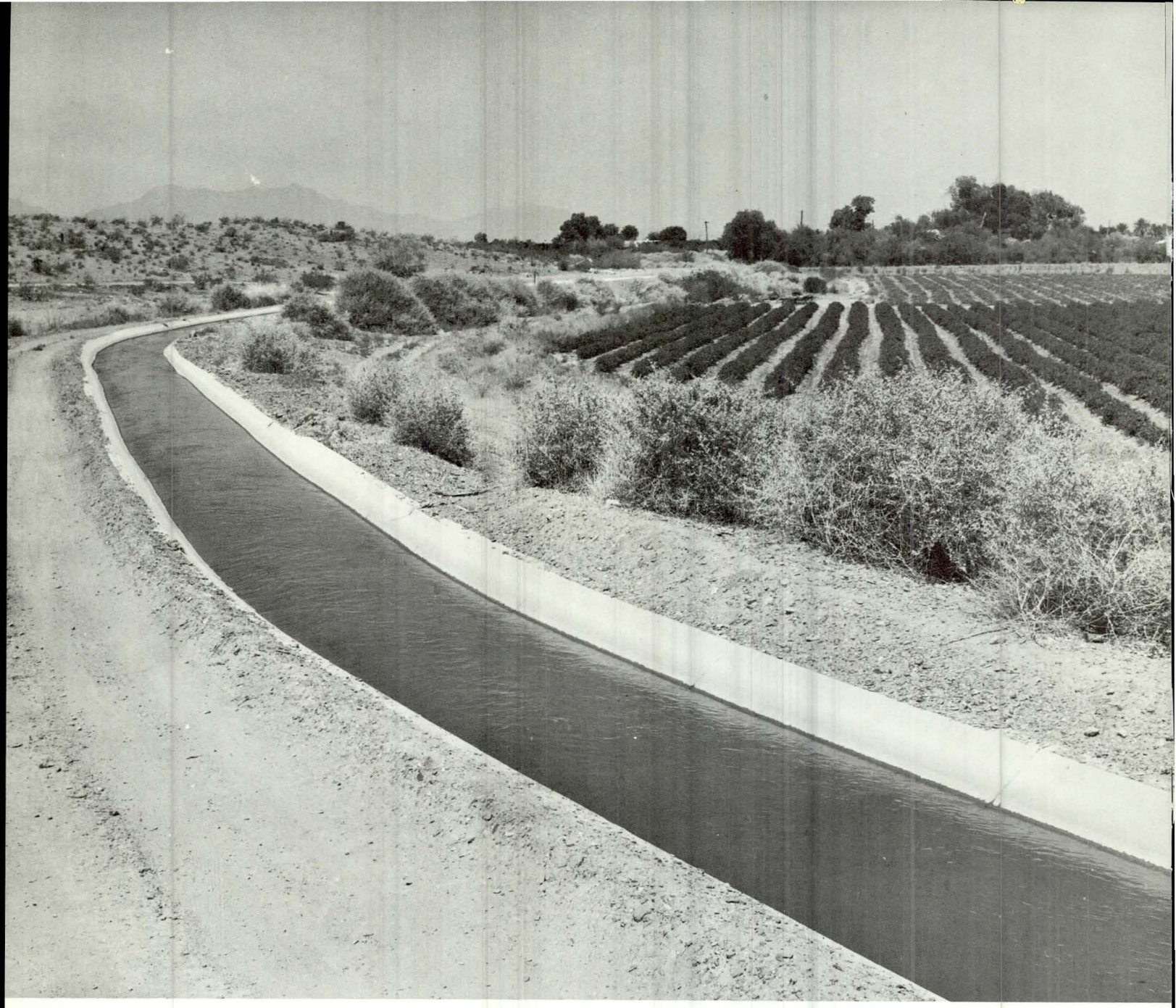
The one million acres plus of top-quality irrigated lands are scattered throughout the state. However, the bulk of it lies in Maricopa, Pinal and Yuma Counties.

Nation's Salad Bowl

Some of the finest agricultural farm land in the United States is located in our beautiful state. If we just had more water we could double our salad bowl operations where lettuce, celery, carrots, brocoli, and cauliflower are raised by the trainload.



Registered Hereford cattle on summer range
Apache SCD



Lined irrigation canal separates choice tomatoe land from desert . . . **New River SCD**

Help Coming

FOR MOST OF THE PERIOD since pioneer days, Arizona farmers and ranchers have tackled their soil and water problems with do-it-yourself methods. Sometimes their efforts worked out well, but more often they meant a continued loss of soil and water. Most farm and ranch lands seldom, if ever, produced up to their capability. Conservation the homespun way just didn't pay.

Owners sought a better way to solve problems of the land. They became convinced that they needed the assistance of trained conservationists, soil scientists, engineers, and specialists.

Pioneer District Board

The Legislature Acts

Help was on the way in 1941 with the passage by the State Legislature of the Arizona Soil Conservation District Law which permitted groups of landowners to organize and operate soil conservation districts as legal subdivisions of state government.

As initially approved, the state district law applied only to farmlands. Later, in 1954, the law was amended to provide the same district assistance to owners of rangelands.

Initiative

The story of Soil Conservation Districts in Arizona is one of farm and ranch people teaming up to work out their land problems with a self-help type program plus today's technical on-the-land "know-how."

Under a functioning district governing board, farmers and ranchers can provide for themselves the kind of technical, cost-sharing, educational and other services needed to work out their soil and water conservation problems.

Districts are responsible for carrying out good soil and water conservation practices on the land within their boundaries, much as counties are responsible for roads or school districts for education.

Organizing Steps

SCD's in Arizona are initiated by petition signed by 25 agricultural landowners of an area and filed with the Soil Conservation Division, State Land Department. After a favorable hearing, a referendum is submitted to a vote of the landowners.

Districts are administered by supervisors who are chosen by qualified landowner electors living in the district. Here in Arizona they serve without expense to the state whereas most states appropriate funds for district administrative use.

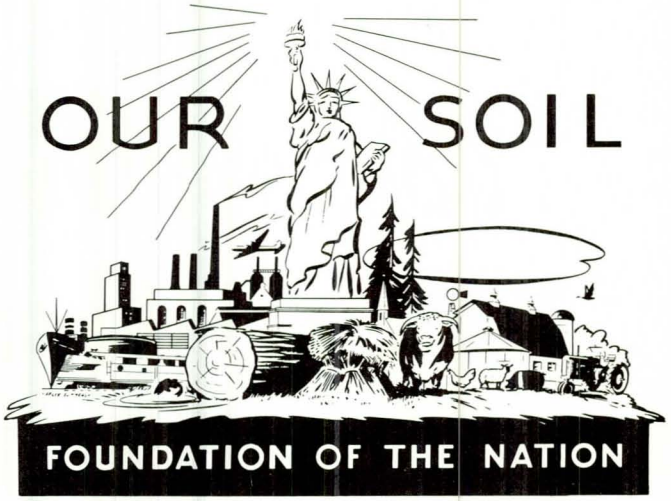
No Tax Powers

Districts do not have tax-levying powers nor are they tax supported. Money needed for carrying out the district program, including operating expenses, is obtained from contributors of farmers and ranchers and by rental of district-owned equipment.

In Arizona's soil conservation districts, farmer and rancher cooperators largely foot the bill themselves for conservation and development of soil and water resources.

District leaders and cooperators aim to make the best use of soil and water through voluntary conservation practices, financed by the individual landowner. Conservation of soil and water is accomplished in accordance with state water laws.

HELP COMING . . .



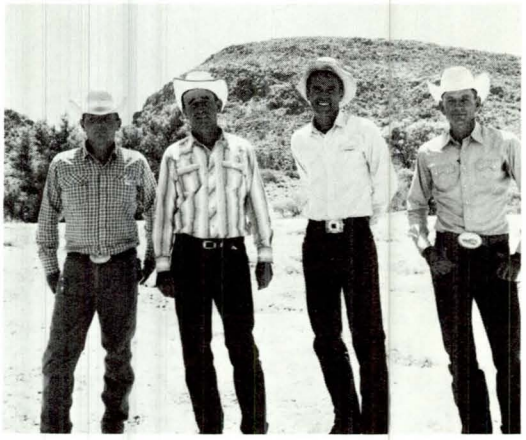
First Eight

Eight soil conservation districts were organized the first year of Arizona's Soil Conservation District's Law. On February 27, 1942, the Secretary of State issued certificates of organization to Bridgeport, Camp Verde, San Francisco Peaks, Navajo County, Duncan Valley and Gila Valley. Next, on March 2 was Apache, and San Simon, March 20.

Fifty-three soil conservation districts have been organized in Arizona. However, as conditions changed, many district supervisors felt they could do a better job through consolidation. Now there are forty, including two all-Indian districts at San Carlos and Parker.

Today, Soil Conservation Districts in Arizona cover 56.7 million acres or 78 percent of the State. Twenty-two percent of the land in districts is privately owned; 16 percent state owned; 26 percent administered by U. S. Bureau of Land Management; 20 percent National Forest; 10 percent Indian lands; 5 percent National Parks; and one percent in military areas.

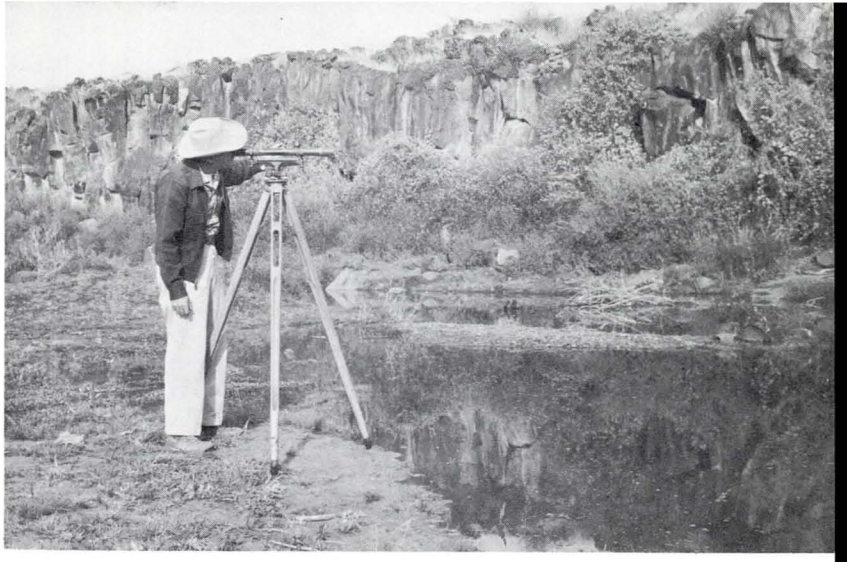
In Arizona, the director of the Soil Conservation Division of the State Land Department administers the soil conservation district law.



Triangle SCD Board

Conservation tour sponsored by Chino Valley SCD during Farm-City Week

Conservation Teamwork



Engineer relocating irrigation ditch for water conservation . . **Apache SCD**

THROUGH A SIGNED memorandum of understanding between the District and the U. S. Department of Agriculture, any of the Department's agencies may supply, through separate agreements, needed technical and other kinds of assistance. Similar arrangements can also be made with the Department of Interior.

Congress, through USDA, has assigned to the Soil Conservation Service the task of carrying out a national technical soil and water conservation program of assistance to farmers and ranchers.

District leaders can call upon federal, state or local agencies and private organizations for assistance in carrying out their programs. At present technical and various other kinds of assistance are being furnished from the following:

Federal

Soil Conservation Service, Forest Service, Bureau of Land Management, Agricultural Stabilization and Conservation Service (ACP), Farmers Home Administration, Agricultural Research Service, Bureau of Indian Affairs, Bureau of Reclamation, Geological Survey, and Fish and Wildlife Service.

State

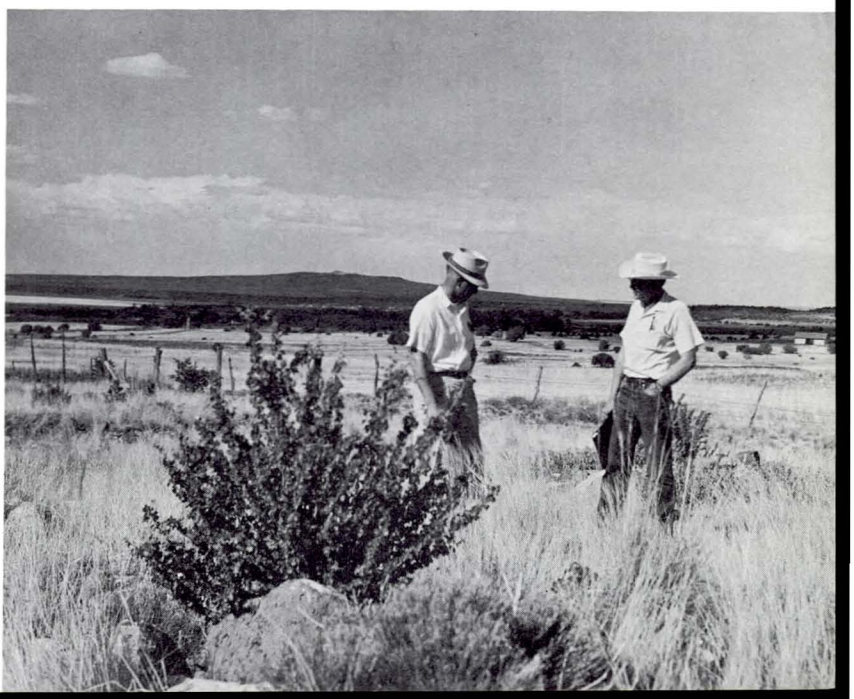
Agricultural Extension Service and Experiment Station of the College of Agriculture, University of Arizona; Game and Fish Department; and State Land Department.

The Division of Soil Conservation in the State Land Department has played a most important role in coordinating Soil Conservation District activities. It has done an outstanding job in administering the State District's Law. Without this very able leadership and timely assistance not nearly as much could have been accomplished.

Local

County boards of supervisors, city governments, chambers of commerce, service clubs, farm organizations, vocational agricultural departments, schools, colleges, clergymen, and 4H Clubs.

WAYNE KESSLER
Director, Soil Conservation Division
State Land Department



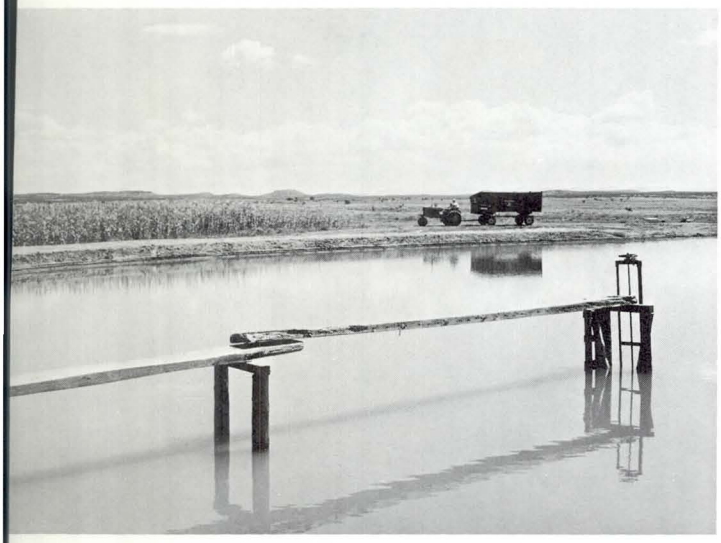
Arizona Association of Soil Conservation Districts Executive Board

Arizona Association of Soil Conservation District Supervisors

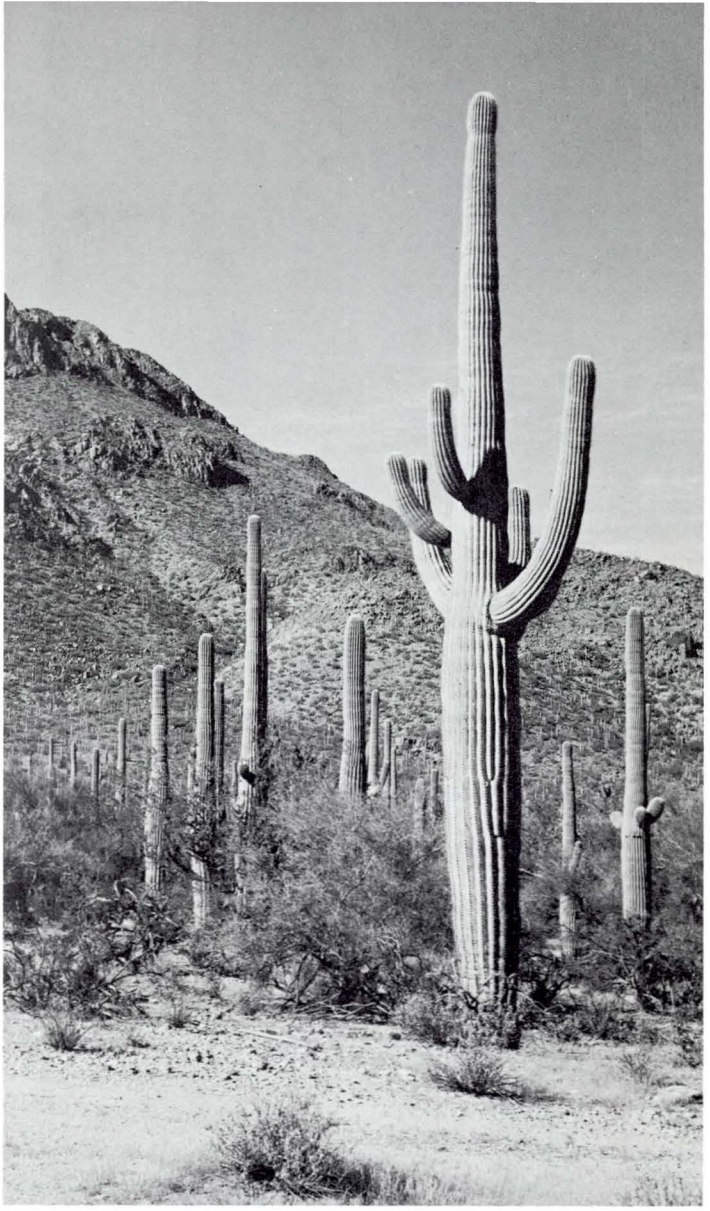
THIS ASSOCIATION, organized in 1944, is a formal organization of all soil conservation districts in the state. Its purpose is to stimulate interest in soil and water conservation activities at state and local levels.

Its goals and objectives are to assist in Arizona's overall soil and water conservation program, designed to obtain maximum sustained production of food, fiber, and wood from the lands of Arizona in such a manner that the productive capacity of these lands is not diminished.

The program is built upon a sound economic base — good for the landowner, and good for the state. "Conservation Pays" is the approach.



Overnight storage reservoir . . **Navajo County SCD**



A distinctive desert scene found in the United States only in Arizona

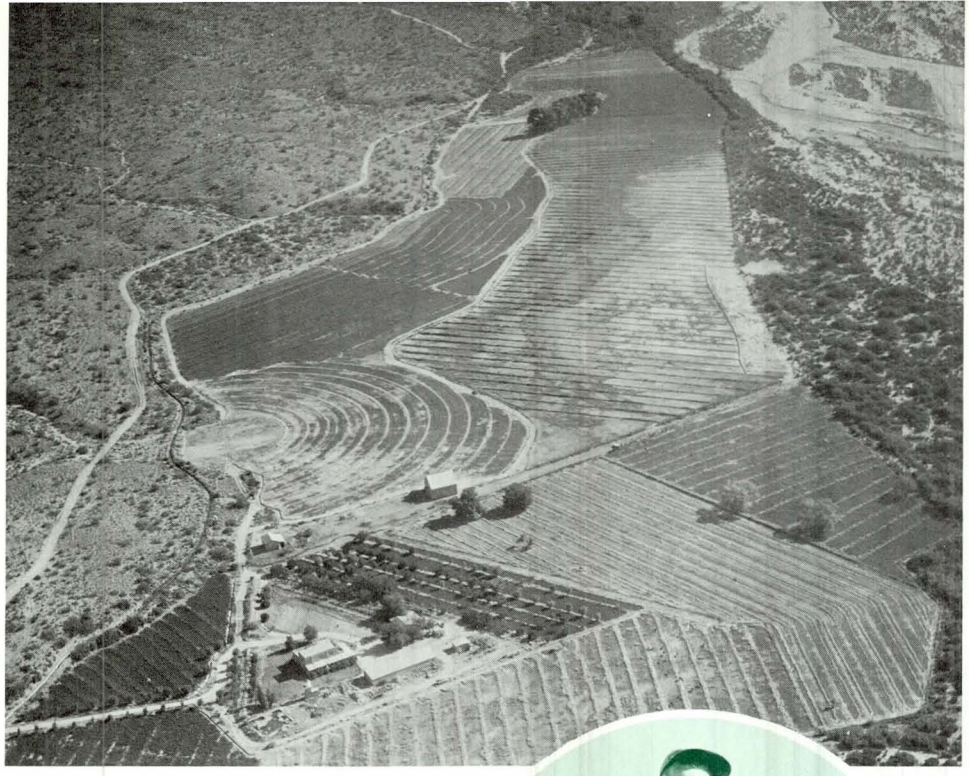
More About AASCD

Association leaders believe that man has God-given responsibility for conserving and improving the precious soil, water, plant and wildlife resources with which the Creator has so generously endowed us and without which man cannot live.

They believe that conservation of natural resources is and should be everybody's business, with major responsibility resting upon local people, primarily upon those who own and operate the land.

Because state and national economic well-being depends largely upon good land and its products, and because unborn generations must use our natural resources for their sustenance, district supervisors believe the state and national governments likewise have an inherent responsibility for conservation and wise use of these resources — to do those things that local people and local governments are unable to do entirely by themselves.

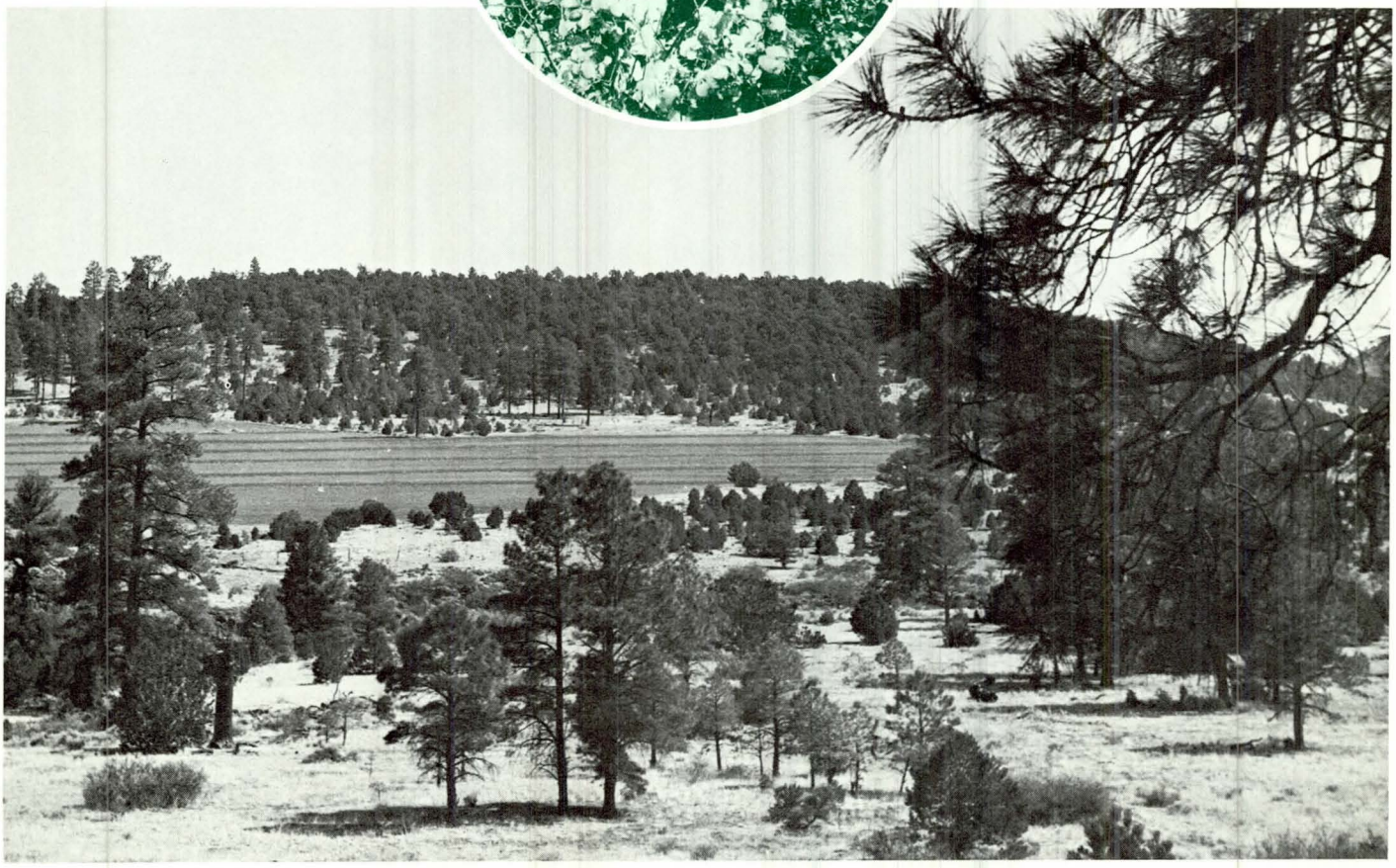
1962 state winners of annual Goodyear Soil Conservation Awards Program . . **Gila Bend SCD**



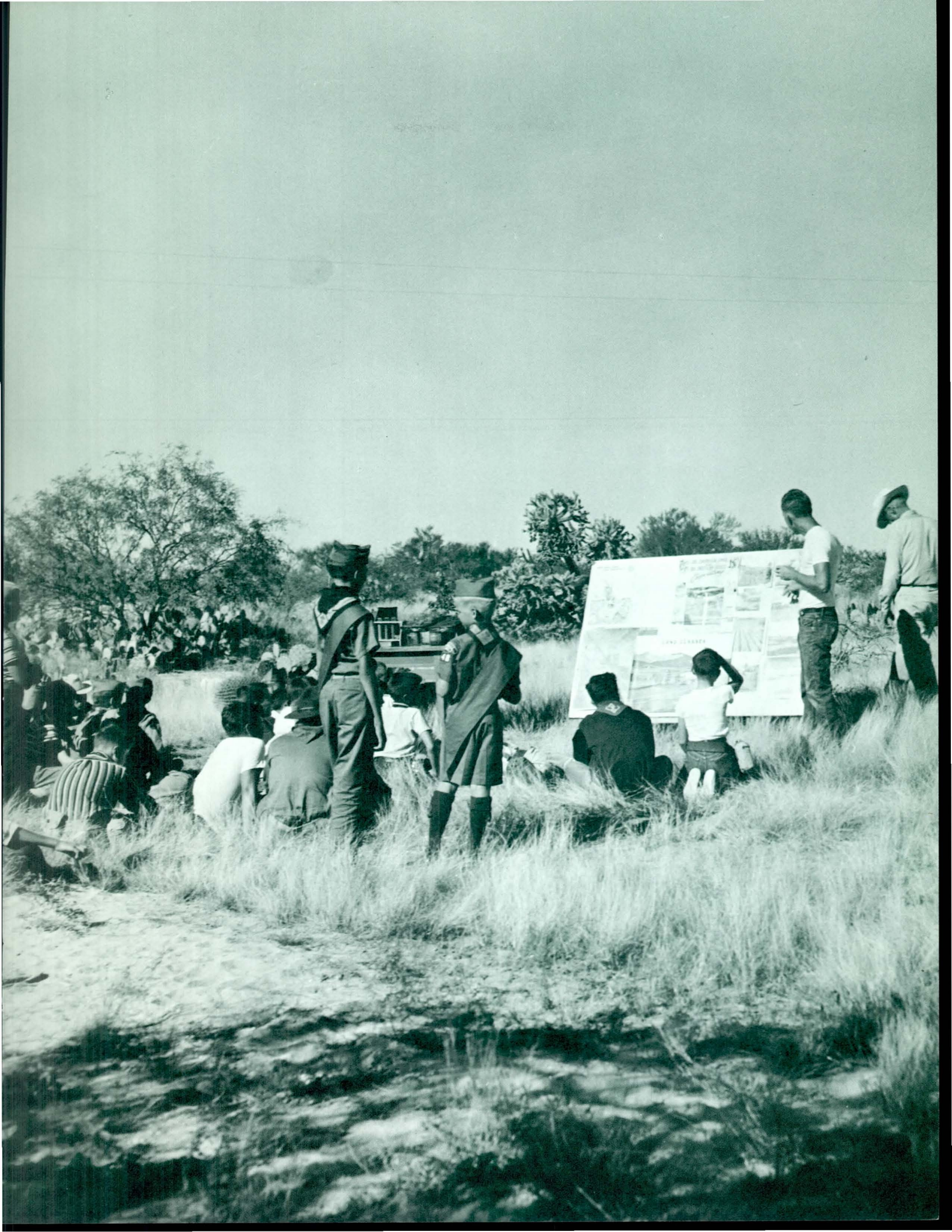
Aerial view of conservation farming . . . **Big Sandy SCD**

BOY SCOUTS . .
at Camporee learning about conservation, proper land use, and erosion control
PIMA COUNTY SCD

Conservation farmer happy with his bumper cotton crop
Florence-Coolidge SCD



Terraced dry farmland among the pines . . . . San Francisco Peaks SCD



Good Land Use

There are nine million acres of state-owned land within districts. Many landowners believe that state government has an obligation to help finance conservation measures on these lands. They also feel that the state should establish additional management guidelines providing for sustained productivity of state lands.

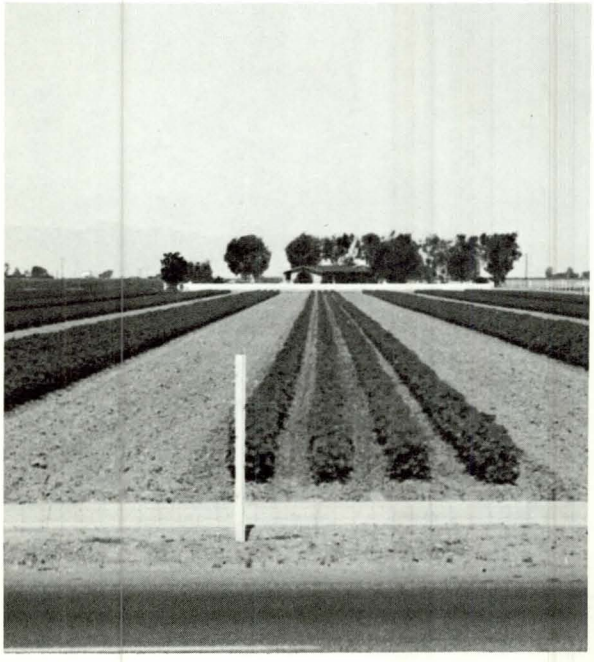
To most farmers and ranchers of Arizona, soil conservation means proper land use, protecting land against all forms of soil deterioration, restoring soil fertility, improving grassland for livestock use, managing wildlife and watersheds, developing recreational resources, and conserving water for agricultural, industrial and domestic use.

A soil conservation district cooperator keeps two things in mind when he begins to apply his conservation plan. First, he recognizes that each acre has certain safe limits of use. He knows he can get long-time, abundant production only by using land within these safe limits.

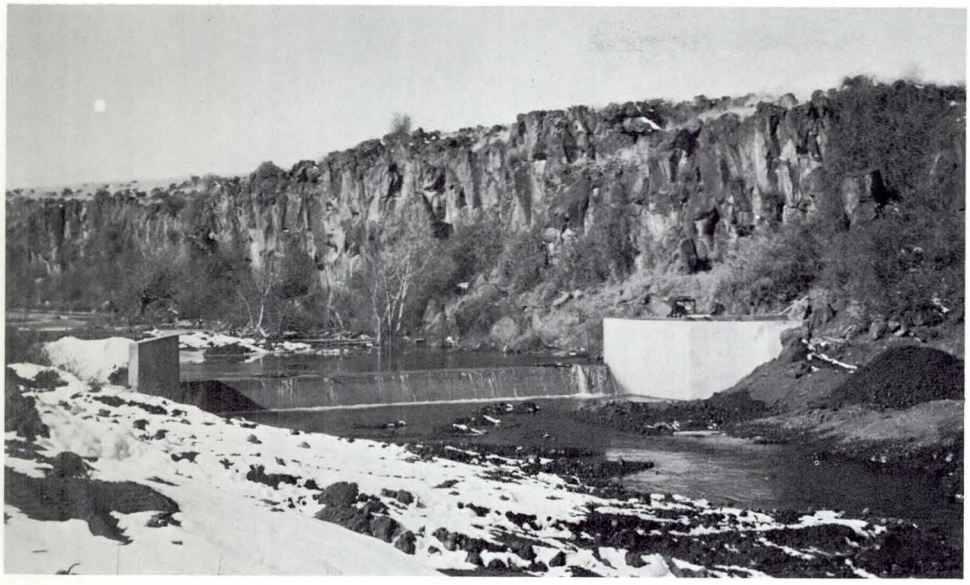
In other words, he recognizes that each acre must be treated in accordance with its needs and used within its capabilities.

The second important factor he remembers is selecting the right combination of soil and water conservation practices to protect and improve his land.

Modern conservation farming and ranching achieve not only these objectives but also result in efficient, abundant production, as well, on a sustained basis for the welfare of the state necessary for a growing population.

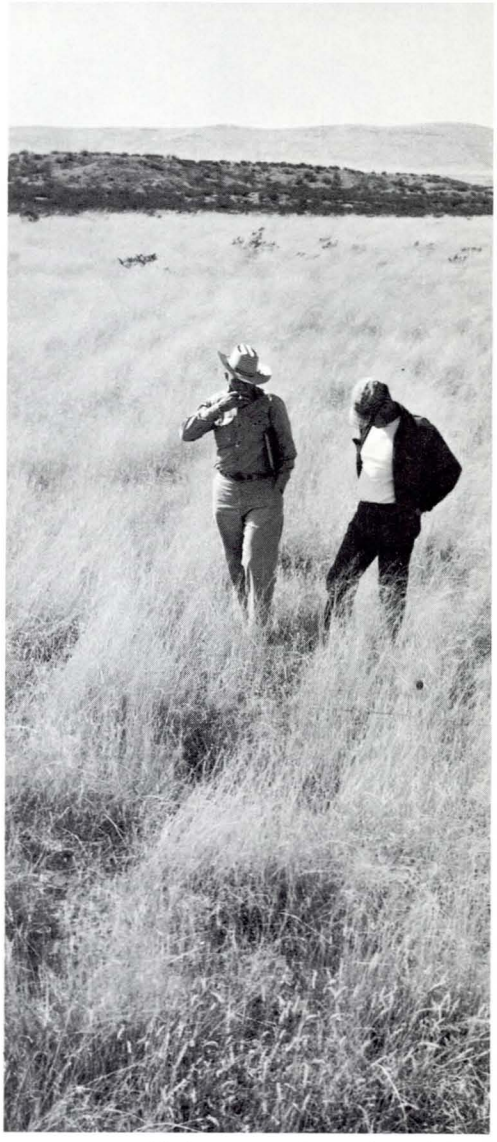


Skip-row cotton . . . **East Maricopa SCD**



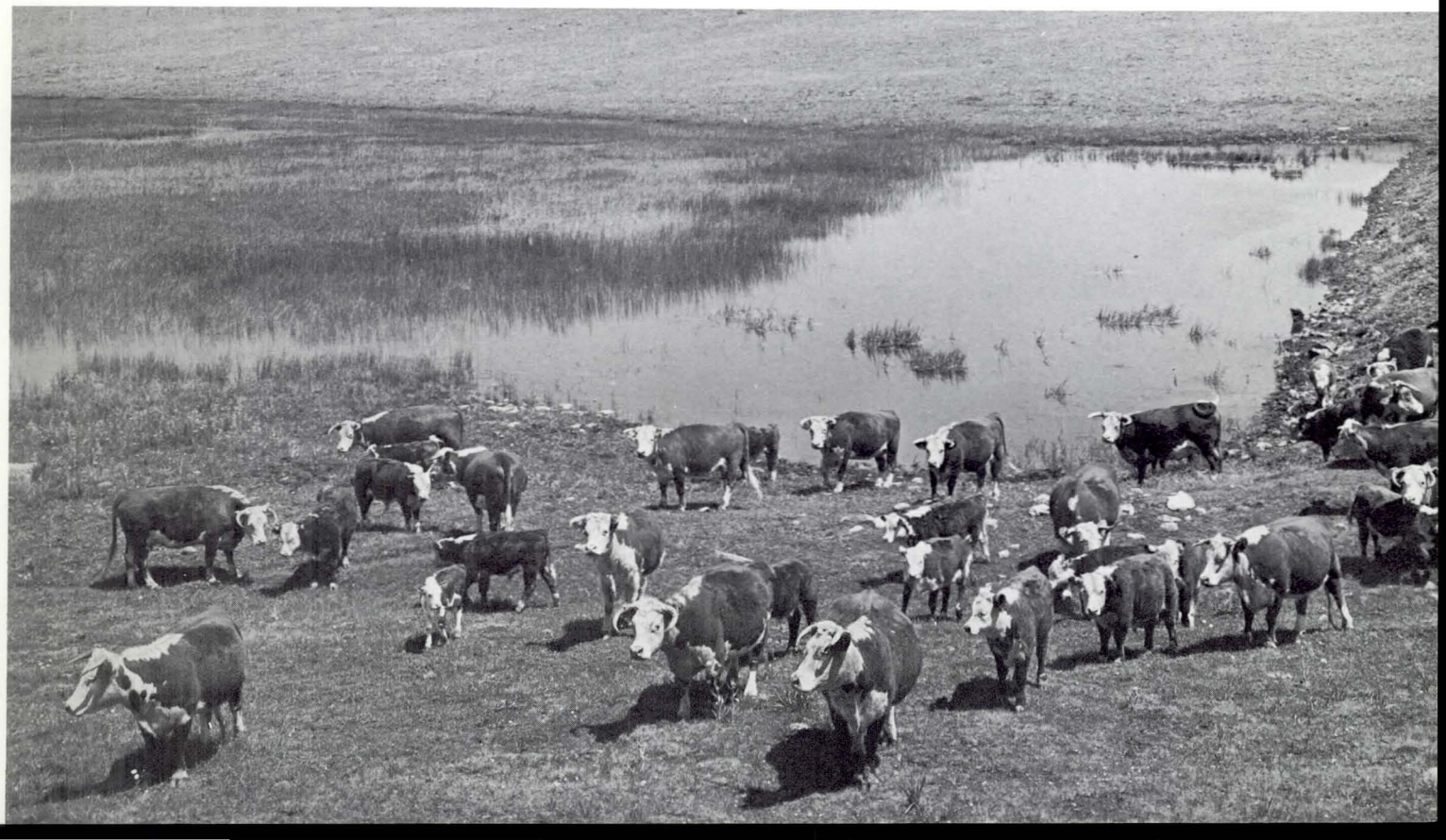
Concrete diversion turns out measured adjudicated irrigation water from the Little Colorado River . . . **Apache SCD**

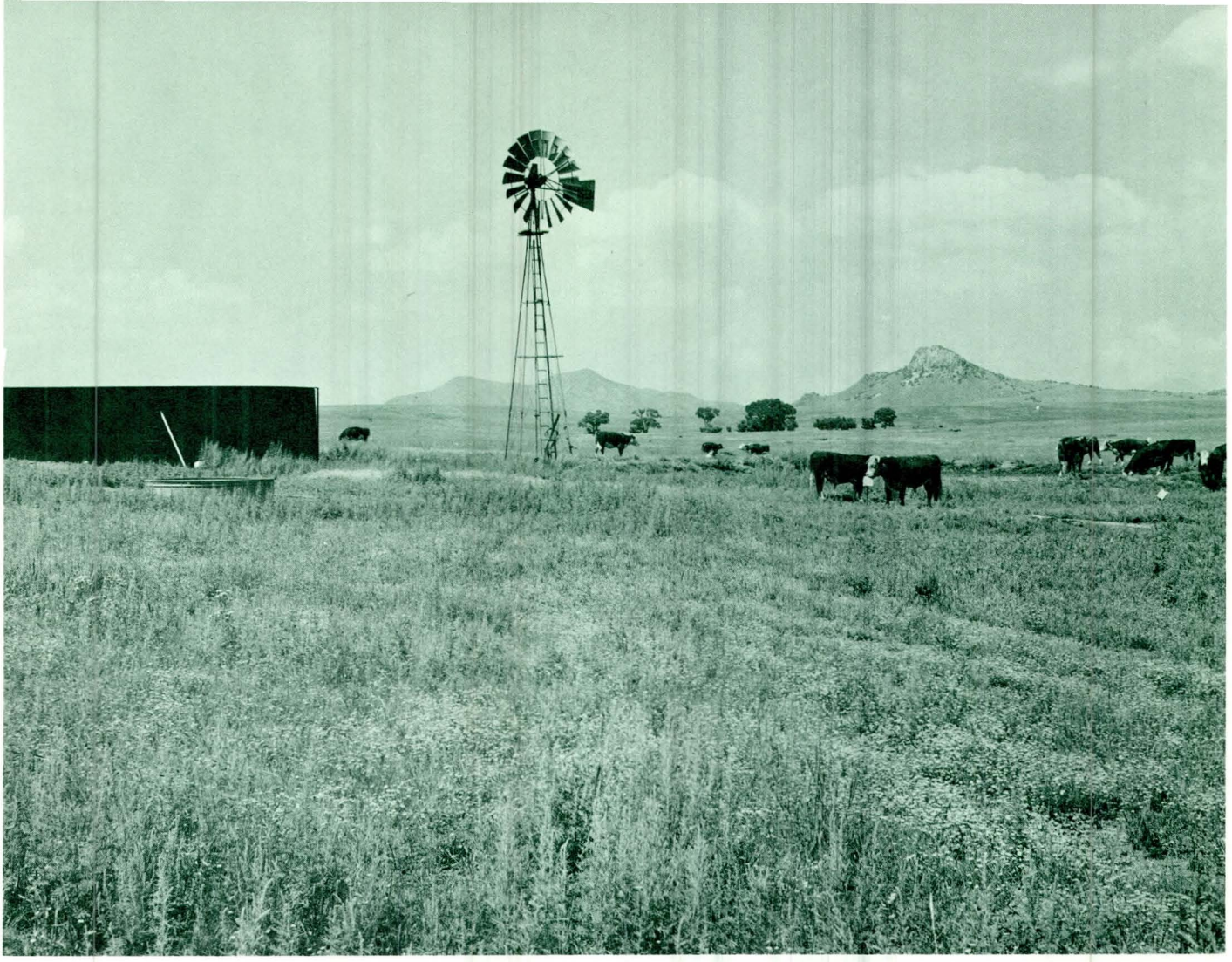
Charolais cattle on irrigated pasture
Chino Valley SCD



Native grasses in good condition
Duncan Valley SCD

Strategically located stock tanks help distribute cattle for good grass management . . . . **Apache SCD**





Good range management is dependent upon permanent water supplies . . **Santa Cruz SCD**

"Land of Arizona" committee in session

AASCD

The way leaders of the Arizona Association of Soil Conservation Districts look at conservation agriculture is that farm and ranch people have demonstrated they can solve their day-to-day problems with the advantages of modern technology.

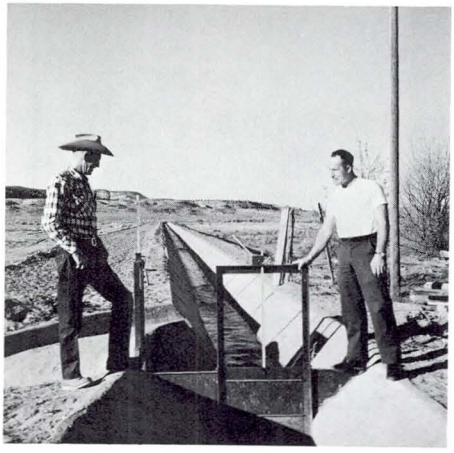
Everybody Affected

It is felt, too, that urban people — non-farming residents of Arizona — have an important role to play in supporting and cooperating with those who are putting conservation on the land.

Conservation farmers and ranchers are stewards of the land — people who in their lifetime have the responsibility of developing and safeguarding their country's rich storehouse of soil, water and related resources.

ALFALFA — good hay and soil improvement crop . . . .
Buckeye-Roosevelt SCD

Along the Bee Line Highway
east of Phoenix



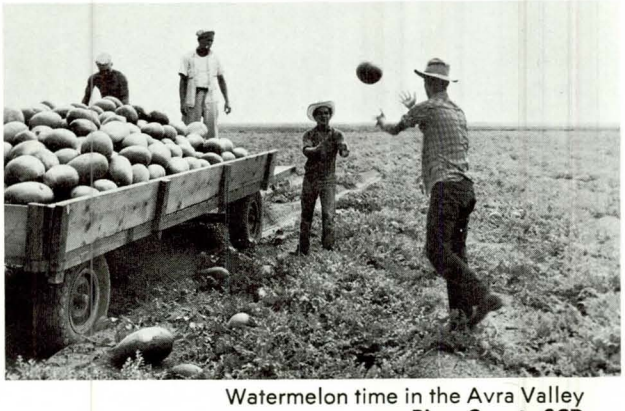
Irrigation water efficiency and ditch lining are important conservation practices on the Arizona Strip, too . . . **Fredonia SCD**

District-sponsored tour of
Lehmann lovegrass seedings
Willcox SCD

FOR TRULY, the Earth is the Lord's and the fullness thereof, but the responsibility for its stewardship is vested in man.

— C. W. GEE

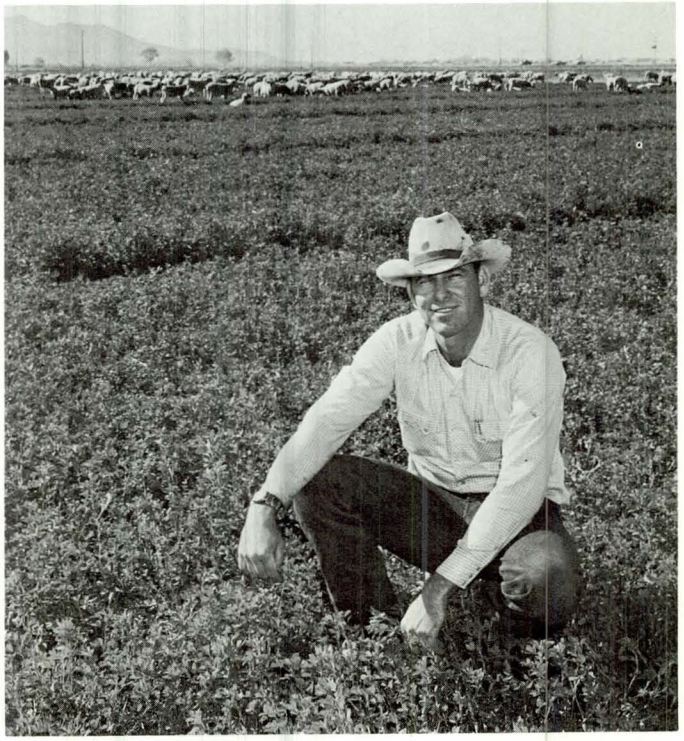
LETTUCE — principal ingredient of Arizona's annual 80-million-dollar salad bowl operation



Watermelon time in the Avra Valley
Pima County SCD

Crated Cardinal grapes leaving the Valley of the Sun for eastern markets
Agua Fria SCD

Alfalfa is used extensively in crop rotations and in this instance for pasturing sheep
West Pinal SCD



Many Agencies Help

FEDERAL AGENCIES provide several programs to help farmers and ranchers with problems of the land.

The Soil Conservation Service supplies on-site technical and specialized assistance in developing conservation plans and solving tough soil and water problems on state-leased and privately-owned lands.

Credit is extended to landowners by the Farmers Home Administration, Federal Land Banks, and private lending agencies to speed up conservation work.

Education Important

Education activities, carried out by the Arizona State Agricultural Extension Service through county agents and by the Bureau of Indian Affairs for Indians, further the cause of conservation throughout the state.

Agricultural Conservation Program Service shares the cost of certain conservation practices on jobs that could not have been financed without these cost-sharing funds.

Public Lands A Factor

Public lands constitute a major factor in the over-all conservation picture in Arizona. Most of the 32 million acres of federally owned land within the state is in districts. Federal land-administering agencies, including the Forest Service and Bureau of Land Management, have agreements with districts to carry out the government's share of conservation work.

The complex land ownership pattern in Arizona of federal, state and private acreages make their development and installation of improvements difficult unless plans for management and installation of improvements are coordinated across ownership boundaries.

In some areas this problem is being solved by coordination — by federal and state agency people working closely with soil conservation districts and their cooperators.

MONTHLY MEETING
Tonto SCD Board
of Supervisors

Soil Surveys

Arizona soil conservation district supervisors are strongly supporting government agencies and the University of Arizona in expediting the National Cooperative Soil Survey. This survey, being conducted by the Soil Conservation Service on private and State land and by the Forest Service and Bureau of Indian Affairs on National Forest and Indian lands, when eventually completed, will classify the soils and determine the capabilities of 70 percent of the land of the State.

Soil surveys provide the key to good land use. Depth, texture, permeability, water-holding capacity, inherent fertility, and other soil characteristics all are factors which govern the wise use and treatment of land. Efficient irrigation is dependent upon reliable soils information.

This acre-by-acre factual information on soils is very helpful to conservation farmers and ranchers as they plan their resource conservation and development operations.

Where soil surveys have been made, the information is also available to city, state, and county agencies, and to planning commissions.

Professional Assistance

The types of professionally trained conservationists on call to district cooperators include agronomists, range management specialists, engineers, economists, soil scientists, geologists, and expert watershed planning technicians.

The conservation plan, which blends professional knowledge with the experience and desire of farmers and ranchers, is the key to modern-day good land use.

The right combination of conservation practices is selected and adapted for each field and pasture to make the best use of soil and water to insure the productiveness of the land.

Range Management

Conservation ranchers manage ranges like a conservation farmer cares for planted crops. Their goal is high production of quality forage harvested with grazing animals. They know that if ranges are allowed to run down as a result of persistent overgrazing, their productivity will decrease and the ranchers' income will decrease as will the income of future generations.

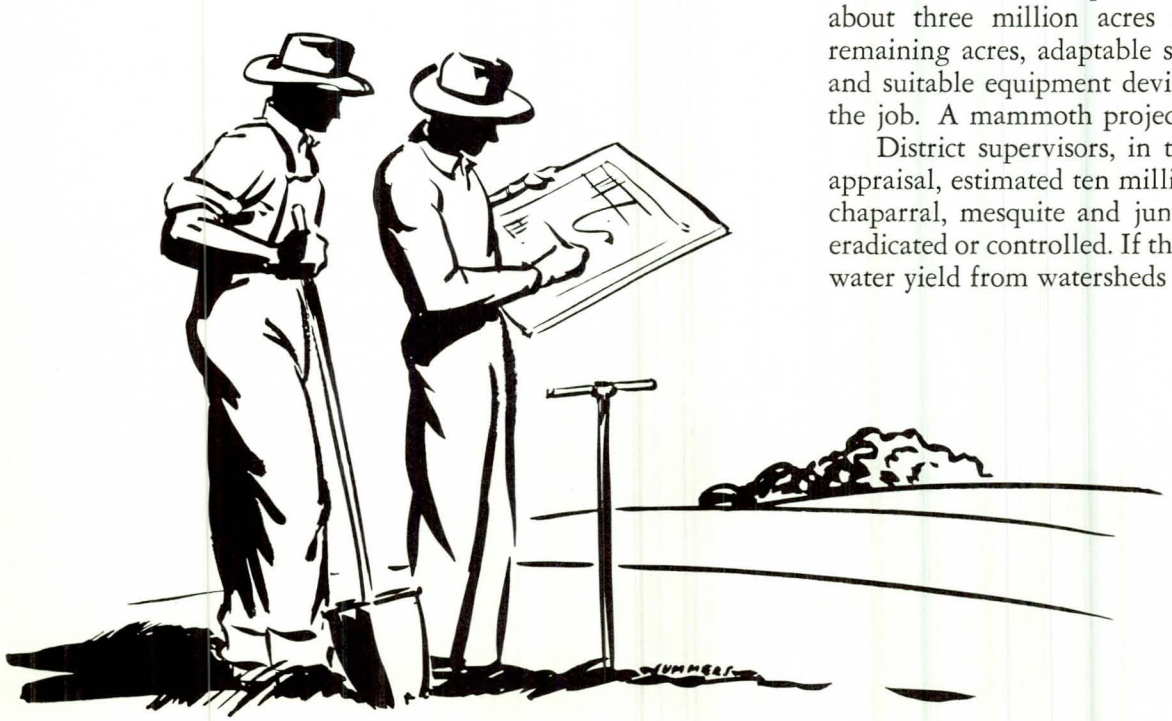
Reseeding

African lovegrasses do well in warmer parts of the state and Asiatic wheatgrasses can be seeded successfully in certain northern areas of the state. However, there is no ready solution for reseeding threadbare, native grasslands of intermediate areas often occupied with dense stands of juniper and pinon.

The Conservation Needs Inventory — conducted by agencies of the Department of Agriculture, Bureau of Indian Affairs, University of Arizona, and SCD's in 1961 — shows that 7¼ million acres of poor range could be improved through seeding.

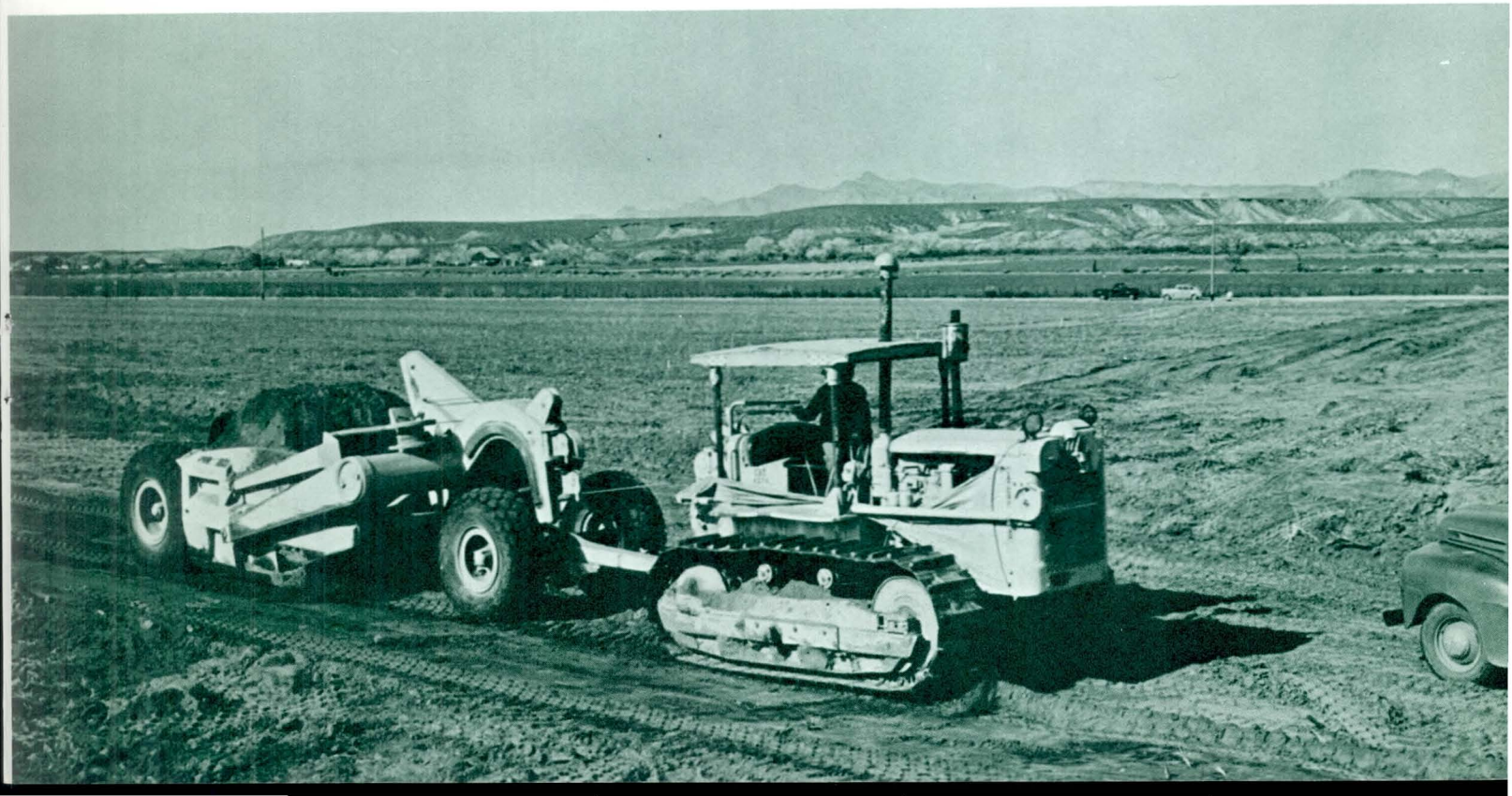
Of this, two million acres will require brush control first. Techniques are known for seeding about three million acres of this, but for the remaining acres, adaptable species must be found and suitable equipment devised or invented to do the job. A mammoth project!

District supervisors, in their 1962 grass-roots appraisal, estimated ten million acres — primarily chaparral, mesquite and juniper — needed to be eradicated or controlled. If this were done increased water yield from watersheds could be expected.



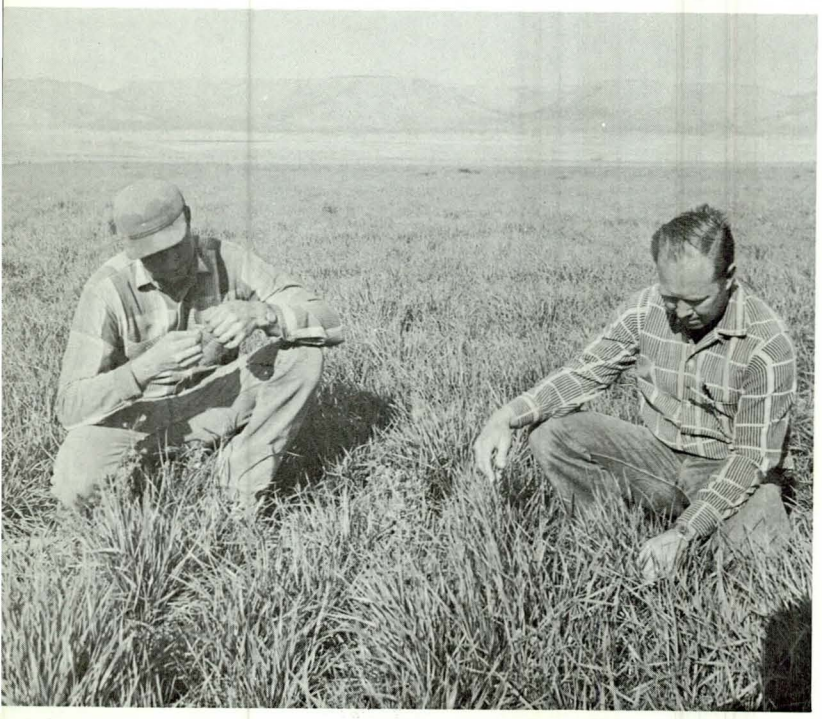
Seeding Lehmann lovegrass on rangeland
covered with annual vegetation
Willcox SCD

**Leveling land for water conservation and irrigation efficiency.
Over 600,000 acres have been leveled since 1942.**



Level fields are easy to irrigate and they save water . . . **Gila Valley SCD**

Tall wheatgrass loosens "tight" land and fattens cattle . . . **Chino Valley SCD**



Land Leveling

The amazing story of land leveling started a generation ago when farmers saw the need for removing high spots and filling in low places on their farms to get more even distribution of water.

Slowly, they learned that water was easier handled and crop yields increased when fields were laid out on uniform grades.

Twenty years ago, Eastern Arizona farmers were practicing hydraulic leveling. They built soilsaving dikes with concrete outlets at lower ends of fiields with flash-boards which could be raised as sediment collected.

Soil and water were saved, but the practice was too slow to keep pace with modern farming.

Power Equipment

Beginning in the early 1940's, upon advice of soil conservation technicians, land leveling with heavy equipment progressed by evolutionary processes.

Steeper grades were gradually reduced until dead-level designs were reached. Presently, the highest type of leveling, for which many farmers are striving, puts entire fields or borders to dead level — commonly called basin leveling.

This is the ultimate in making efficient use of scarce and expensive irrigation water.

Plant Needs

By planning ahead and examining the moisture content of the soil and the plant needs in the level basins, the farmer can turn in the correct amount of water to wet down to the proper depth. Thus, water is not lost through deep percolation or wasted as tail water.

More To Go

Records show that since 1942, 600,000 acres have been leveled on district cooperators' farms. That is a lot, but the "grass-roots appraisal" by Districts in 1962 revealed that more than a million acres needed leveling or releveling.

Concrete Ditch Lining

About the same highly significant story of progress can be told of concrete ditch lining, another water-saving medium.

Concrete ditch lining was once a back-breaking, time-consuming, hand-labor job. Practical

SNOW SURVEYS determine approximate amount of annual runoff for downstream use . . .

Slip-form machine lining a ditch with concrete . . . New River SCD. More than 5000 miles lined in Arizona to date.

Willow trees and old car bodies team up to protect valuable farmland along meandering stream . . **Verde SCD**

Arizona Cypress windbreak
Chino Valley SCD

experimentation and vision of farmers who wanted to lighten the load for themselves and their neighbors resulted in slip-form machines which pour concrete in a continuous stream. These machines for lining irrigation ditches were first developed in the Salt River Valley.

The Idea Caught On

From practically no ditch lining in 1950, ditches were being lined at the rate of 550 miles per year in Arizona SCD's by 1957. The current rate is 300 to 400 miles annually. Lining to date is reducing ditch seepage losses by about 300,000 acre feet of water a year.

Concrete ditches, like other conservation practices, need to be planned. Land leveling, length of runs, kinds of crops to be grown are factors to consider before locating the ditches. They are expensive.

$5,000 A Mile

The average farm ditch costs about a dollar a foot to line, or $5,000 a mile.

Concrete ditches do not insure efficient irrigation but, like land leveling and other practices, they make it possible.

By 1963 there had been more than 5,000 miles of concrete-lined ditches built in Arizona on district cooperators' farms. Remaining to be done are another 7,500 miles. Some farmers are installing irrigation pipelines — an even greater water-saving device.

Irrigation Efficiency

Every effort is being made to make the best use of water in Arizona where there is more good arable land than water to irrigate it. It is encouraging to know that the findings of research are helping us to make good headway in water conservation efficiency.

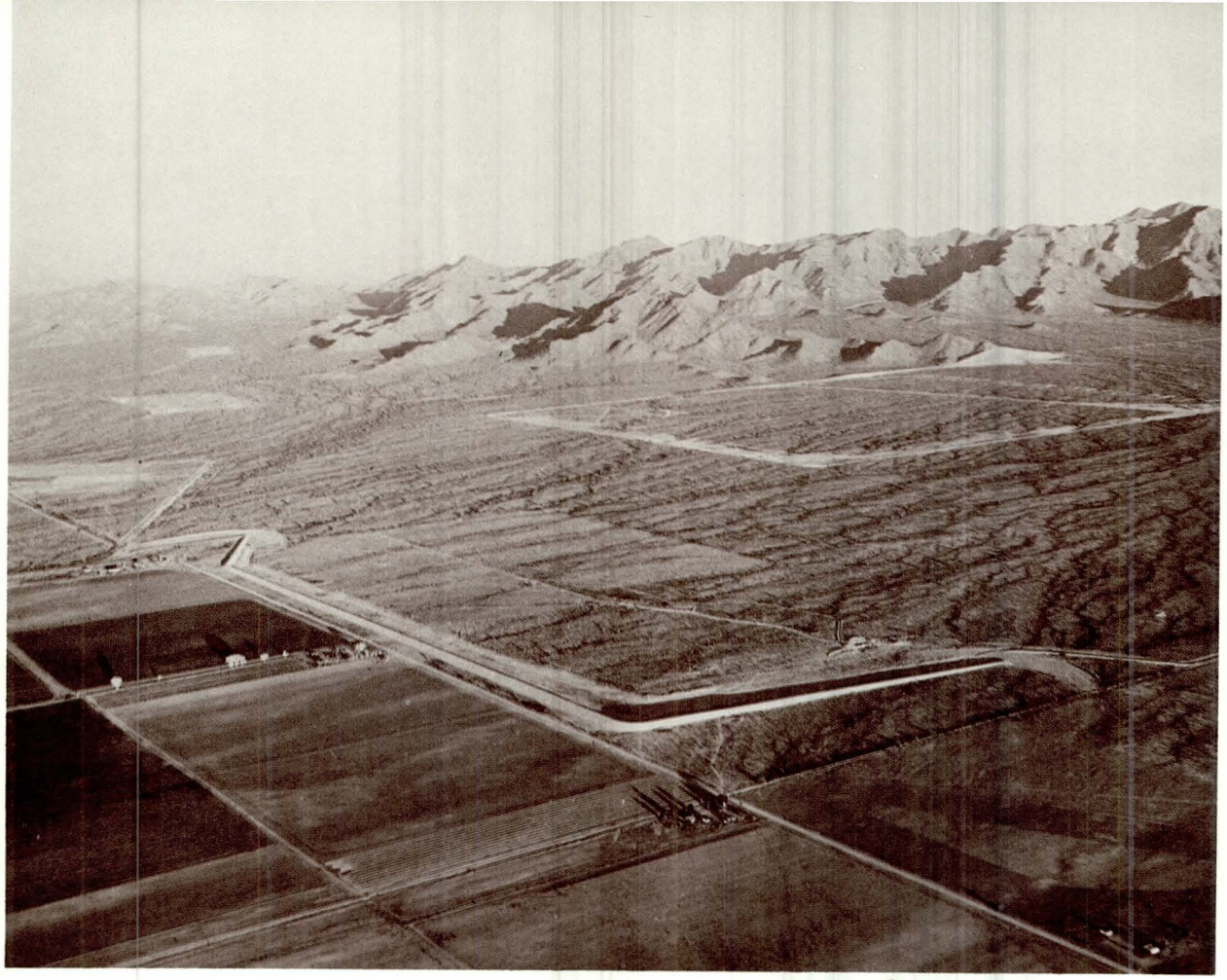
Many farmers have changed from old, wasteful irrigation methods and are now saving water by irrigating, not by the calendar but according to soil and crop needs. Irrigation Districts and ditch companies are also taking steps to reduce water losses between the source and farm headgates.

Lest We Forget

THE ELEVENTH COMMANDMENT

XI THOU SHALT INHERIT THE HOLY EARTH AS A FAITHFUL STEWARD, CONSERVING ITS RESOURCES AND PRODUCTIVITY FROM GENERATION TO GENERATION. THOU SHALT SAFEGUARD THY FIELDS FROM SOIL EROSION, THY LIVING WATERS FROM DRYING UP, THY FORESTS FROM DESOLATION AND PROTECT THY HILLS FROM OVERGRAZING BY THY HERDS, THAT THY DESCENDANTS MAY HAVE ABUNDANCE FOREVER. IF ANY SHALL FAIL IN THIS STEWARDSHIP OF THE LAND, THY FRUITFUL FIELDS SHALL BECOME STERILE, STONY GROUND AND WASTING GULLIES AND THY DESCENDANTS SHALL DECREASE AND LIVE IN POVERTY OR PERISH FROM OFF THE FACE OF THE EARTH.

DR. W. C. LOWDERMILK



Two aerial views of a portion of the White Tanks Flood Prevention Project — Agua Fria SCD

Watersheds... A Natural Conservation Unit

FARMS, RANCHES, HOMES, business establishments, roads—in fact everything—fall within natural boundaries of watersheds. All lands are bound by drainage divides.

Some watersheds are subject to periodic flooding. People living in these may have to share with others the tragedies of damaging floods, washed land, mud-filled reservoirs, and water shortages. On the other hand they can share with others the benefits of well-managed watersheds with flood-prevention measures.

Costly Floods

Many floods occur as a result of accelerated runoff from denuded, poorly managed watersheds. Floods can be very costly to both farm and city people. Damage to farmlands, improvements, utilities, roads, and homes from some big floods is figured in the millions of dollars.

In 1953 Congress passed a law which established 60 pilot watershed projects. These projects were set up across the Nation to measure the benefits of combining soil and water conservation on the land with up-stream flood control works and to test local-state-federal teamwork in carrying out flood prevention projects.

White Tanks Project

The White Tanks Flood Prevention Project west of Phoenix, constructed in 1954, was the first in the nation of these pilot projects to be completed.

Cooperating in this project were the Agua Fria SCD, Maricopa County, Soil Conservation Service, Maricopa Water District, individuals, and firms which pooled resources to protect valuable property. It is the realization of a dream that began in 1920. It is an outstanding example of rural area development.

Army Engineers subsequently completed the nine-mile McMicken Dam in 1956 as the final part of this overall watershed operation.

New Act

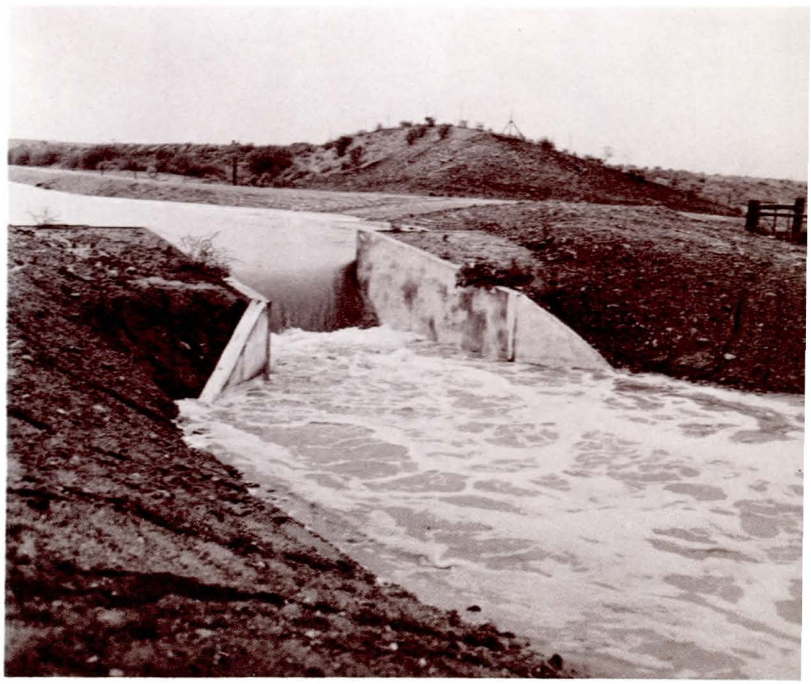
In 1954, the Watershed Protection and Flood Prevention Act (Public Law 566) was passed by Congress which provided for a new project-type approach to soil and water resource conservation and development.

Two of these projects, the Frye Creek-Stockton Wash project near Thatcher and Safford and the Virgin Valley project in Mohave County, are under construction.

Arizona SCD's do not have the authority under present law to build or maintain flood control structures. Watershed projects must be sponsored by organizations which do have this authority such as counties, cities, irrigation districts, or flood control districts. SCD's can and do co-sponsor projects.

In every instance where an application has been made, the local SCD supervisors have encouraged the project and pitched right in to help. They have committed themselves to cause the land treatment phases of the program to be carried out on schedule.

A functioning channel stabilizing drop structure — Frye Creek-Stockton Wash Watershed Protection Project — September 1962



Breaking ground for J. David Lee Dam — First structure completed on the Frye Creek-Stockton Wash Watershed Protection Project . . . **Gila Valley SCD**

Close Cooperation

There is close cooperation between upstream and downstream water users to make sure all water belonging to downstream users is turned loose to serve these people. Airing of needs and rights is bringing about a healthy feeling and better understanding. Users are learning one another's problems.

Small Watershed Projects are the people's own projects, not federal projects. The federal government provides only technical and cost-sharing assistance in accordance with provisions of the Act.

Interest Increasing

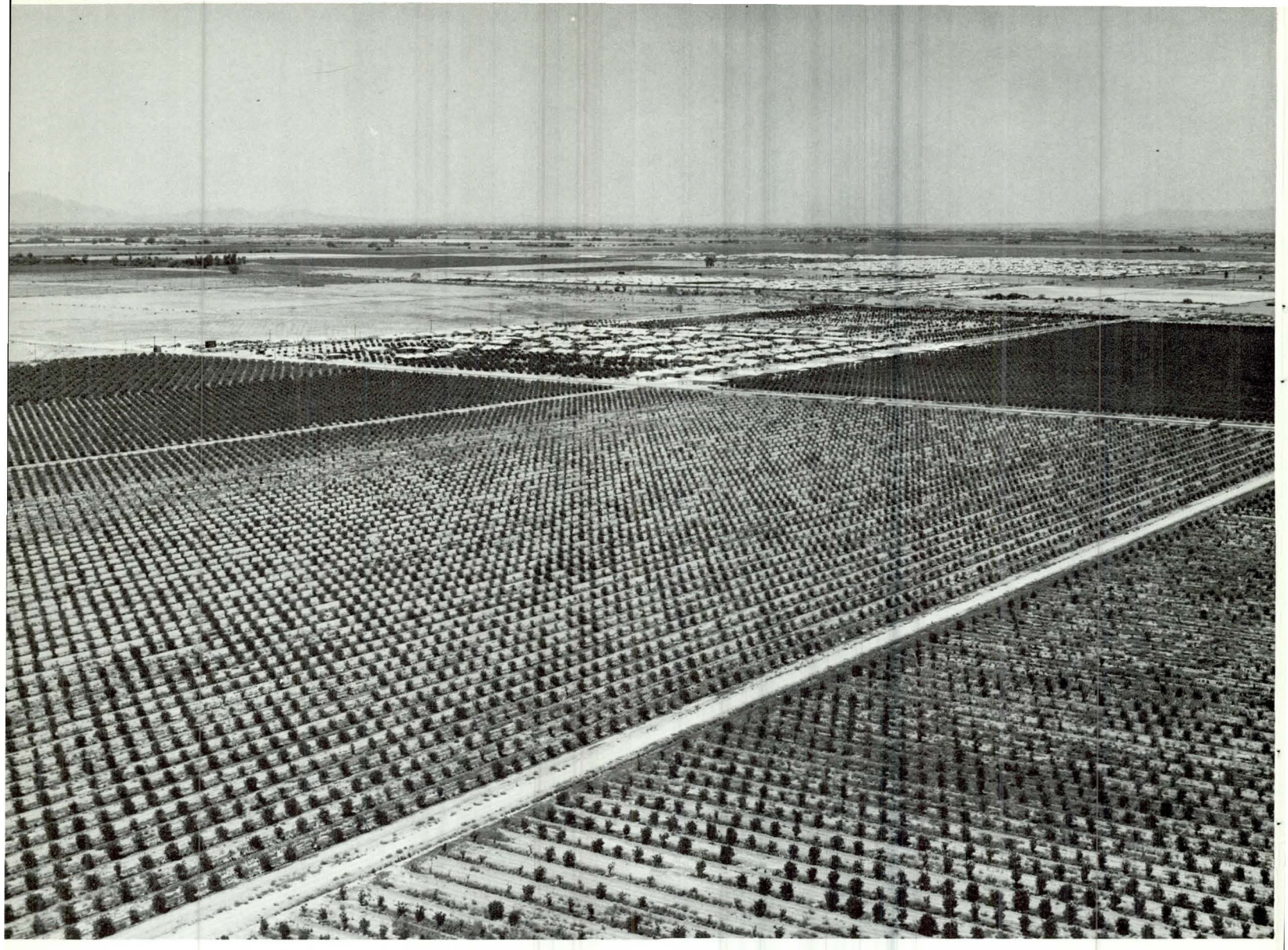
The Florence-Coolidge and Magma projects in Pinal County have been approved for construction. Planning and preliminary investigations are underway on seven projects in Cochise and Maricopa Counties.

So far, a total of 24 applications for watershed assistance have been filed by local communities with the State Land Department and the Governor.

THATCHER RESIDENTS are pleased with the Frye Creek-Stockton Wash flood control project. They no longer worry about flood waters coming in their front doors. Completion of the project will allow the city to expand in homes, schools and businesses. Eastern Arizona Junior College has already spent nearly one million dollars for expansion and improvement. New homes are being built in areas previously subjected to annual flood damage. Assessed valuation is increasing 15 percent a year.

J. Nat Hoopes, Mayor of Thatcher, Arizona

J. DAVID LEE DAM prevented approximately $200,000 damage to Thatcher and surrounding area in one Sept. 1962 storm . .



Housing development encroaching on good farm land
New River SCD

Urban Sprawl

ARIZONA PEOPLE feel they have the right to determine what they do with their lands. To some, land provides a place for a home, to others, an opportunity to earn a living, and to still others, land means recreation, hunting, fishing.

Land uses in sharp competition with one another further complicate an already-complex problem. Many believe the solution lies in closer cooperation between groups of farmers and ranchers, county, city and other planning organizations, plus closer attention by urban people to what is happening to the productive agricultural lands of their state.

Saving Water

University of Arizona water scientists estimate that general farming, crediting return flow, uses about four acre-feet of irrigation water per acre a year; whereas a subdivision with homes, industry, and business requires 2.6 acre-feet of water per acre annually.

Though this is a sharp saving of water which can be used to good advantage elsewhere, many people regret to see so much of the state's best irrigated land covered with asphalt, houses, and other signs of urbanization. This is land lost to crops forever. In the next 50 to 100 years, this good land may be badly needed for food production.

State-owned Raymond buffalo ranch east of Flagstaff — **San Francisco Peaks SCD**

Arizona Mule Deer on native range — **Chino Valley SCD**

Harvesting safflower seed — **Wellton-Mohawk Valley SCD**

What's Ahead?

IN ACHIEVING significant gains in solving the soil and water problems the past 21 years, Arizona farmer and rancher district cooperators have spent around a hundred million dollars of their own putting conservation work on the land.

Although great strides have been made in conservation farming and ranching, leaders of the Arizona Association of Soil Conservation Districts estimate it will take another 21 years and cost landowners considerably more than a 100 million dollars to put their lands in working order for full-scale agricultural uses.

Officers of the Association — supervisors themselves — intend to work with other District Supervisors to accomplish these goals.

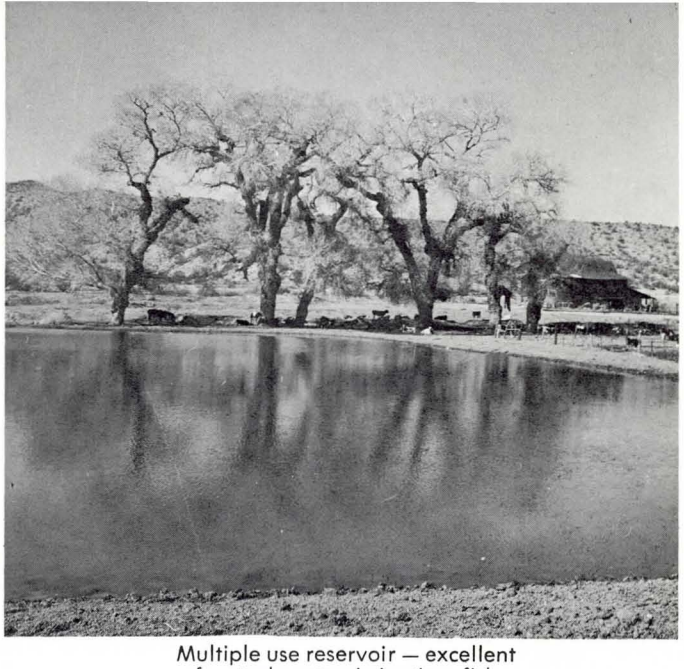
More funds, new technologies and services are needed to work out complex soil and water problems in the years ahead.

Stepped-up research is needed to obtain maximum benefits from limited and decreasing irrigation water supplies. Likewise, the National Cooperative Soil Survey needs to be speeded up on range lands; Arizona got off to a late start! Additional Small Watershed Projects are expected to be requested by local organizations because they are needed to develop water resources and to provide flood protection for their communities.

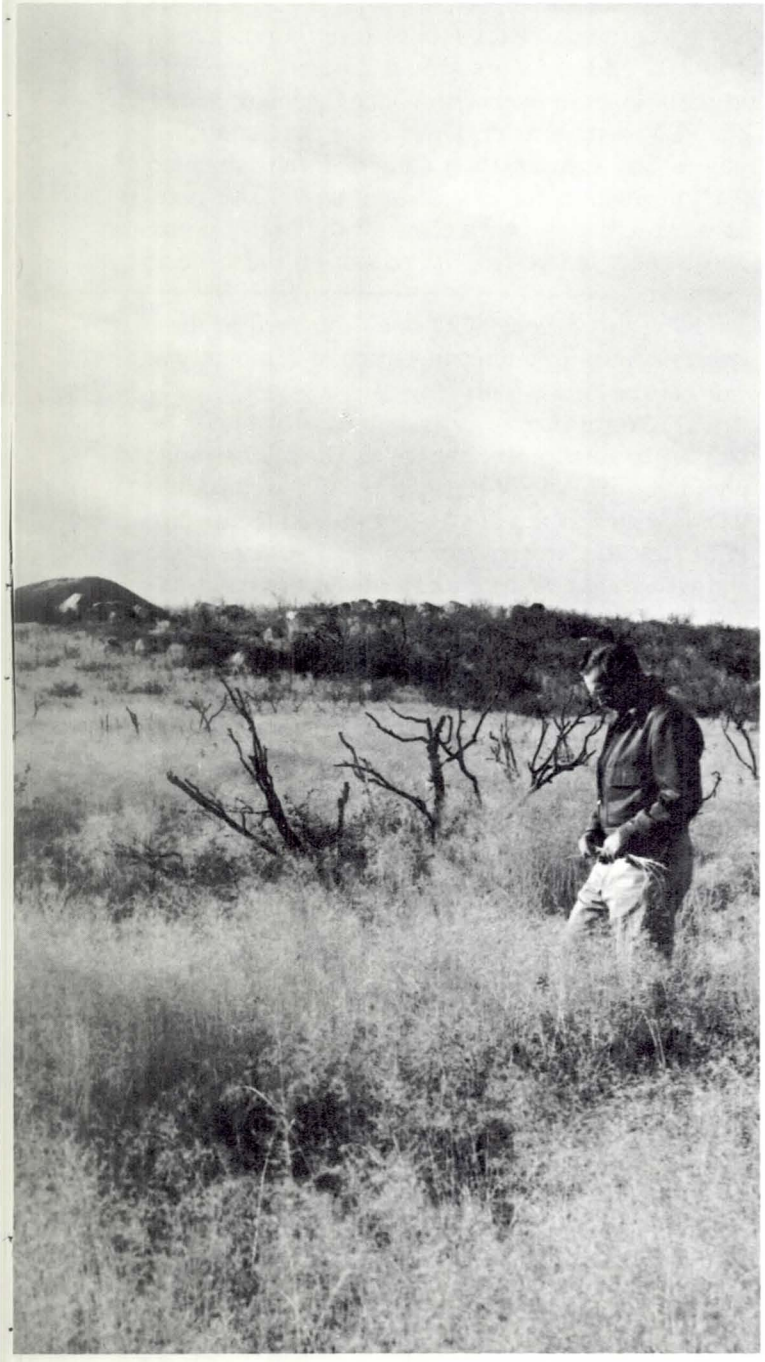
Future

There are many more conservation jobs to be done. More willing hands are needed to tackle them. We believe during the next 21 years farmers and ranchers, with help from others, will match the good record of accomplishment achieved in the past.

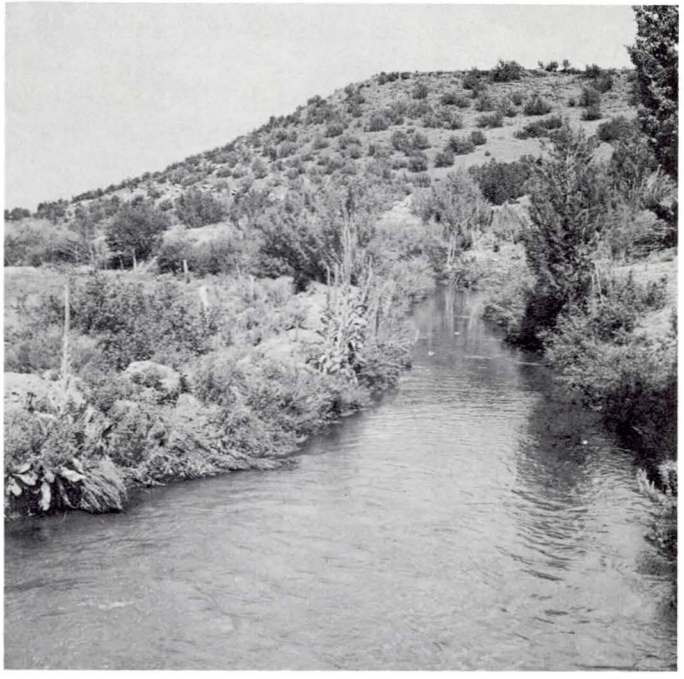
The history of man is a story of hungry people looking for food. Those who control the food-producing areas will control the life of man. That is why we are concerned. Soil, as once believed, is not indestructible.



Multiple use reservoir — excellent for stock water, irrigation, fish
Big Sandy SCD

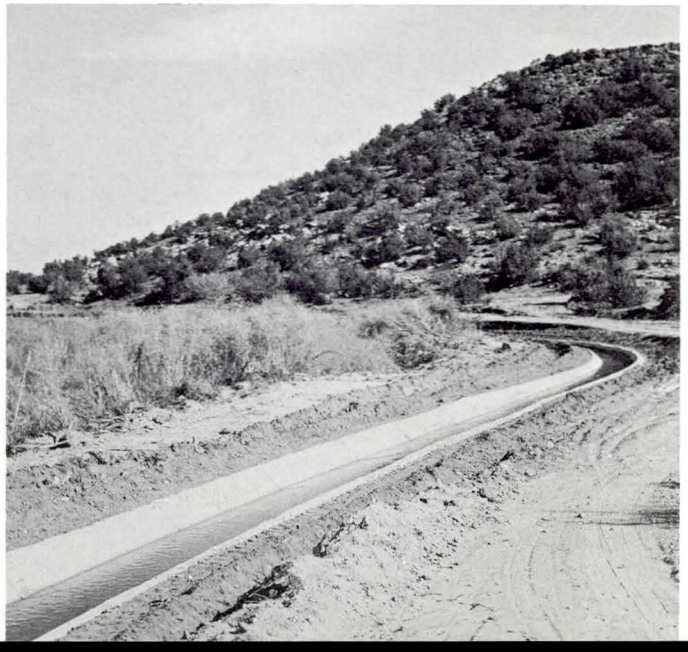


Brush burned and area seeded to Lehmann and weeping lovegrass, Henderson ranch.
Upper Agua Fria Basin SCD



Irrigation canal before lining

Same canal after lining — **Navajo County SCD**



State Inventory by Grass-roots People

A "GRASS-ROOTS" appraisal of resource conservation and development needs is being conducted in each of the eleven western "public-lands" states. Purpose of the survey is to arrive at a realistic estimate of what is on the land and the job remaining to be done. Arizona was the first to complete this gigantic task (December 1962).

One hundred percent of state and Federal agencies and Arizona's 40 soil conservation districts participated in this timely project. General coordination of this tremendous undertaking was handled by the Soil Conservation Division of the State Land Department.

The first job was to evaluate the needs of the private and state-owned lands. This was done with Soil Conservation Service assistance.

Next, the supervisors contacted other federal and state agencies for additional information pertaining primarily to Federal and Indian lands.

When all the reports were in, the supervisors went over the estimates with care, setting their own priorities and amounts which differed frequently from those of the agencies. When the job was completed, Wayne Kessler, Director of the State Division of Soil Conservation compiled and tabulated the information for a state summary. The practices needed, along with costs for the high priority needs (next ten years), are shown on the table at the right. →

How the various SCD boards arrived at these figures affords an interesting study of democracy at work at the "grass-roots" level.

This information, district by district, will be helpful to district supervisors in their long-range planning. This look-ahead planning is a coordinated, district-wide, local, self-government program for the orderly development, conservation and wise use of *all* land and water resources in the district.

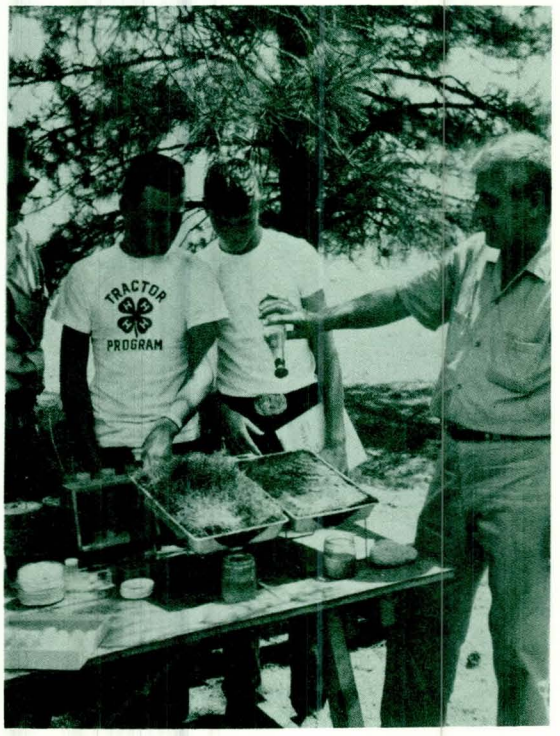
Conservation Education For Youth

THE ARIZONA Youth Conservation Camp is sponsored annually by the Arizona Association of Soil Conservation Districts, the Agricultural Extension Service of the University of Arizona, and the Soil Conservation Division of the State Land Department.

Objective of the camp is to arouse the normal curiosity of our youth into developing an appreciation and understanding of the state's natural resources.

Arizona Association of Soil Conservation Districts' president discussing present and future conservation with boys attending Conservation Youth Camp — **San Carlos Apache SCD**

Boys at Conservation Youth Camp learn that vegetative cover reduces soil losses
San Carlos Apache SCD



INVENTORY OF ARIZONA

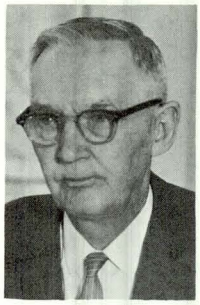
As determined by District Supervisors at grass-roots level

Practices	Unit	Completed	Remaining to be done	High Priority Needs	Estimated Cost of high Priority needs
Range Management	Ac.	19,941,210	36,823,474	29,430,468	$ 4,895,634
Erosion Control	Ac.	802,409	5,785,205	2,376,807	12,920,809
Retarding Dams	No.	1,576	1,990	1,035	33,548,890
Diversion Dikes	No.	1,859	8,407	2,782	4,584,910
Stock Water	No.	18,244	18,905	7,821	10,417,823
Range Seeding	Ac.	357,410	5,166,270	2,171,472	14,185,166
Fencing	Mi.	39,490	62,299	22,395	12,862,532
Noxious Plant Control	Ac.	1,076,640	10,351,845	2,620,286	12,973,200
Timber Management	Ac.	1,982,383	839,616	839,616	3,933,900
Timber Planting	Ac.	191,951	303,390	303,390	5,283,900
Timber Treatment	Ac.	236,412	693,447	571,142	7,861,820
Windbreaks	Ac.	146	6,469	7,469	45,910
Wildlife Habitat Improvement	Ac.	20,619	139,024	139,024	1,026,394
Wildlife Stream Improvement	Mi.	52	329	320	583,500
Fish Ponds, Lakes and Improvements (Includes Charleston Dam)	No.	413	720	720	36,442,250
Soil Surveys	Ac.	3,219,157	18,502,202	13,594,047	2,039,107
Rodent and Pest Control	Ac.	727,615	2,667,437	1,143,778	435,550
Fire Control	Ac.	352,869	10,014,673	7,700,496	1,057,488
Insect and Disease Control	Ac.	285,020	1,318,483	1,192,770	8,011,500
Roads and Trails	Mi.	13,637	3,931	3,931	48,447,975
Outdoor Recreation Developments (camp and picnic)	Units	2,904	17,740	17,740	22,617,602
Outdoor Recreation Developments (other)	Units	812	1,211	300	5,992,000
Buildings and Physical Facilities (Administration)	No.	679	263	263	2,996,400
Land Leveling	Ac.	568,584	1,116,269	407,257	32,028,307
Irrigation wells	No.	6,158	2,922	983	9,690,000
Irrigation Reservoirs	No.	923	521	277	6,373,900
Reorganization of Irrigation Systems	No.	1,068	4,346	1,680	10,167,600
Pasture and Meadow Establishment or Improvement	Ac.	62,716	342,548	342,548	2,325,110
Terracing	Mi.	714	20,790	20,790	3,053,500
Soil Improvement on Farms	Ac.	579,252	1,073,031	625,311	20,277,374
Ditch and Canal Lining	L.F.	26,090,884	39,965,056	12,974,369	19,477,699
Irrigation Pipelines	L.F.	2,501,650	3,415,940	1,536,365	5,605,717
Irrigation Water Management	Ac.	162,389	1,316,800	653,503	848,948
Total					$ 363,012,415

In addition, it is estimated that 40 million dollars will be required to take care of high-priority needs outside Soil Conservation Districts

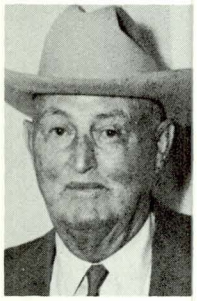
THE SOIL CONSERVATION District movement to me was one of the most needed and progressive in the nation's history. The No. 1 problem of any land is the conservation and wise use of its basic resource, namely the unlovely clod which has the mysterious power to produce babies, roses and cuttle fish. It has been a long struggle to organize and get going, but I am quite proud of district progress in Arizona.

Frank Gyberg, Verde SCD supervisor, and past-president, Arizona Association of Soil Conservation Districts.



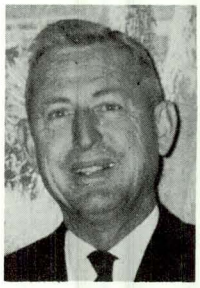
SOIL CONSERVATION Districts are outstanding institutions for conservation education and action. District programs are based on the democratic belief that local people know their problems best and can cope successfully with them if given encouragement, cooperation, and appropriate assistance. I compliment the Arizona Association of Soil Conservation District Supervisors on the leadership that the SCD governing bodies are providing in conservation and development of our soil and water resources and on the progress to date.

Obed M. Lassen, State Land Commissioner.



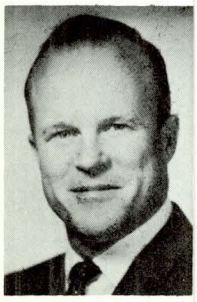
I THINK THAT Soil Conservation Districts have made land users more conscious of conservation needs and, in turn, will cause more work to be done. Because of the terrain of Arizona, much of it must be used for livestock and game. Livestock has contributed materially over the years to the economy of the state, and if we continue to have an industry as we know it today we must conserve our range lands and water resources.

Ernest Browning, President, Arizona Cattlegrowers Association.



OUR PROGRESS AND accomplishments are, of course, very fine. But the reason that Soil Conservation Districts here in Arizona will warrant a very important place in the history of America is that they maintain the principle of local self-rule, making their own decisions and accepting no financial help from the State or Federal Government for their operation. Of this, I am sure, we can all be proud.

H. S. Raymond, Secretary, Agua Fria SCD, and District Engineer-Manager, Maricopa Water District.

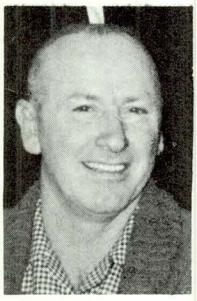


ARIZONA SOIL CONSERVATION Districts have made farmers and ranchers aware of their responsibilities and opportunities for better use of their land and water. Organized districts, under the leadership of local people, have shown that sound conservation practices are not only in the best long-term interest of our state but offer economic advantages to those who currently manage and control these valuable resources. Land and water are important to Arizona's future progress.

Marvin R. Morrison, President, Arizona Farm Bureau Federation.

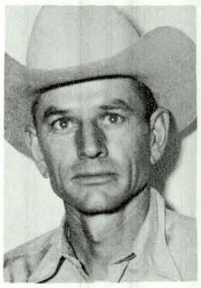
SOIL CONSERVATION districts have a distinctive role in the future well-being of this country; they are just as essential to the future of America as were our National Leaders who unselfishly set guide-lines for the birth and growth of this nation. We cannot question that our great American Leaders of yesterday unselfishly paved the way for the abundant life we are enjoying today. Our district boards are building on this same firm foundation.

Melvin S. Crosby, a former supervisor, Apache Soil Conservation District.



WE IN THE GILA BEND Soil Conservation District are giving serious thought as to where we think SCD's should be heading. For Districts to meet their challenge in the coming years, we are of the conviction that soil and water conservation is everyone's problem — not just the farmer's — and in this light it is not proper for less than 10% of the people to make plans without giving the other 90% a voice in the decisions.

Desmond G. Wood, Chairman, Gila Bend Soil Conservation District.



I HAVE SEEN a lot of progress and improvement during the past 13 years as a district supervisor. Considerable work has been done through the efforts of supervisors, farmers, ranchers and others. However, conservation work could be speeded up with state financial help to districts for administrative purposes. With a growing population and continued drouth, soil and water conservation is as important as ever. We need to inform and educate more people.

Cecil C. Billingsley, Secretary-Treasurer, Triangle Soil Conservation District.

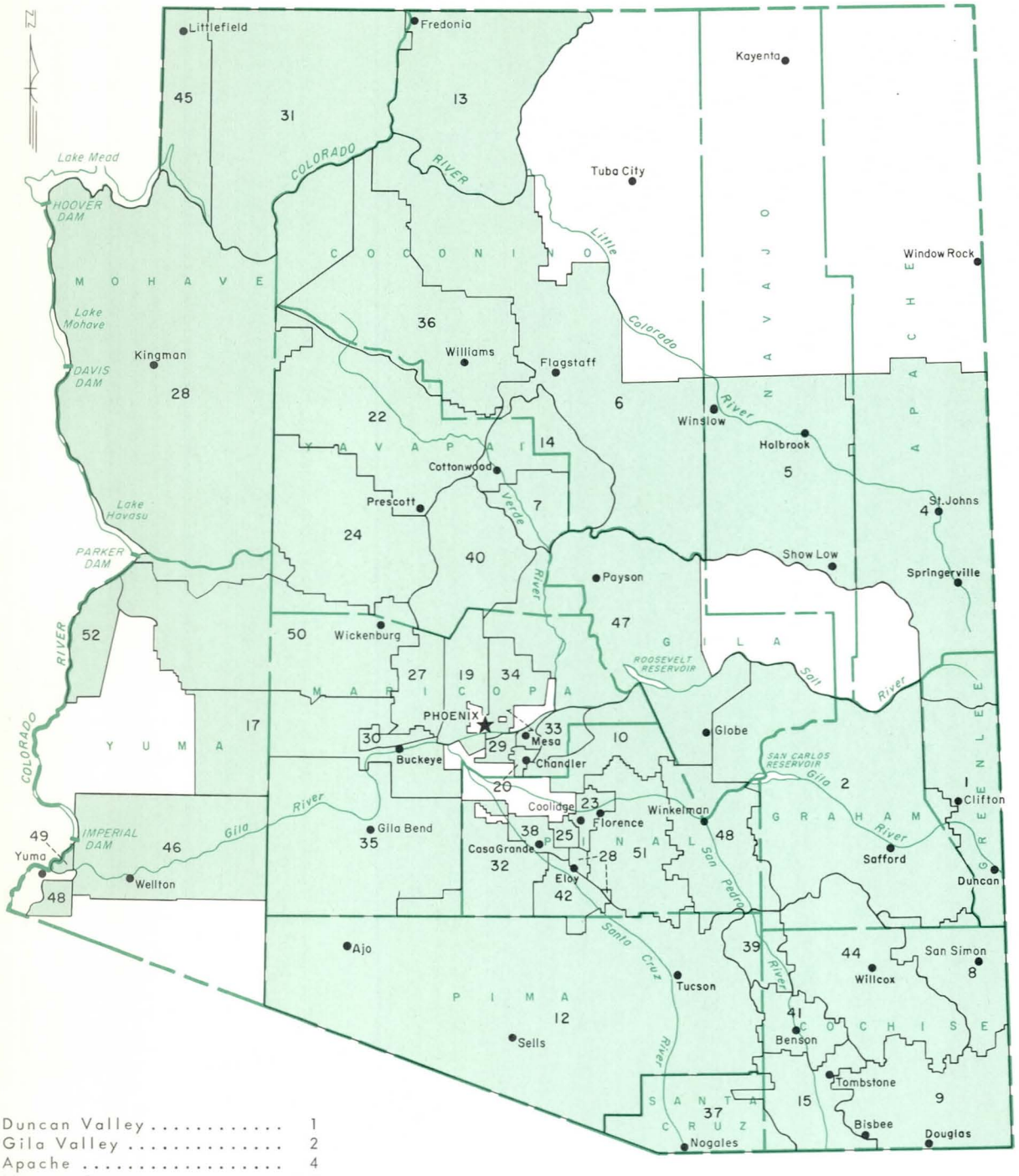
SINCE 1954 SOME 50,000,000 acres have been added to Soil Conservation Districts in Arizona. This has generated a lot of interest among ranchers to adopt new soil and water conservation techniques, suggested by SCS technicians and others, and proves we were right in urging enactment of the "Rangeland Amendment." Districts can play an ever-expanding role in the future in helping farmers and ranchers bring their lands to their full productive capacity.

Kel M. Fox, past-president, Yavapai Cattle Growers, and former State Senator.

PUMPING WATER is the most expensive item farmers have. That is why we believe that flat leveling and irrigation efficiency go hand in hand. Maximum irrigation water efficiency on heavy soils can be obtained and "tail-water" abolished only after basin-type irrigation systems have been installed. These systems eliminate runoff and allow farmers to accurately apply the exact desired amount of water to any field. This is the ultimate in irrigation water management.

Duane B. Daley, Chairman, West Pinal Soil Conservation District.

ARIZONA
SOIL CONSERVATION DISTRICTS



Duncan Valley	1	Triangle	24	Eloy	42
Gila Valley	2	Big Sandy	26	Winkelman	43
Apache	4	Agua Fria	27	Willcox	44
Navajo County	5	West Pinal	32	Littlefield-Hurricane Valley	45
San Francisco Peaks	6	East Maricopa	33	Wellton-Mohawk Valley	46
Verde	7	Mesa-Tempe	34	Tonto	47
San Simon Valley	8	Gila Bend	35	Yuma	48
Whitewater Draw	9	Sitgreaves Mountain	36	Laguna	49
Queen Creek	10	Santa Cruz	37	Wickenburg	50
Pima County	12	Redington	39	Pinal	51
Fredonia	13	Upper Agua Fria Basin	40	Parker Valley	52
Hereford	15	San Pedro	41	San Carlos Apache	53
Buckeye-Roosevelt	17				
New River	19				
Chino Valley	22				
Florence-Coolidge	23				

ARIZONA ASSOCIATION OF SOIL CONSERVATION DISTRICTS