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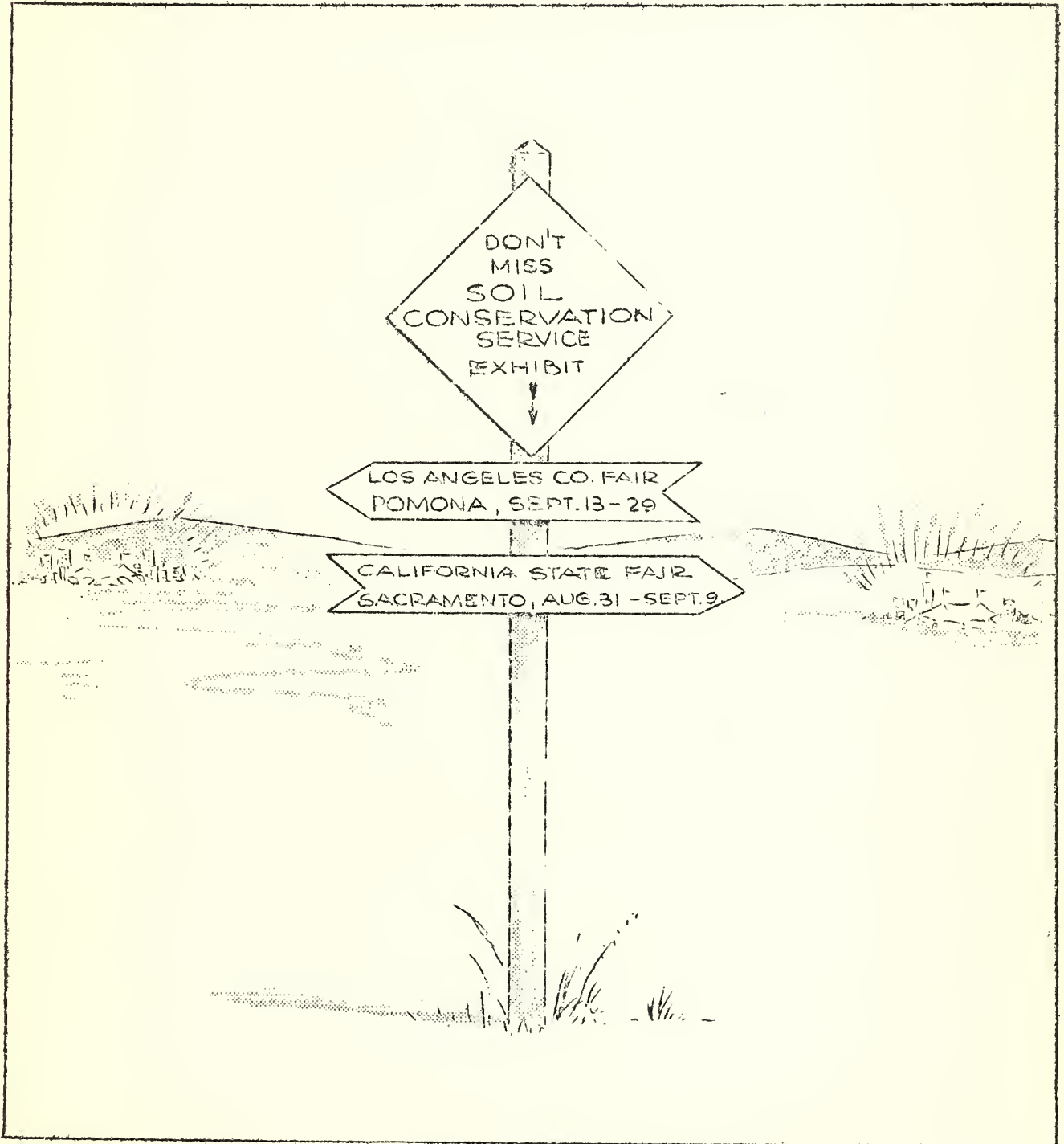
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CALIFORNIA EROSION DIGEST

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U. S. Department of Agriculture



SOIL CONSERVATION SERVICE
U. S. DEPT. OF AGRICULTURE

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CALIFORNIA EROSION DIGEST

Soil Conservation Service

U.S. Department of Agriculture

(Issued monthly at the Regional
Office, Santa Paula, California)

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Santa Paula, California

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Volume 1 - No. 11

August, 1935

"ANCHORING THE GOOD EARTH"

"The city of Antioch in the year 360 A.D. was the center of an almost Arcadian region, with a population of 400,000. The earth, the streams, and a temperate climate vied with each other in making this district of Asia Minor luxuriant with olives and golden corn. The mountain heights were covered with timber and furnished a perennial water supply. Vineyards abounded. The export of agricultural produce was a flourishing trade. Today these formerly rich highlands lie devastated and abandoned, with a population of less than 28,000. The mountains are denuded of forest and soil, and during the rainy season contribute torrential floods. "Arcadia" has been changed to "Desolation."

"While wars and earthquakes were partly responsible for the decline, the disastrous transformation is fundamentally due to soil erosion caused by neglect and misuse of the land. History is filled with similar tragic changes, and today the same process is going on in Africa, China, Italy, Puerto Rico and many other countries.

"Of all nations in the world, however, the United States has been the greatest despoiler of natural resources.Of our agricultural lands, more than 50,000,000 have become virtually uncultivable and an additional 125,000,000 acres have been largely stripped of productive topsoil.In many parts of the United States floods are increasing in frequency and destructiveness, due to treeless and eroded watersheds. Vast quantities of silt from eroded lands are being deposited in reservoirs.

"The most conservative estimates - those leaving out flood damage, the costly problem of silting reservoirs and streams, the losses incurred by impoverished farm populations - indicate an annual loss from erosion of at least \$400,000,000 and a total loss, already of not less than \$10,000,000,000. To meet the situation, the administration, in 1933, launched the first widespread practical program ever undertaken in the United States for permanent protection of its land resources." - From July Readers Digest. Article by Charles W. Collier, Special assistant to H. H. Bennett, Chief of the Soil Conservation Service.

CALIFORNIA SOIL CONSERVATION NURSERIES

By Fred W. Herbert,
Regional Director of Nurseries.

The Soil Conservation Nurseries constitute a division of the Soil Conservation Service of the Department of Agriculture, with Mr. C. R. Enlow, Washington, D. C., Acting in Charge. Each Regional Soil Conservation Service has a nurseries unit in charge of a regional director or superintendent, under Mr. Enlow's supervision. The regional directors of the Soil Conservation Service, through their Agronomy and Woodland Management Divisions, make known their needs for seeds and plants, and it is the responsibility of the nurseries to supply these needs.

At the present time there are three nursery units in California. The main, or headquarters unit, is located on the 20-acre farm owned by the City of Santa Paula. One branch nursery, comprising approximately 6 acres, is located on land owned by the City of Watsonville, at its Filtration Plant at Corralitos, about 8 miles north of Watsonville. At each of these nurseries the land is being occupied on the basis of long-term agreements between the cities named and the Secretary of Agriculture. In these agreements it is recognized that soil conservation is a cooperative undertaking between the government and the respective communities. The other branch nursery is located at the Institute of Forest Genetics, 4 miles east of Placerville, on land which is now under the jurisdiction of the U.S. Forest Service.

In these three units over 1,200,000 trees and shrubs of many different varieties of native plants will be ready for fall planting. The plants selected to afford the highest degree of protection for soil conservation will be assigned to the areas according to adaptation to the conditions. They will also provide a refuge for game and birds and will beautify the landscape. Trees may be used to establish profitable woodlots on eroded, non-productive areas.

The following outline of the present nurseries organization is given as a matter of information and guidance to those having contacts with the Nurseries Division.

Fred W. Herbert, Regional Director of Nurseries,
City Hall, Santa Paula, California.

Santa Paula Headquarters Nursery, City Farm, Harvard Road, Santa Paula.

Oswald K. Hoglund, Superintendent,
Ervin E. Lewis, Assistant Superintendent,
August F. De Bouter, Nursery Assistant,
Byron E. Janes, Nursery Assistant,
Wesley F. Dodge, Nursery Assistant,
Ernest F. Manzer, Nursery Assistant.

Corralitos Nursery - 8 miles north of Watsonville, California.

Silvio E. Ronzone, Superintendent,
Arthur L. Perkins, Nursery Assistant,
Steele D. Wilson, Nursery Assistant.

Watsonville,- Soil Conservation Service Headquarters

Albert F. Sander, In charge of grass work and grass
seed collection.

Placerville - Conifer nursery at Placerville, located at Institute
of Forest Genetics, under the Forest Service, four
miles east of Placerville. Nursery stock maintained
by Institute staff in local charge of Mr. Lloyd Austin,
by special arrangement.

The work of the nurseries consists of three general divisions--
seed collection, plant propagation, and research. These are very
briefly outlined, as follows:

SEED COLLECTION

While based on the estimated needs of the Agronomy and Woodland Management Divisions, primary consideration is given to the collection of seeds needed for plants to be grown in the nurseries, and secondary attention to seed required for direct seedings. At present the seed collection program is being carried out through the cooperation of the E.C.W., by the Camp Superintendents and their Agronomy Foremen. A system has been put into operation whereby seed collections are reported direct by the collectors, both to Washington, D.C., and to Santa Paula daily, or every few days, by means of a duplicate mailing card. As the figures come in, they are transferred to seed inventory cards. The weights are necessarily of uncleaned seed but with most species the percentage of clean seed that will result is known approximately, so that the system provides the Washington and regional headquarters offices with information concerning the progress of the collections and a fair approximation of the total amount of seed on hand.

In addition to the seed requirements of the Agronomy Division, the Washington Office has arranged for seed collections and exchanges whereby regions in which seed of some species may be collected easily will supply other regions in which the collection of these seeds is difficult with required species.

It is not the purpose of this article to give detailed information, so that the names of the species from which seed is being collected are not included. It may be stated, however, that seeds from approximately 75 species of trees, shrubs, and grasses have been collected to date. Seeds of some of these are collected in relatively small quantities, for trial in the nurseries, while others, especially those desired for direct seeding, are collected in very large amounts.

PROPAGATION

Plants produced by commercial nurseries are invariably sold to people who expect to take the best possible care of them. The purchaser plants them under the best of conditions of soil, moisture, proper exposure, or protection. Our plants, on the other hand, will need to establish themselves on moisture supplied by the winter rains, possibly augmented in some cases by artificial watering, but if so, in no measure comparable to the watering of the "domestic" plants. On our areas the soil may be good, fair, or poor--so poor in some locations that soil will have to be "made" by raking in such topsoil as may be immediately available. There will be no choice as to exposure. Under these conditions, the plant needs of our California unit are almost entirely of drought-resistant species and it has been considered safest to make first and principal use of those native or long-established trees, shrubs, and grasses that have proven their adaptability. It is the problem of the nurseries, not only to produce these plants in large quantities, but to deliver them to the Agronomy Division in such shape as to be most easily planted and conditioned to insure the highest possible survival.

It is recognized, of course, that some plants can be transplanted "bare root," while others must be potted. The Eucalyptus species, of which large quantities are desired, come under the latter requirement, especially for transplanting under the conditions above described. Our propagation work, therefore, is rather unique in the sense that for the first time, perhaps in nursery history, a large variety of native, or typical, California plants are being potted in such large quantities. An idea of a part of our nursery propagation program may be gained by the following statements relating to the handling of Eucalypti alone this season, at our headquarters nursery.

Approximately 400,000 Eucalypti will be supplied in containers. The most inexpensive paper pot available on the market of the size needed for potting this quantity of plants was quoted at approximately \$5.00 per thousand. This would have entailed an expenditure of \$2,000 for paper pots, for the Eucalypti alone! To reduce this cost, a special method was developed at our headquarters nursery which provides paper containers at approximately one-fifth of the above cost. Even under this method, 220 rolls of tar paper, totaling 110,000 square feet, were required for the containers; also 4,000 nursery flats holding a total of 150 tons of leafmold and topsoil, brought in from the forest, and placed in the flats by hand.

At the headquarters nursery at Santa Paula, a lathhouse covering approximately three-fourths of an acre of land has been constructed, sufficient to provide shade to about 750,000 plants transplanted to flats. Nearly that number of plants will be in the lathhouse by winter, for in addition to the Eucalypti, such species as Rhus integrifolia, (lemonade berry); Photinia arbutifolia (Christmas berry or Toyon); Shepherdia argentea (Silver buffaloberry); Grevillea robusta (Silk Oak), and others are being transplanted to flats in large quantities. With a transplanting crew of 10 men, each working 40 hours, about 35,000 plants are placed in individual paper containers each week. Lined-out plants that will be handled bare-root, consisting largely of Walnuts, Black Locust, Chinese Elm, Elderberry, and a few others are grown in the open nursery.

At the Corralitos Nursery, many of the species growing at Santa Paula are repeated, but in smaller quantities. In addition, the Corralitos Nursery will supply six species of Pine, the Coast Redwood, (Sequoia sempervirens), Douglas Fir, Chinese Pistasche, and a few others needed for the demonstration areas in that part of the state.

At Placerville approximately 160,000 trees will be produced, all of which are species of Pines, with the exception of about 20,000 Arizona Cypress.

RESEARCH

In connection with quantity production, better methods of handling the plants, particularly those that are potted, are being studied. Small tests are already under way, the results of which it is expected will provide information on which such improved methods will be based. It is also planned to establish plots of some of the native grasses, to be grown for seed purposes, especially of those

species from which it is difficult and expensive to gather the seed. Small experimental propagations will also be made of species of plants deemed desirable for soil erosion control but with which very little or no nursery work has been done in the past.

Additional branch nurseries as may be necessary are planned to keep pace with the plant needs of the regional soil conservation work.

* * * *

County Allots \$1,000 for SCS Dam Materials

Cooperation with the Soil Conservation Service in erecting a dam in the Las Posas area was voted by the Board of Supervisors of Ventura county August 23, and \$1,000 for materials was appropriated from the 1933 bond fund. The SCS will furnish the labor.

600 MILLION TREES AND SHRUBS FOR EROSION CONTROL PLANTING

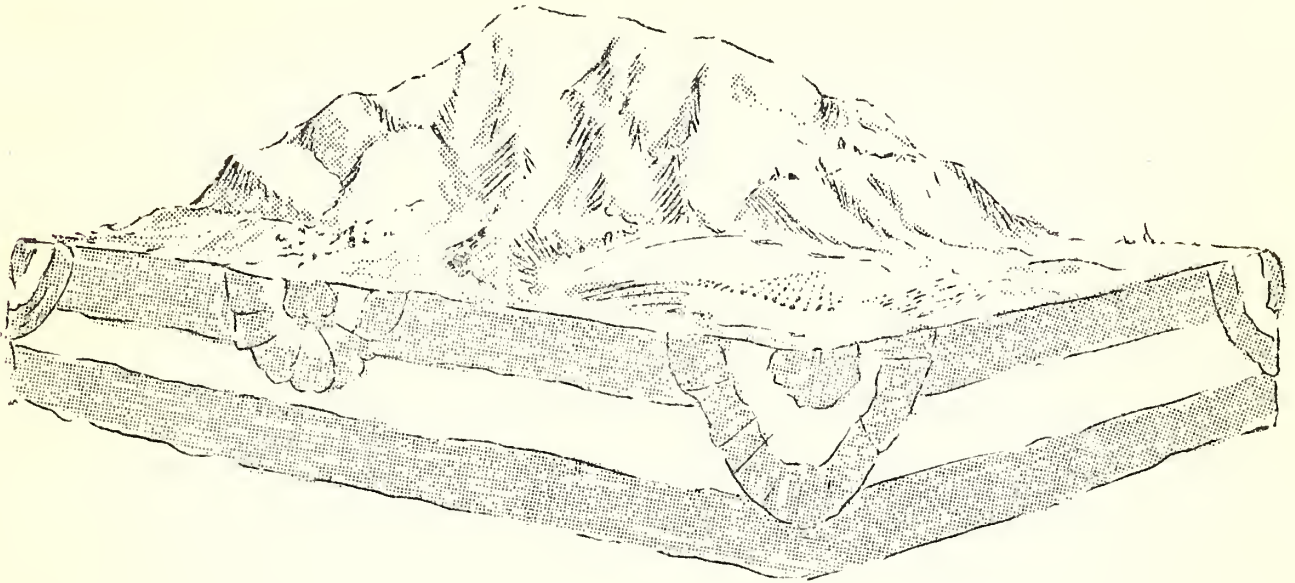
Approximately 600 million trees and shrubs will be produced by nurseries of the Soil Conservation Service and cooperating agencies for use on erosion control demonstration projects throughout the country the coming year, Charles R. Enlow, Chief of the Division of Nurseries of the Service, recently announced.

The nursery program also calls for collection of one million pounds of grass seed not commercially available, to be used in erosion control planting. To meet this heavy production assignment, 19 new nurseries will be established bringing the total number of Service nurseries to 83, in 38 states. They now range in size from 2 to 800 acres.

Fifteen of these nurseries are under supervision of Emergency Conservation Work and were established primarily to provide materials for use by the 545 Civilian Conservation Corps camps under direction of the Service. Certain other nursery areas providing trees for the Service are operated in cooperation with State Foresters.

The mounting demand for trees, shrubs and grasses has been occasioned by the recent expansion in the demonstration program of the Service, which increased the number of demonstration projects from 47 in 31 states, to 141 in 41 states, and the number of CCC camps from 55 to 545

SAVE THE SOIL



Don't Miss Seeing the SOIL CONSERVATION SERVICE EXHIBIT at: California State Fair, Sacramento, August 31 to September 9. Los Angeles County Fair, Pomona, September 13 to 29.

The Soil Conservation Service exhibit at the Sacramento and Pomona fairs shows in realistic detail the damages wrought by soil erosion and the methods being used by the SCS and cooperators to curb this menace to the welfare of the land.

In the nine by fourteen foot replica of a typical California farming area are shown ranches that have been abandoned due to washing away of the fertile topsoil by rains falling on unprotected sloping fields and orchards. Contrasting vividly with this desolate scene are prosperous ranches protected by proved erosion control methods, such as: Strip crops, broad-base terraces, contour ditches, and soil-holding trees and grasses.

Looming over the valleys and foothills is a range of mountains, the formations of which are shown in natural color. Perched on one of the higher peaks of this range is a fire lookout tower.

Don't Forget - See This Exhibit By All Means.

WHY PLANT A COVER CROP?

By

Glenn E. Paxton
Corralitos Project No. 31

It is a known fact that cultivated lands have been slowly but surely losing fertility with a corresponding steady decline in crop yields. This loss is greatly accelerated on the steep slopes, due to excessive erosion, and occurs on many farms in this and other areas. In order to help overcome this condition, cover crops have been recommended in conjunction with the contour method of planting and cultivation.

Experience has shown that these soils need organic matter more than anything else. Cultivation burns out humus rapidly and in a few years may reduce soil fertility with a corresponding reduction in yields. When the cover crop is turned under, it supplies organic material which decomposes into humus.

The role played by the addition of organic matter to the soil by cover crops may be described as follows:

1. Organic matter contains most of the nitrogen found in soils, and all plants except legumes are absolutely dependent upon it for their supply of this most essential element.
2. It increases the permeability of the soil and results in more rapid absorption of moisture.
3. Organic matter is the source of energy and the laboratory or factory for soil bacteria in which they make available the essential elements providing food for plants.
4. It helps prevent leaching out of much of these plant nutrients which are in solution.
5. The depletion of organic matter results in reduced fertility of the soil and corresponding reduction in yield.

Considering soil conservation, the leaves and stems of the growing cover crops break the force of the falling raindrops, reduce the rate of runoff, and increase absorption. The roots hold the soil together and resist the cutting action of water running over the surface, while the above-ground portions of the plants reduce the velocity of the running water and retain many of the soil particles carried by it.

The following are the principal plants recommended for winter cover crops in California:

1. Barley, oats, or Spring Rye. Any one of these three cereals have a good fibrous root system; are fast growers, and make a good top growth.

2. Combined with a cereal one of the following legumes should be used in the northern part of the state: Purple or Common vetch, Australian Field Peas or Horsebeans. These are especially important in building up the nitrogen content of the soil, in that this group alone are able to take nitrogen from the unlimited supply in the atmosphere.
3. For the southern part of the state purple or common vetch, yellow top (*melilotus indica*) and malva should be combined with a cereal.

The results obtained by the use of cover crops, aside from the standpoint of soil erosion control, may be found in any Agricultural Experiment Station bulletin on that subject. All show a falling off in production when no cover crop or alternation of crops is practiced, and the level is held constant or increased when organic matter is added to the soil.

Cover crops should be planted as soon as possible in the fall. The usual rate of seeding per acre is 30 pounds of a cereal, plus 40 pounds of a legume. Ten pounds of *melilotus indica* or malva with a cereal are sufficient. A broadcast seeder is desirable but not necessary for an even distribution. Proper fertilization is absolutely essential on most soils.

The time for plowing under the cover crop depends considerably on the type of soil. The earliest date in this area should be March 15 for the north, and February 15 for the south. Considerable soil erosion may be expected in normal years if cover crops are turned under before that time.

The cost per acre for seed and fertilizer varies from four to eight dollars, depending on the kind used. It does not take much of an increase in production of any crop to repay this. At the same time the fertility is maintained and the farmers' worst enemy, Soil Erosion, is held in check.

Try cover cropping one year and watch the results. If there is any doubt about the financial returns, ask someone who has been using it. He invests in seed and fertilizer because of satisfactory returns for his money.

The Soil Conservation Service is depending on the farmers in the demonstration areas to help themselves, as well as the Service, in using all possible means in preventing soil erosion. The use of the cover crop is the basis on which all ditches and mechanical controls depend, and it is, therefore, of utmost importance that cover crops be planted as early as possible in every orchard this fall.

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