SOIL CONSERVATION DIGEST

CALIFORNIA - NEVADA REGION

VOL 2 - NO. 4. JAN. 1936

SOIL CONSERVATION SERVICE PROJECTS
CALIFORNIA-NEVADA REG. 10.

NAME	COUNTY	AREA
LAS POSAS	VENTURA	25 000 ACRES
ARROYO GRANDE	SAN LUIS OBISPO	6 500 ACRES
CORRALITOS	SANTA CRUZ	40 000 ACRES
ALISO CREEK	ORANGE	25 000 ACRES
SEBASTOPOL	SONOMA	12 500 ACRES
ENGLISH HILLS	SOLANO	8 000 ACRES
PLACERVILLE	EL DORADO	10 000 ACRES
PAHRANAGAT WY.	(NEVADA) LINCOLN CO.	25 000 ACRES
PANACA	(NEVADA) "	25 000 ACRES
PALOS VERDES	LOS ANGELES	15 000 ACRES
LOMPOC	SANTA BARBARA	12 500 ACRES
VISTA	SAN DIEGO	12 500 ACRES
BUNKERVILLE	CLARK CO. NEV.	10 000 ACRES

U. S. DEPT. OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL CONSERVATION DIGEST - REGION NO. 10*

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

Soil Conservation Service — U.S. Department of Agriculture

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*Region 10 includes all of California and Nevada.

Volume 2 - No. 4 — January 1936

- FRUIT TREES ON CONTOUR -

"It is my opinion that probably the most efficient handling of cultivated, erodible slope land to be seen anywhere in the United States is to be found in the Las Posas-Santa Paula district. Here, on declivities frequently exceeding 30 percent, with a highly erodible soil, fruit trees are planted on the contour and cultivated in such manner as to develop a steplike topography. Eventually the trees grow about midway from bottom to top of the sloping face between the benches. These sloping faces are maintained in a protective cover of grass, alfalfa, Australian Saltbush or other stabilizing vegetation, with cultivation and irrigation furrows restricted to the flat or upper part of the bench. Land thus treated lost no soil and very little water during a single cloudburst in 1934, when similar untreated plowed slopes lost in the neighborhood of 500 tons of soil per acre. Such an accomplishment is almost unbelievable until you study the details of this wellnigh perfect method of land stabilization." - H. H. Bennett, Chief, Soil Conservation Service. (Reprinted from Soil Conservation, Vol. 1, No. 4.)

THE BATTLE AGAINST SOIL LOSS IN THE ALISO CREEK PROJECT
AS SEEN BY AN ENROLLEE OF THE EL TORO CCC CAMP

DAM IT!

(To Hold The Soil)

-by-

Samuel Livingston, Enrollee
SCS Cal. No. 12, Veterans' Camp, El Toro

Enrollee Martin leaned on his pick and an explosive "damn it" escaped his lips. The rhythmic thud-thud of picks cutting away at the spreader ditch on the brow of hill 77 was hardly disturbed by the outburst. The ditch diggers, spread out at twenty foot intervals, were stripped to the waist; the warm California sun upon them. Sweat rolled from their bronzed bodies as the picks struck into the stubborn sandstone. Bit by bit the stone was cut and chipped away, the ditch widened and deepened. Picks were exchanged for shovels and the loose material thrown to the upper side of the ditch.

Martin often wondered what all this confounded ditch-digging was about. It was obvious that a ditch would carry or divert water. Any ditch would do that. He knew, in a general way, the system of ditches and dams had something to do with soil erosion control. That was why he was here.

Martin raised the pick across his lean, muscled shoulder and brought it down viciously. "Wait 'till another twister comes along," he said, shaking his head dolefully. "It'll blow this 'no man's land' into the Pacific," he grumbled on to himself.

He would never forget the Santa Ana (Ed. note: local name for strong winds) which came up after dark on Tuesday, November 22. A bit of stubble had taken fire on a hog-back where two ranches round out each other. Ordinarily such a blaze would be beaten out with little difficulty. But without warning the wind came up and fanned the flames with unbelievable swiftness across the hills and down to 101 highway. All night long, into the morning hours, the gale raged and howled, whipping up clouds of dust and sand, tearing the unprotected soil to pieces.

From where he stood now, meditating gloomily, his feet planted in the ditch, he could see the very range of denuded hills over which the wind and fire had raged. Ugly white scars shown like cancers where erosion had done its work. These hills were once covered with soil-binding grasses which knit and held the soil securely with their fibrous roots.

During and after Spanish days vast herds of cattle grazed over these hills. The cattle cropped the grass almost to the roots and kicked up the soil with their hoofs; and crisscrossed the hills with numerous trails. As though this were not enough, the sheep followed, eating the grass ever closer to the ground, leaving the soil bare. Only a scanty, weedy, vegetation was left to shelter the soil from pelting rains and Santa Anas.

The job Martin is working on is designated as Job #2, a piece of land sixty-six acres in area, in the form of a huge timedial, extending thirty-one hundred feet in a westerly direction, starting from an orange grove, down to a deep barranca on the edge of an irrigated truck garden, just below the county road. A dirt road runs through the center of the dial-shaped land, rising gently and feathers out at the plowed field below the orange grove. The field, eighteen hundred feet across, like an open umbrella, sheds the dial. The road is paralleled on its southern side by a hideous, twisting gully, varying from four to twenty feet in width and in some places down to thirty feet in depth.

The gully snakes crazily across the Japanese truck garden, in places so wide and deep that a fleet of five ton trucks could be comfortably stored in its confines. The perpendicular walls of the gully, undermined by increasing runoff, grew wider and deeper each year, sending out lateral branches which were steadily eating into the cultivated tract.

To stop the concentrated flow of water into the gully, the field has been terraced with 2% broadbase terraces and 2% contour ditches. Also, spreader ditches, which will spread the water evenly and carry it off gradually. Concrete, circular arch dams, with spillways and wing walls and concrete collars with wing walls have been constructed in the upper gully. The banks have been sloped, cultivated and planted to erosion-resisting grasses.

The gully eating into the Japanese truck garden below, has been dammed with earth above the main barranca so that the water will be directed into a newly constructed channel. Above the earth dam concrete collars (stabilizing the grade to one percent) have been built.

The new channel will draw the water into a four foot, semicircular, galvanized, iron pipe, thirty-eight feet long, thence to a spillway basin in the main barranca.

Job #2 is representative of the entire project. These methods of control will be applicable to the entire twenty-five thousand acres and to the surrounding regions.

Only a few months have passed since work started on the Aliso Creek Project. Farmers are being instructed in the rudiments of safe plowing and crop planting. No more will they plow their fields straight down the slopes, but will plow with the contour of the land. When the job of repairing Martin's "no man's land" is completed the water will spread out over the slopes and valley floor to sink into the loam.

Martin's "damn it," translated into action will save the land.

Dam it - and you hold it!

* * *

TO SURVEY SOIL EROSION ABOVE CALIFORNIA RESERVOIRS

Soil erosion surveys of two watershed areas in California, comprising approximately 374 square miles, are planned by the Soil Conservation Service of the Department of Agriculture. These will provide fundamental scientific facts on the relation of soil erosion to the silting of reservoirs.

The work in California will be part of a series of similar surveys which will be made in parts of Virginia, North Carolina, South Carolina, Georgia, Missouri, Arkansas, Oklahoma, and Texas.

According to H. H. Bennett, Chief of the Service, the purpose of the erosion surveys is to find out just how serious soil erosion is in the watersheds lying above the Lake Hodges and San Leandro Reservoirs, so that this information can be correlated directly with facts the Service has already collected on the extent and rate of silting in the two reservoirs.

Work will be carried on under the general supervision of Glenn L. Fuller, Head of the Section of Conservation Surveys, of the Service.

The erosion survey of the watershed lying above Lake Hodges will cover approximately 330 square miles in San Diego County. Approximately 44 square miles in Contra Costa and Alameda counties will be covered in the erosion survey of the watershed area lying above the San Leandro Reservoir.

Headquarters for the surveys have been assigned tentatively to Oakland, California, but the actual date for start of work has not yet been determined.

NAPIER

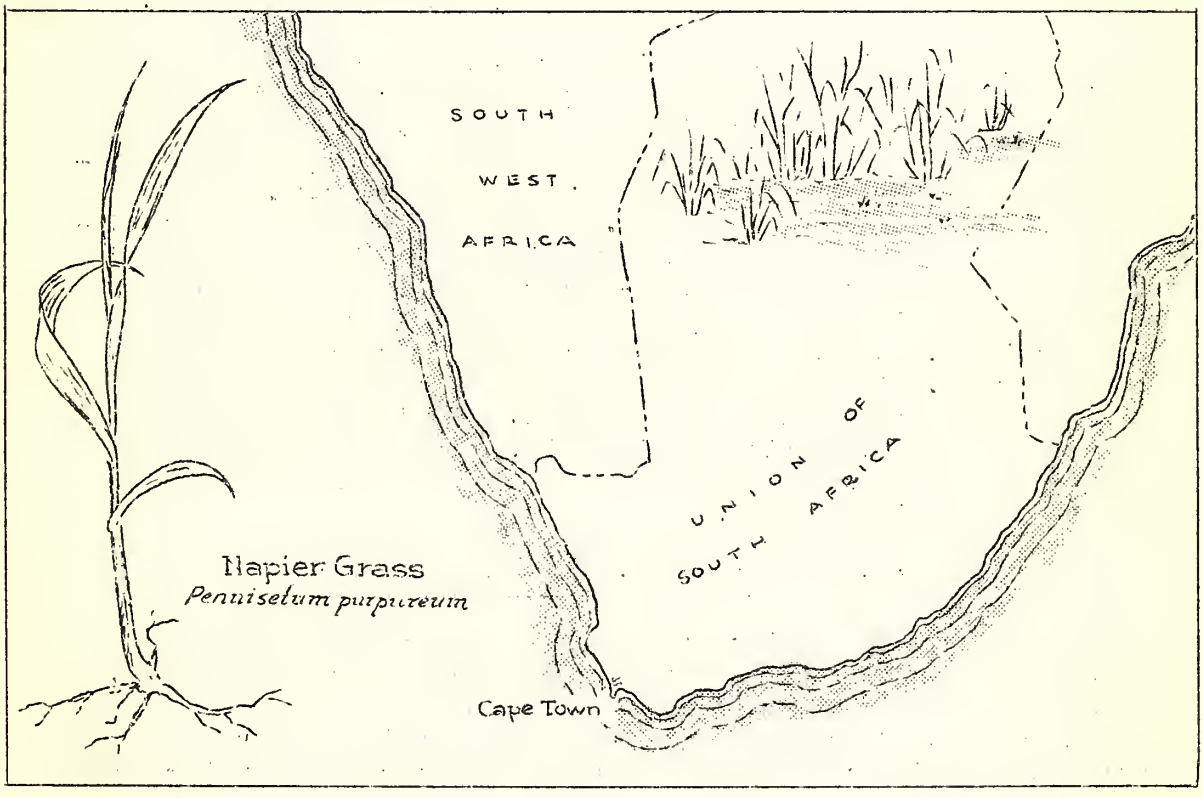
A GRASS THAT GROWS "OUT LOUD"

-by-

Paul B. Dickey
Associate Agronomist

Napier grass grew 14 inches in six days (July 19 to 25, 1920) on a ranch at Sycamore Heights, Los Angeles County; keeping pace with the appetites of the goats raised there.

In its native habitat, along the water courses and in marshes of South Africa, it sometimes reaches a height of 21 feet. The grass also extends into open spaces of bush and forest land and often forms the principal grass of the savannas. In 1932 in



Chatham County, Georgia, the county agent reported the harvesting of 62 tons of Napier (also known as Elephant Grass) from one acre, which filled a silo. Cooperators who contemplate plantings of Napier for pasture or fodder must take into account the fact that a crop which produces a large tonnage requires a fertile soil or liberal quantities

of fertilizer for continued maximum returns.

Napier grass was distributed in California in 1915. Plantings have been made in most of the counties south of Kern County, and it is probable that there are plantings north of this line. As a general rule the grass is eaten readily by all classes of livestock and poultry. On high-priced land in the southern counties it has not proven profitable enough to complete with other crops. However, used in connection with a soil conservation program it is economically justified, furnishing not only protection from soil washing but forage and fodder as well. Plans of the SCS call for the use of large quantities of cuttings of this plant.

The Agronomy and Nursery divisions of the Soil Conservation Service have approximately an acre of Napier in each of the district nurseries. What makes it especially valuable in erosion control is its large fibrous root system, which binds the soil.

Propagation is by cuttings or by seed planted in the spring. Since it sets seed well only in the warmer regions of the world, the general practice is to use cuttings. Propagation can be made in the same manner as sugar cane, that is, by planting mature canes end to end in furrows four to six feet apart. Cuttings can be made if material is scarce. One node per cutting is sufficient. If the cut is made on a slant about an inch below each joint and the cutting thrust into well-prepared soil, a good stand will usually be obtained, the roots and stems coming from the single node or joint. Cuttings should be made of mature canes (at least one year old). If seed is planted it should be sown in a bed and the seedlings transplanted to the field. Six inch plants can be produced from seed in five to six weeks. They can be transplanted rapidly and will grow quickly if most of the leaves are cut off when transplanting is done.

Napier Grass in Other States and Countries

In Florida Napier grass seeds freely and tests show 60% to 70% germination of one-year-old seed within four or five days. A growth of six inches within five weeks of plants from seeds has been recorded. Chemical analyses show that Napier compares very favorably in feeding constituents with any of our common non-leguminous forage plants. Tests made at the Gainsville, Florida, Experiment Station brought out the fact that Napier hay contains a greater percentage of protein than any of the other non-leguminous hays included in the study, among which were Timothy and Natal grass.

-Paraguay-

Observations made in Paraguay indicate that frost injury does not damage the grass for feeding, that it is extremely drought-resistant, and that although little growth is made during a dry period it recovers rapidly after a rain.

-Hawaii-

Repeated trials beginning in 1915 at the Hawaii Experiment Station show the adaptability of Napier grass in these islands. Six hundred acres, all used for pasture, were planted on one ranch. Plantings in Hawaii are now used for both pasture and as a soiling crop (cut and fed green to the stock).

-Has Many Uses-

Among the uses found for this grass are: pasture, green fodder, hay, dry fodder, ensilage, green manure, and for paper making. In South Africa natives use it for building the walls and roofs of houses. As an example of its luxuriant growth one of these native houses can be built from grass gathered from the building site plus a six foot strip around it.

Paper made from Napier has been used for government printing paper in Uganda, Africa). The paper is tough, of good color and fine surface, taking either writing or printing ink.

-Australia-

Napier grass was introduced into southern Australia in 1914. After a three-year trial it was considered valuable along the coast but made insufficient growth to be recommended for the dry table lands of the interior.

-Napier Grass and Soil Conservation-

Plans for the use of Napier grass call for plantings around dams, wing walls, and on the banks of waterways, to prevent the sluffing of soil into the channel. It will not be used in small field gullies as its large growth would hinder the movement of farm machinery. A limited amount of plantings are contemplated for pasture and fodder.

H. H. BENNETT, CHIEF OF SCS
SUMMARIZES NATION-WIDE SOIL CONSERVATION ACTIVITIES

* * *

Approximately 141,800 persons were participating actively in the erosion control program of the Soil Conservation Service at the close of 1935, H. H. Bennett, Chief of the Service, announced January 5 in summarizing soil conservation activities in the past year.

Of the total number of persons engaged in the control of soil erosion, more than 100,000 were Civilian Conservation Corps workers under supervision of Soil Conservation Service field technicians in 501 CCC camps throughout the country. Approximately 5,500 men, including camp superintendents, technical foremen, semi-skilled laborers and mechanics, were connected with the camps doing soil conservation work.

In addition to the CCC force, more than 32,000 persons had been taken from relief rolls and given work in the erosion control program by the end of the year.

Summarizing the progress of the erosion control program, Bennett declared that it represents the most comprehensive effort ever made to protect and conserve the soil resources of the United States.

"During 1935," he said, "the Service was able to initiate a major expansion in its operations. On January 1, 1935 there were 32 erosion control demonstration areas and 51 CCC camps doing erosion control work throughout the country. Today there are 139 demonstration areas and 501 CCC camps.

"A year ago the areas within which field operations were under way covered approximately 28,000,000 acres in 31 States. Today the corresponding area amounts to more than 51,500,000 acres of land in 41 States.

"Through the medium of these projects and camps, the Federal Government is showing farmers throughout the country the practical way to combat soil erosion and the destruction of valuable farming land.

"Within 42 of the demonstration areas," he said, "thousands of individual farmers have signed cooperative contracts, whereby they voluntarily agree to carry out, for a five-year period, the soil conservation measures recommended by experts as most adaptable to the needs of their land."

Bennett declared that additional thousands of contracts, covering farms in the 97 new demonstration areas which were started in the final months of 1935, are not yet completed because of the limited period of operation.

"More than a quarter of a million farmers and other interested persons inspected erosion control work on the demonstration areas during the past two years," Bennett said. "If each of these persons represented only 50 acres of land needing protection from erosion, the demonstrations of the Service might logically be said to have extended some measure of influence to more than 12,500,000 acres outside of the demonstration areas.

"We believe it is possible," he said, "that more than 50,000 additional farmers will adopt scientific soil conservation methods of land use during 1936 as a result of expanded operations of the Soil Conservation Service.

"This program of erosion prevention and control is designed to conserve the nation's most indispensable asset -- its agricultural lands," said Bennett. "We should have begun the scientific control of erosion 75 years ago. Today approximately 50,000,000 acres of once fertile land has been essentially destroyed, an equal acreage is bordering on this condition, and more than 100,000,000 acres have been seriously impoverished. In addition, the destructive process is getting under way on still another 100,000,000 acres."

"The evil of erosion is rapidly spreading," he said, "and is stripping productive soil from additional millions of acres. This soil cannot be replaced and there is no alternative but to meet the problem with the only weapon having a substantial chance for success -- that is, treatment of the many different kinds of land, occupying all degrees of slope, and subjected to a great variety of climatic conditions, in accordance with the specific needs and adaptabilities of each remaining acre worth saving."

* * *

BURNING CAUSES LOSSES

"Burning meadow land is an expensive operation, says C. B. Watkins, Logan County (Okla.) farmer.

"An accidental fire burned 45 acres of prairie meadow land on Watkins' farm on August 10, 1934. In 1935, a fair year for hay production, the yield on the meadow was less than half normal and weeds in the hay caused it to be unsalable.

"Experiments conducted at the Red Plains Soil Erosion Experiment Station, Guthrie, Okla., prove that Watkins' experience is not at all uncommon. Five-year experiments show that burning multiplies the water loss by 28 and the soil loss by 12."

- From December 1935 Soil Conservation
U.S. Department of Agriculture
Washington, D. C.

* * *

SOIL CONSERVATION LABORATORY TO BE ERECTED AT CAL TECH

(From Pasadena Star-News, January 6, 1936)

"Bringing to a head a Federal soil-erosion study project which will make Pasadena the most important research center in this field in the entire country, plans are being completed to erect at the California Institute of Technology a Soil Conservation Laboratory. Cost of the laboratory and equipment, the amount of which is not stated, will be borne by the Department of Agriculture at Washington, by special arrangement with the Institute trustees.

"The new laboratory will be erected on the San Pasqual Street side of the Caltech campus, and east of Throop and Dabney Halls. The building, substantial rather than pretentious, will house the very latest in soil-erosion study apparatus, much of which has been devised in Pasadena as the outcome of experimental work already done here.

Flood Control Studies

"The soil-conservation research at the Institute originated two years ago, when estuary, harbor and beach studies were undertaken for the County Flood Control. In these studies complete large-scale working models of the San Gabriel flood channel, Ballona Creek and other badly eroded areas were made on the Institute campus, and detailed reports made covering many weeks of close study.

"These investigations came to the notice of the Federal government largely through the instrumentality of Dr. W. C. Lowdermilk, now co-director of the Soil Conservation Service at Washington. With the increasing hazards from flood and fire in the foothills districts, it was felt that Pasadena was the logical place to establish the western

headquarters for the Federal work.

"Dr. Robert T. Knapp, assistant professor of hydraulics, was assigned by the California Institute to direct the new laboratory. Under him are working Vito A. Vanoni, who was in immediate charge of the flood-control studies of the past two years, and other technicians."

* * *

The celebrated "$16 ditch," now the Camino barranca, was started back in 1892 when a three foot drainage ditch was cut across a ten acre field. - - - Las Posas Project.

* * *

SOIL EROSION UNCOVERS HORSE'S TOOTH MILLION YEARS OLD!

Santa Anita racetrack is not the only place in California where horses show their teeth; the tooth of a horse that died a million years ago was discovered recently in a sand and gravel deposit at the bottom of a barranca on the Palos Verdes Estates near San Pedro by Tom McCleod, Camp Engineer at Palos Verdes CCC camp.

McCleod and Charles Wilson, Assistant Agricultural Engineer for the SCS, were laying out stabilization work to control soil erosion in the thirty-foot deep barranca when they unearthed the tooth. The tooth is two and one-half inches long, and the enamel is in a good state of preservation. A geologist at the California Institute of Technology estimated the age of the tooth as approximately one million years.

* * *

ATTENTION - SCS STAFF!

American Geophysical Union, Section of Hydrology, Pacific Coast Meeting
January 31 - February 1, 1936, California Institute of Technology
Saturday afternoon (February 1) 1:30 o'clock
Room 201, Bridge Laboratory of Physics

"Some Considerations on the Behavior of Rock Debris and Silt Particles in Streams and Reservoirs." - George H. Otton and Vito A. Vanoni, Soil Conservation Service.

"A Closed Circuit Flume for Suspended Load Studies." - Robert M. Oaks, Soil Conservation Service, and Robert T. Knapp, California Institute of Technology.

VOLUNTARY SOIL CONSERVATION ASSOCIATIONS FORMED

The following voluntary Soil Conservation Associations have been formed in the California-Nevada Region:

Lompoc-Buellton; Placerville; Vacaville-English Hills; Vista; and Analy Township in California and, Panaca and Bunkerville in Nevada.

Preliminary work has been completed toward the formation of Associations for the Cucamonga Basin, the Palos Verdes area, and the Las Posas demonstration area in California.

All of these Associations are voluntary and serve as a temporary agency to function until such time as permanent Soil Conservation Associations or Soil Conservation Districts may be organized under the laws of the State as a public body, corporate and politic.

On and after July 1, 1937, and sooner wherever feasible, all erosion control work on private lands, including work on new demonstration projects, will be undertaken only through legally constituted Soil Conservation Associations or governmental agencies. Until then, new ECW erosion control projects on private lands outside of demonstration areas, if not handled through legally constituted Associations, will be undertaken only through voluntary Associations, and then subject to the specific approval of the Secretary of Agriculture.

- Officers of Associations -

Lompoc-Buellton:

R. E. Sudden, President
Guy Hibbits, Vice-President
H. E. Hutton, Treasurer
Robert Hibbits, Secretary
Robert McGregor, Director

Placerville:

George Volz, President
W. J. Clark, Vice-President
John Larsen, Director
Elmer Scott, Director
Leo Ench, Secretary-Treasurer

Vacaville-English Hills:

George P. Akerly, President
Roy Brinck, Vice-President
Ed. R. Rogers, Director
Elwood Mitchell, Director
Joseph Libonati, Secretary

Vista:

Chas. H. Mull, President
Lewis H. Field, Vice President
Frederick W. Lyttle, Director
Benjamin Vlier, Director
Harry F. Gay, Secretary-Treasurer

Analy Township: (Sebastopol)

Newton B. Kinley, Director
George A. Kennedy "
J. C. Tabor "
W. Hotel "
F. W. Scarby "

Panaca:

Frank E. Wadsworth, President
Allen Findlay, Secretary-Treasurer
W. H. Edwards, Director
Charles P. Mathews, Director
Phillip Mathews, Director

Bunkerville:

Alfred Frehner, President
Warren Hardy, Vice-President
Max Hafen, Secretary
John Leavett, Director
George Huntsman, Director

These Associations are proving of inestimable value in arousing the farmers of California and Nevada to the need for controlling soil erosion. They are giving splendid cooperation to the Soil Conservation Service. Associations formed are within working distance of CCC camps assigned to the SCS or are in SCS demonstration areas. Educational work regarding erosion control and erosion prevention practices and the encouragement of individual operators and land owners to carry out a far-sighted program of soil conservation are some of the principal objectives of these Associations.