

**AGRICULTURAL RESOURCES  
AND CAPABILITIES OF PORTO  
RICO: MESSAGE FROM THE  
PRESIDENT OF THE UNITED  
STATES**

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Agricultural Resources and Capabilities of Porto Rico: Message from the President of the United States by Various

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**VARIOUS**

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THE UNITED STATES**



U.S. Office of experimental stations

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AGRICULTURAL RESOURCES AND CAPABILITIES OF PORTO RICO.

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## MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

TRANSMITTING

A REPORT ON INVESTIGATIONS OF THE AGRICULTURAL RESOURCES  
AND CAPABILITIES OF PORTO RICO WITH SPECIAL REFER-  
ENCE TO THE ESTABLISHMENT OF AN AGRICULTU-  
RAL EXPERIMENT STATION IN THAT ISLAND.

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WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1901.

AGRICULTURAL RESOURCES AND CAPABILITIES OF  
PORTO RICO.

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MESSAGE

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DECEMBER 11, 1900.—Message and accompanying papers ordered printed and re-  
ferred to the Committee on Insular Affairs.

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*To the Senate and House of Representatives:*

I transmit herewith a report on investigations of the agricultural resources and capabilities of Porto Rico with special reference to the establishment of an agricultural experiment station in that island, made in accordance with the act of Congress making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1901.

WILLIAM MCKINLEY.

EXECUTIVE MANSION, *December 10, 1900.*

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LETTER OF TRANSMITTAL.

UNITED STATES DEPARTMENT OF AGRICULTURE,  
OFFICE OF THE SECRETARY,  
*Washington, D. C., December 5, 1900.*

SIR: I have the honor to transmit herewith a report on the agricultural resources and capabilities of Porto Rico with special reference to the establishment of an agricultural experiment station in that island, made in compliance with the act of Congress making appropriations for this Department for the fiscal year ending June 30, 1901. The investigations have, in my judgment, shown the desirability and feasibility of maintaining an agricultural experiment station in Porto Rico,

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and I earnestly recommend that provision be made by Congress for the establishment of such a station in the Territory on a permanent and efficient basis in accordance with the recommendations of the Director of the Office of Experiment Stations, herewith submitted, and that an appropriation be made for this purpose equal to that which is given for the maintenance of similar stations elsewhere in the United States.

I have the honor to be, sir, your obedient servant,

JAMES WILSON, *Secretary.*

The PRESIDENT.

UNITED STATES DEPARTMENT OF AGRICULTURE,  
OFFICE OF EXPERIMENT STATIONS,  
*Washington, D. C., December 5, 1900.*

SIR: I have the honor to transmit herewith a report on the agricultural conditions in Porto Rico with special reference to the establishment of an agricultural experiment station in that island. This investigation was made in accordance with the terms of the appropriation act for this Department for the fiscal year ending June 30, 1901, which authorizes the Secretary of Agriculture to "investigate and report to Congress on the agricultural resources and capabilities of Porto Rico with special reference to the selection of locations for agricultural experiment stations and the determination of the character and extent of agricultural experiments immediately demanded by the condition of agriculture in that island." As the agent to make this investigation, Prof. S. A. Knapp, formerly of the Iowa Agricultural College and more recently engaged in agricultural enterprises in southern Louisiana, was appointed special agent in charge of agricultural investigations in Porto Rico and sent to that island about the middle of June, 1900, with the following instructions:

The following subjects should be included in your investigations:

(1) The general agricultural conditions existing in Porto Rico and the necessary and feasible measures for the improvement of these conditions.

(2) The lines of experimental investigations which should be undertaken in Porto Rico, and especially those which should be undertaken in the immediate future. As far as practicable, the scope, extent, and cost of the experimental inquiries immediately demanded should be determined.

(3) The locations suitable for agricultural experiment stations in Porto Rico, including a main station with laboratories, farm buildings, and experimental fields, and outlying stations, whose work shall consist of field, garden, and orchard experiments and experiments with domestic animals.

(4) The buildings, land, and equipment required for the proper maintenance of agricultural investigations in Porto Rico on the plan indicated in section 3. Careful estimates should be made regarding the cost of the buildings, land, and equipment needed to inaugurate the work of the experiment station in the island, with special reference to the sum required for these purposes during the fiscal year ending June 30, 1902. The methods of acquiring real estate for the use of the station should also be investigated.

(5) The needs of the agricultural people of Porto Rico as regards information on agricultural subjects, and the best means for supplying them with this information by publications, oral instruction, and demonstration experiments, or otherwise.

(6) The desirability and feasibility of securing the cooperation of the residents of Porto Rico in the conduct of experimental inquiries and the dissemination of agricultural information; the desirability and feasibility of including instruction in agricultural subjects in the curriculum of the schools of Porto Rico.

(7) The facilities for preparing, printing, publishing, and distributing in Porto Rico circulars of inquiry and bulletins of information on agricultural subjects in

the English and Spanish languages, and the best ways of securing the preparation and dissemination of such information in printed form.

(8) The cost of inaugurating and maintaining agricultural investigations and disseminating information (exclusive of the buildings, land, and equipment) in a manner similar to that of an agricultural experiment station in one of the United States having an area approximating that of Porto Rico. An estimate should be made with special reference to the cost of maintaining such work during the single fiscal year ending June 30, 1902.

Professor Knapp's report of his investigations is submitted herewith. In this report the need of experiment-station work in Porto Rico is plainly shown, and it is recommended that a station should be established with headquarters in the vicinity of San Juan. This station should give immediate attention to promoting the production of larger and better crops of coffee, sugar, and tobacco, and of food products for home consumption. As soon as practicable it should undertake work in horticulture, forestry, animal husbandry, and dairying. Besides conducting experiments, it should give object lessons in improved farming and should disseminate information by publications and agricultural meetings. In these recommendations of Professor Knapp I heartily concur. In my judgment an agricultural experiment station should be immediately established in Porto Rico on the same general plan as that pursued elsewhere in the United States.

Land should be obtained in the vicinity of San Juan on which to erect office, laboratory, and farm buildings and to conduct experiments. A competent man should be appointed to act as the chief executive officer of the station, plan and supervise its operations, and begin the organization of a staff of scientific and practical men to conduct investigations in various lines and instruct the people in improved methods of agriculture. It will be best to limit the work of the station at the outset to a few main lines, which will require the services of only a small staff, and develop the organization of the working corps as the station becomes more fully established and the way is opened for the extension of its work. As the station will not have the aid of an agricultural college already equipped with buildings and land, as has been the case with most of the stations established in the United States, it will be necessary at the outset to devote a considerable amount of money to its equipment. Without doubt as much will be required for the current expenses involved in the proper maintenance of an experiment station in Porto Rico as is the case elsewhere in the United States. I can see no good reason why an appropriation of \$15,000 a year should not be given to Porto Rico for the maintenance of an experiment station as well as to the other Territories of the United States, and I hope that Congress will make the first appropriation of this kind during its present session. For the purchase of land and the erection of buildings the station should have in addition an initial fund of \$15,000. In the case of the other Territories such expenses have been largely provided for by the local governments, and I think it would be well if this plan could be followed in Porto Rico, a portion of the revenues of the island being set aside for this purpose by the action of Congress or the Territorial legislature.

Authority should be given the Secretary of Agriculture in the appropriation act to establish and maintain an agricultural experiment station in Porto Rico, including the purchase of land, the erection of buildings, the printing (in Porto Rico), illustration and distribution of reports and bulletins in the English and Spanish languages,



and all other expenses essential to the maintenance of said station. Half of the first appropriation should be made immediately available.  
Very respectfully,

A. C. TRUE, *Director.*

Hon. JAMES WILSON,  
*Secretary of Agriculture.*

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LAKE CHARLES, LA., *September 22, 1900.*

SIR: I have the honor to submit herewith my report on the investigations regarding the agricultural conditions existing in Porto Rico, with special reference to the establishment of an agricultural experiment station in that island, made under your instructions dated June 11, 1900. I arrived at San Juan June 19, 1900, and immediately commenced my observations on the agricultural conditions and capabilities of the island. I traveled by private conveyance over 350 miles in the rural districts, and was everywhere cordially met by the farmers and given every facility for obtaining the information desired.

Respectfully,

SEAMAN A. KNAPP,  
*Special Agent in Charge of Agricultural  
Investigations in Porto Rico.*

Dr. A. C. TRUE,  
*Director of Office of Experiment Stations.*

## AGRICULTURAL RESOURCES AND CAPABILITIES OF PORTO RICO.

### GENERAL STATEMENT.

The island of Porto Rico is situated in latitude 18° north and lies in the direct line of trade between New York and South America. In a general way it may be described as about 100 miles long and 36 miles wide, and has an area, including its dependencies—the islands of Vieques, Culebra, and Mona—of 3,530 to 3,860 square miles. The whole island may be classed as mountainous except a border on the seacoast and numerous interior valleys. The mountains are not in bold and forbidding ranges, but consist of an endless variety of immense segregated and fertile hills, with interspersed valleys, in an ascending series, but without special order, from the north coast to two-thirds the distance across the island, where the hills attain an elevation of 1,500 to 2,500 feet, and the valleys, many of which are of considerable extent, are from 500 to 1,500 feet above the sea.

### CLIMATE.

The temperature of the island is tropical, but is so modified by altitude and ocean winds that extreme heat or cold is never experienced. Cold never reaches the frost line and rarely drops below 65° F., while 91° is usually the extreme of heat in a season, and that only for a short period. As the temperature is largely modified by the winds from the ocean, and especially by the trade winds, considerable variation is found in different portions of the island, it being warmer where the trade winds are shut off by mountains. A much greater difference is observable in the rainfall. Some sections are ordinarily deficient in rainfall; in others it is very heavy.

In a recent report on the water resources of Porto Rico, H. M. Wilson<sup>1</sup> states "that all the crops which the soil will produce can be grown over three-fourths of the extent of the island with the aid of the abundant rainfall alone. The other one-fourth, including all the region near the coast and from Cabo Rojo on the extreme west to beyond Guayama on the east, must be irrigated if the soil is to produce the full measure of crops of which it is capable. The total area of these irrigable lands is, however, relatively small."

The weekly crop bulletin issued by the Weather Bureau of this Department, San Juan, P. R., June 18, 1900, confirms the above statement.

<sup>1</sup>Water Supply and Irrig. Papers, U. S. Geol. Survey, No. 93, p. 28.

*Temperature and rainfall for the week ending June 18, 1900.*

City.	Temper-	Rainfall.
	ature.	
	° F.	Inches.
Arecibo.....	78.4	1.65
Manati.....	80.4	.58
Isabela.....	82.0	1.22
Bayama.....	79.2	1.90
San Lorenzo.....	79.8	4.37
Cidra.....	77.2	3.40
Maunabo.....	80.8	3.19
Humacao.....	80.2	6.52
Juana Diaz.....	80.4	4.72
Lajas.....	86.3	4.20
Bayamon.....	80.9	.36
Canovanas.....	88.9	1.48
San Juan.....	81.4	1.38

The above being a report for one week does not indicate the relative rainfall for the year at the different points, but it shows how unequally the rainfall is liable to be distributed in a given period. It is said that the rainfall was much more equal when the summits of the mountains were well wooded. An article by Prof. Mark W. Harrington, of the United States Weather Bureau (in U. S. Treasury Doc. 2118), is instructive:

The published observations of Porto Rico are very scanty, consisting of a total of about nine years at San Juan only, and these are fragmentary, being scattered through twenty years. They show a true tropical climate, with a high mean temperature (78.9° F.) and very little difference in season, except in rainfall. The coldest month on the average is February (75.7°) and the hottest, June (81.5°), but December to March are very much alike in temperature, and so are the months from June to September. The very coldest month on record is January, 1895 (70°), and the very warmest is June, 1878 (86°). The average change from the coldest to the hottest is only 8°, but this is very appreciable to one who has lived long in the Tropics. The cool months really seem to the natives to be decidedly cold, requiring additional covering on the bed and heavier clothing. The coldest temperature on record in San Juan is 57.2° on a day in January, 1894. The very hottest on record is 108° on a day in May, 1878. The absolute range of temperature observed is therefore between 49° and 44°. The former temperature is far above frost, but would seem to the natives very cold and would check the growth of tropical plants. The latter would seem very hot, for the air of San Juan is very moist and the evaporation of perspiration is slow.

The comfort of San Juan as a place of residence, not to mention its healthfulness, is very much increased by the "briza," which is not given in the public reports. It is the northeast trade wind which has been turned toward the west, until the "briza" comes quite regularly from the east. It is not felt much during the day, but springs up late in the afternoon and lasts through the evening. It is a soft, gentle breeze, laving the body and giving an effect which is most fresh and delightful. It has a regularity approaching that of the sun, and Santurce and Cataño, two suburbs of the capital, get it both more strongly and through a larger part of the twenty-four hours. At Cataño it may be felt until the middle of the forenoon, and begins again in the mid afternoon. At Santurce it makes the nights positively cool.

The year at San Juan is divided into the dry season and the wet season; but the dry season has about as much rainfall as the Northeastern States, and the wet season more than twice as much. The dry season embraces the months from December to March, with a rainfall of 10 or 11 inches. It is the most attractive season of the year, relatively dry and cool. It is the proper season for the visits of Northerners to San Juan, and winter residents would find its climate very gentle, mild, and safe. The wet season embraces the other eight months in the year, and has a rainfall of 48 to 49 inches, or more than the whole of the year for the most of the United States. The total rainfall at San Juan is nearly 60 inches, and the culmination is in November, when an average of nearly 8 inches falls.

The rainfall is not excessive. It is equaled in many places in the Southern States and in the northern part of the Pacific coast, and is surpassed in many places. It is less significant from the ease with which the rain comes down. There are no threatenings of storms for days beforehand. There is little wind and little light-