U.S. DEPARTMENT OF AGRICULTURE. BURREAU OF PLANT INDUSTRY - BULLETIN NO. 88; WEEVIL-RESISTING ADAPTIONS OF THE COTTON PLANT

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649451890

U.S. Department of Agriculture. Burreau of Plant Industry - Bulletin No. 88; Weevil-Resisting Adaptions of the Cotton Plant by O. F. Cook

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

www.triestepublishing.com

O. F. COOK

U.S. DEPARTMENT OF AGRICULTURE. BURREAU OF PLANT INDUSTRY - BULLETIN NO. 88; WEEVIL-RESISTING ADAPTIONS OF THE COTTON PLANT

Trieste

VALLEY AT SECANQUIM, ALTA VERA PAZ, GUATEMALA, THE SCENE OF EXPERIMENTS WITH WEEVIL-RESISTING COTTON.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY—BULLETIN NO. 88.
B. T. GALLOWAY, *Chief of Bureau.*

WEEVIL-RESISTING ADAPTATIONS OF THE COTTON PLANT.

BY

O. F. COOK,
BIONOMIST IN CHARGE OF INVESTIGATIONS IN THE AGRICULTURAL ECONOMY OF TROPICAL AND SUBTROPICAL PLANTS.

ISSUED JANUARY 13, 1906.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1906.

BUREAU OF PLANT INDUSTRY.

B. T. GALLOWAY,

Pathologist and Physiologist, and Chief of Bureau.

VEGETABLE PATHOLOGICAL AND PHYSIOLOGICAL INVESTIGATIONS.

ALBERT F. WOODS, *Pathologist and Physiologist in Charge, Acting Chief of Bureau in Absence of Chief.*

BOTANICAL INVESTIGATIONS.

FREDERICK V. COVILLE, *Botanist in Charge.*

FARM MANAGEMENT.

W. J. SPILLMAN, *Agriculturist in Charge.*

POMOLOGICAL INVESTIGATIONS.

G. B. BRACKETT, *Pomologist in Charge.*

SEED AND PLANT INTRODUCTION AND DISTRIBUTION.

A. J. PIETERS, *Botanist in Charge.*

ARLINGTON EXPERIMENTAL FARM.

L. C. CORBETT, *Horticulturist in Charge.*

INVESTIGATIONS IN THE AGRICULTURAL ECONOMY OF TROPICAL AND SUBTROPICAL PLANTS.

O. F. COOK, *Bionomist in Charge.*

DRUG AND POISONOUS PLANT INVESTIGATIONS, AND TEA CULTURE INVESTIGATIONS.

RODNEY H. TRUE, *Physiologist in Charge.*

DRY LAND AGRICULTURE AND WESTERN AGRICULTURAL EXTENSION.

CARL S. SCOFIELD, *Agriculturist in Charge.*

EXPERIMENTAL GARDENS AND GROUNDS.

E. M. BYRNES, *Superintendent.*

SEED LABORATORY.

EDGAR BROWN, *Botanist in Charge.*

J. E. ROCKWELL, *Editor.*

JAMES E. JONES, *Chief Clerk.*

INVESTIGATIONS IN THE AGRICULTURAL ECONOMY OF TROPICAL AND SUBTROPICAL PLANTS.

SCIENTIFIC STAFF.

O. F. COOK, *Bionomist in Charge.*

G. N. COLLINS, *Assistant Botanist.*

F. L. LEWTON, *Scientific Assistant.*

H. PITTIER, *Special Agent.*

LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF PLANT INDUSTRY,
OFFICE OF THE CHIEF,
Washington, D. C., September 26, 1905.

SIR: I have the honor to transmit herewith a report on "Weevil-Resisting Adaptations of the Cotton Plant," and to recommend it for publication as Bulletin No. 88 of this Bureau. This report has been prepared by Mr. O. F. Cook, bionomist in charge of investigations in the agricultural economy of tropical and subtropical plants. It contains an account of his observations and experiments which show that some of the varieties of the cotton plant have definite weevil-resisting characters. The establishment of these facts opens new and unexpected lines of approach to cultural solutions of the weevil problem.

The investigation of cotton referred to in this report was begun in March, 1904, through the Laboratory of Plant Breeding, there having been set aside for it from the emergency cotton boll weevil appropriation a part of the funds which had been devoted to the breeding of weevil-resistant cotton. The existence of a field culture of cotton in the presence of the boll weevil had been ascertained by Mr. Cook during a visit to Guatemala in 1902, and it was hoped that the immunity of the cotton might prove to be due to some weevil-resistant quality.

The first result of detailed observations was the discovery of the weevil-eating kelep or so-called Guatemalan ant, which has been made the subject of previous reports through the Bureau of Entomology. It now appears that the usefulness of this insect is not limited to the boll weevils which it catches and kills. By making a regular field culture of cotton possible in the presence of the boll weevil it has contributed in an important manner to the development of the weevil-resisting characters here described. The cotton plant, it seems, has been greatly modified in protecting itself against the ravages of its insect enemy. Not only has it attracted the kelep to its service and developed other means of defense which are more

direct, but even the lint, on the peculiar character of which the commercial value of the crop depends, appears to find its chief use to the plant in excluding the weevil larvæ from the seed. Our Sea Island and Upland varieties have been raised for long periods in regions where the boll weevil did not exist and, as was to have been expected, are largely lacking in protective features. The Kekchi cotton, on the other hand, which has continued its development in a weevil-infested region under the protection of the keleps, has by far the largest number of weevil-resisting characters.

The fact that weevil-resisting adaptations really exist, as shown in numerous instances in the present report, emphasizes the necessity of a thorough study of our cultivated cottons for the purpose of taking advantage of any and all protective characters.

It is possible, as Mr. Cook suggests, that the Guatemalan variety of cotton which he has discovered, and which has such a surprising number of weevil-resisting adaptations, may not prove suited to cultivation in the United States, but even in that case the value of the present paper on weevil-resisting characters would not be diminished, for it will serve as a help to all who may engage in seeking and developing such characters in the types of cotton now cultivated in our country.

Respectfully,

B. T. GALLOWAY,
Chief of Bureau.

Hon. JAMES WILSON,
Secretary of Agriculture.

CONTENTS.

ILLUSTRATIONS