

## A VARIETY OF TOBACCO RESISTANT TO ORDINARY TOBACCO MOSAIC

By J. A. B. NOLLA, JOHN SIMON GUGGENHEIM Memorial Foundation Fellow, 1932-33, University of Wisconsin; and ARTURO ROQUE, Assistant Phytopathologist, Insular Experiment Station, Puerto Rico.

The ordinary mosaic of tobacco affects a wide range of solanaceous hosts including most members of the genus *Nicotiana*. It is particularly severe on all varieties of *Nicotiana tabacum* L. heretofore studied in relation to the disease. In spite of the common occurrence of this virus disease on *N. tabacum* and the unusual opportunity afforded for the recognition of varietal or strain resistance to the disease, no such development has apparently been reported. Furthermore, the economic aspects of control of this malady are of such a nature that plant pathologists must have been on the lookout for cases of resistance to the disease for many years.

In the summer of 1929 the senior author visited the Cauca Valley of Columbia, South America. In these trips he observed several varieties of commercial tobacco, and his interest was curiously drawn to two varieties, seed of which was introduced into Puerto Rico. This seed obtained from Señor Carlos Rivera G., of Palmira, Department of Valle del Cauca, was presumably from the same stock of which plants were seen grown at the Santa Ana Farm of the Compañía Colombiana de Tabaco. The exact location is near the southeastern limits of the Department of Valle del Cauca.

The two varieties were grown in Puerto Rico, near Caguas, in 1929-1930 and it was during that year that the senior author observed the almost complete freedom from mosaic in one of the varieties, namely, the *Ambalema*. In a population of some six hundred plants, four individuals showed the disease as evidenced by a slower growth and by the characteristic symptoms on leaves. Unfortunately, no further studies were made with the susceptible plants. Selection of resistant plants was made from that progeny and crosses between these and a susceptible variety begun that year.

The senior author left Puerto Rico in the summer of 1930 and his studies were delayed for one year while doing graduate studies at Cornell University. He resumed this investigation in the fall of 1931.

In the meantime, the junior author, working at the Insular Experiment Station of Puerto Rico, discovered, independently, the resistance of this variety of tobacco to mosaic.

Both authors are now engaged in a study of the inheritance of resistance to mosaic. Our observations show that most plants of this variety inoculated with the virus of the ordinary tobacco mosaic do not exhibit any very marked symptoms. However, a clearing of the veins may be noticed in some individuals, while a smaller percentage exhibit chlorotic areas of a mild type, in the interveinal regions of the blade of the leaf.

Since the genetic nature of the resistance of this variety of tobacco was not well understood, an earlier note had seemed unwarranted. An explanation for the cases of susceptible individuals would have been desirable before publishing any note on resistance of the variety to mosaic. The senior author, in his annual report to the Chief Pathologist [See Cook (2)] in 1930, said concerning this variety:

... "of the Colombian varieties one proved to be very promising", Page 97. Quite intentionally no mention is made of any specific quality.

Knowledge that the planting of this variety of tobacco is being extended in some places of the Island has prompted the writers to release this preliminary note. We wish to make it clear at this time that we are not responsible for the distribution among farmers of a variety of tobacco which has not yet been submitted to adequate selection and testing.

The senior author wishes to call attention to the fact that at the time the tobacco was collected in Colombia, no observations of resistance to mosaic were made. Our notes on prevalence of mosaic on the various farms rather showed that the variety was apparently susceptible. That we failed to detect freedom from symptoms of mosaic at that time may be explained in two ways. Either the mosaic of tobacco of that part of the continent is more virulent than the mosaic of Puerto Rico and the United States; or, as is most probable, the plants represented a very heterozygous population in which the susceptible individuals predominated. It is of interest, that in a small planting in Toro, Colombia, inspected on June 11th, no mosaic was observed even in plants a year old. No particular significance was attached to this observation at that time, and it was believed that such freedom from mosaic was the result of good cleaning of seed and careful handling of beds and seedlings.

The first illustrative record of this variety of tobacco, as far as the authors know, appeared in 1930 in a Puerto Rican publication (3). That picture was taken by the senior author near Toro, on June 11th, 1929. This town is located in the northern part of the Depart-

ment of Valle del Cauca. In this locality, however, the name given to the variety is "Pájaro Negro" (black bird). A plant of the first Puerto Rican grown tobacco of this variety is illustrated opposite page 97, Annual Report of the Insular Experiment Station of Puerto Rico, 1929-30. Bunker (1) publishes a figure of a "Variedad Colombiana Seleccionada y Aclimatada por el Especialista . . ." (Colombian variety selected and acclimated by the Specialist) . . ." Bunker obtained seed from our experimental plots of 1929-30 and, therefore, his plant must have been photographed the following season.

Doctor Carlos Durán Castro, formerly Director of the Agricultural Station at Palmira and now Chief of the Department of Agriculture in the Ministerio Nacional de Industrias at Bogotá, accompanied the senior author in most of his trips, being a source of constant encouragement. His courteousness on the one hand, and his devotion to our work, on the other, more than compensated for our efforts. He should have a considerable share of whatever credit may be reaped from the discovery of this important tobacco variety. The Hon. Carlos E. Chardón, formerly Commissioner of Agriculture of Puerto Rico and now Chancellor of the University of the Island, head of the Agricultural Mission to Colombia in the summer of 1929, also deserves our recognition for his valuable cooperation.

#### REFERENCES CITED

- (1) Bunker, F. H. Informe del Perito en Tabaco. In Rev. de Agr. Puerto Rico 26:177-186. 1931.
- (2) Cook, M. T. Annual Report of the Division of botany and plant pathology for 1929-30. In Ann. Rpt. Insular Expt. Sta. Puerto Rico, 1929-30. 1930.
- (3) Nolla, J. A. B. La industria tabacalera en el Departamento del Valle del Cauca. Puerto Rico Rev. de Agr. 25:85-96, fig. 1-13. 1930.