

The banana is an important crop in certain regions of Puerto Rico. The Gross-Michel is considered an excellent variety because of its high quality. However, it is susceptible to Sigatoka (*Cercospora musae*) and Panama (*Fusarium oxysporum* f. *cubensis*) diseases which are prevalent in Puerto Rico. This susceptibility constitutes the limiting factor in the expansion of production of the Gross-Michel not only in Puerto Rico, but elsewhere. The varieties developed for resistance to these diseases are inferior in quality to the Gross-Michel. It was proposed that possibly through induced variations in the Gross-Michel variety, selection could be made for clones resistant to diseases and with the known quality of this variety. Gamma radiation with cobalt 60 was utilized as a means for inducing this variation. As a first step in this program an attempt to determine the proper dosage was made in a preliminary trial.

Five treatments of five corms each were made at the Nuclear Center at Mayagüez, P.R. Individual corms were placed in plastic bags with lead weights and lowered into the center of the gamma-irradiation facility. The Co 60 capsules were positioned to form a hollow cylinder with a 20-cm.

² Arroyo-Aguilú, J. A., Evans, J. L., and Taylor, M. W., The artificial-rumen technique for estimating the nutritive value of forages, *J. Agr. Univ. P.R.* 47 (3): 169-79, 1963.

³ Cook, C. W., Symposium on nutrition of forages and pastures: Collecting forage samples representative of ingested material of grazing animals for nutritional studies, *J. Anim. Sci.* 23 (1): 265-70, 1964.

diameter which produces a dose rate of 500 r per minute inside the cylinder. The total dose for each corm was regulated by the time it remained in the radiation field.

Irradiated corms were planted at the Fortuna Substation of the Agricultural Experiment Station on January 24, 1964. Results were recorded on March 4, 1964 and were as follows:

<i>Treatment dosage (r)</i>	<i>Corms that produced plants (Number)</i>
1. 0 (check)	5
2. 2,500	5
3. 5,000	2
4. 10,000	0
5. 20,000	0
6. 40,000	0

There was no germination with dosages above 5,000 r. In the treatment with 5,000 r two plants were produced 1 week apart. The 2,500-r treatment resulted in five plants, two of which appeared normal, and the other three showed symptoms similar to those shown by plants affected with banana mosaic virus. As our Pathologist excluded the possibility of mosaic infestation, these symptoms must have resulted from the effects of radiation, possibly as a result of temporary hormonal imbalance, because 2 months later these three plants recovered and now appear phenotypically equal to the other two in the same treatment. None of the plants in the 2,500 r and 5,000 r were equal in size to those under the check treatment which showed the largest growth. When measurements were taken from the soil level at the plant base to the tip of the longest leaf when in vertical position, the check plants ranged from 6 to 9 feet. Plants under the 2,500-r treatment ranged from 4 to 6 feet and those in the 5,000-r treatment ranged from 1.5 to 7 feet. These measurements were taken on June 25, 1964 when the plants were 5 months old.

Differences in plant heights may represent differences in the rate of plant growth.

It seems that the proper dosage for irradiating banana corms is somewhere between 2,500 r and 5,000 r. It may be even closer to 5,000 r than to 2,500 r. Future treatments with a larger number of corms will be made to determine the exact dosage, after which several hundred corms will be treated for field observations and selection for the objectives mentioned previously.

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