



IAEA

Atoms for Peace: The First Half Century

1957-2007

Developing drought tolerant sorghum for food, animal feed and the bioethanol industry, Indonesia

The challenge...

Water scarcity is a significant problem in the drought-prone areas of the hilly district of Gunungkidul and in the sandy soil of the coastal Bantul district of Yogyakarta Province in Indonesia. It has prevented the increase of agricultural production in these areas, especially during the relatively long dry season.

The project...

This project focused on the introduction of a water-efficient crop species. Sorghum was chosen due to its wide adaptation and drought tolerance. Nuclear technology was used to increase the genetic variability of sorghum, by inducing mutations with gamma irradiation. The resulting plants were screened for drought tolerance. Drought tolerant mutants with desirable agronomic characteristics were analyzed for specific criteria to determine their usefulness for animal feed, alternative food, and bioethanol.

The impact...

The new drought tolerant mutants have resulted in new cropping systems, as local farmers grow sorghum by the end of the rainy season to anticipate the availability of animal feed during dry season.

In collaboration with Pajajaran University, sorghum technology had been adopted and developed in West Java (Cijayana and Ciwidey regions). Some traditional food based on sorghum have become popular home industry products, including dodol sorghum, sogi, kue sorghum and tape sorghum.

Sorghum is now being studied and developed, in collaboration with private companies, for a number of uses, including the food industry (by LIPPO Enterprises), animal feed and land conservation (by PT. Great Giant Pineapple Company in Lampung, and also by PT. Adaro Indonesia in South Kalimantan), and the bioethanol industry (by PT. Kreatif Energi Indonesia)



INS5030: Sustainable Agricultural Development in Yogyakarta