

Radiation may be key to better turfgrasses

Radiation treatment can be used to overcome genetic barriers to the future improvement of turfgrasses, according to Dr. Jerrel B. Powell, a research geneticist with USDA's Agricultural Research Service (ARS).

In tests conducted at ARS's Beltsville Agricultural Research Center, Beltsville, Md., Dr. Powell used gamma radiation to induce genetic mutations in commercial varieties of bermudagrasses.

"Bermudagrass hybrids are the mules of the grass world," Dr. Powell said. "They are sterile and can have no further offspring because of their particular chromosome makeup, resulting from their diverse and mixed parentage."

Mutation breeding is one way out of this genetic dead end. The

technique involves exposing the root stems of bermudagrasses to gamma radiation. The radiation treatment causes the chromosomes of the sterile grasses to break up, and the genetic material to be rearranged, producing combinations that would be rare in nature.

"Radiation speeds up the mutagenic process. Within a single year you can obtain many hundreds of mutations rather than the one or two that you might get from an untreated natural populations," Dr. Powell said.

From these mutants, those grasses showing desirable traits such as dwarfism, deep green color, or winter hardiness, can be selected for development as a new variety. Because the bermudagrasses are sterile, it would be impossible to br-

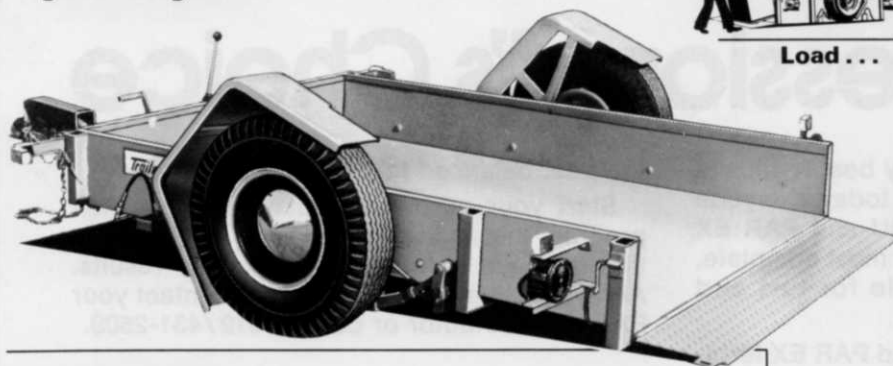
ing out these traits with conventional breeding.

Bermudagrasses make good sod. They can be mowed close and can withstand heavy wear. They are relatively resistant to diseases, insects, drought and high temperatures. Because of these many desirable traits, bermudagrasses are widely used on golf courses, athletic fields, lawns, and highway rights-of-way throughout the southern region of the United States.

Mutation breeding technology has already been used by European researchers to develop new varieties of potatoes, ornamentals, fruits and cereals. With the exception of sugarcane, however, it has not yet been extensively applied to grasses such as bermudagrasses which reproduce form sprigs or sod.

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