


Report of new cultivar

H-Ame15: New single hybrid transgenic maize, resistant to the fall armyworm and tolerant to herbicides

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ABSTRACT

The simple maize hybrid H-Ame15 was obtained by the Center for Genetic Engineering and Biotechnology (CIGB, according its acronyms in Spanish) from a cross between the transgenic line L-Moltó and the Cuban commercial line CT9. L-Moltó contributes transgenic events to the hybrid that facilitate its large-scale management by providing resistance to the fall armyworm and tolerance to glufosinate-ammonium herbicides. This hybrid also has good productive potential, its plants are tall, with large foliage, with the angle of insertion of the leaf to the stalk almost narrow, the delayed senescence character is present and the cobs are cylindrical with semi-crystalline yellow grains.

Key words: *Zea mays*, *Spodoptera frugiperda*, yield, kernels

INTRODUCTION

The use of simple corn hybrids is one of the main strategies to increase yield. In Cuba, national production is mainly based on the use of conventional varieties characterized by high tolerance to pests and diseases, due to their phylogenetic origin, mainly from Caribbean breeds, well adapted to the tropical conditions of the country. Despite this, their contribution to dry corn production in Cuba is low, with an average of 1.93 t ha⁻¹. The Ministry of Agriculture has also included in its Official List of Varieties some single and double corn hybrids with great potential, among them T-991, T-3236 and T-444; however, their use has not been extended in the country because of technical difficulties inherent to the management of the crop and worsened by the hybrid seed generation process. The production of a transgenic hybrid of good potential with properties that facilitate field management is an alternative for corn cultivation in Cuba. This possibility encourages the necessary strategy to establish a system to generate seed of high genetic value, with the quality required to stimulate corn production.

ORIGIN AND DESCRIPTION

The simple maize hybrid H-Ame15 was obtained by crossing the L-Moltó line developed from Brazilian materials with the Cuban commercial line CT9. L-Moltó is used as a female parental and is the carrier line of transgenic events, which add insect resistance and tolerance to glufosinate-ammonium herbicides to the crop. These plants exert effective control over the fall armyworm, *Spodoptera frugiperda* Smith, as well as other noctuid lepidoptera, by the expression of toxins from the vip3Aa20 and cry1Fa genes originating from *Bacillus thuringiensis* (Bt). Tolerance to glufosinate-ammonium herbicides results from the expression of the enzyme Phosphinothricin N- acetyltransferase, from the pat gene originating from *Streptomyces viridochromogenes*.

The H-Ame15 hybrid is characterized by its high productivity provided by heterosis, to which is added the value added by the transgenesis products that give it tolerance to glufosinate ammonium herbicides and resistance to the fall armyworm. The average plant height is 260 cm and the ear position is 161 cm from the ground. It has an angle of insertion of the leaf blade to the stem, with a tendency to narrow, 33°. In its flowers, the pink color of the anthers of the panicles and the stigmas of the cobs can be distinguished (Figure 1). They are prolific plants with one to two cobs and the condition of delayed senescence stands out (Figure 2). Cobs are cylindrical, with good closure, formed by 16 rows and 30 grains per row (Figure 3). The kernels are yellow and semi-crystalline. The average grain yield per cob is 180 g, for a potential of more than 12 t ha⁻¹ in a population of 71000 plants ha⁻¹.



Figure 1. Flower appearance



Figure 2. Appearance of plants, before the harvest



Figure 3. Appearance of cobs and kernels