

Evaluation and Utilization of the Valuable African Watermelon Germplasm

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Abstract

Ten African watermelon [Citrullus lanatus (Thunb.) Matsum. and Nakai] (AW) were first introduced from Botswana, Africa, to China in 1984. Their morphological, biological and agronomic characters, and disease resistance have been studied for three years. Albumin components and iso-esterase of AW seeds were assayed by using electrophoresis. The content of crude protein and fat were tested as well. The AW accessions are obviously different from those of commercial watermelon cultivars (CW) in many characters, and a great diversity was found among them. Inoculation with 5×10^8 spores/ml of Fusarium wilt (Fusarium oxysporum f. sp. niveum) at the seedling stage indicated that the AW accessions were highly resistant to Fusarium wilt and field testing indicated resistance to other diseases. The AW have a great yield potential. The fruits of AW have an amazingly long storage life which can reach as long as half a year or one year and even two years. In addition, high heterosis was shown in the hybrids between AW and CW cultivars. Although the albumin components of AW and CW were quite similar, the iso-esterase of dry seeds was obviously different. The crude protein content of AW seeds ranged from 33.9 to 43.6 percent, while the crude fat was between 35.7 - 46.8 percent. The oleic acid (C₁₈¹) and linoleic acid (C₁₈²) are 12.9 - 23.9 and 59.5 - 68.2 percent of the total fat content, respectively. Thus it is a valuable plant oil with high quality. In view of the above rare characters, the newly introduced AW accessions can be widely used for the following purposes: a) stock food; b) sources for refining plant oil and protein; c) raw materials for processing candied and canned watermelon fruit; and d) resistance stock for grafting of watermelon. Also, the AW accessions can be used as a very useful germplasm resource in watermelon breeding, especially for disease resistance, high yielding and long storage life.