INTRODUCTION

White oat breeding activities started at IAPAR in 1996, with the introduction of advanced lines and cultivars from the breeding programs of UFRGS (Federal University of Rio Grande do Sul), UPF (University of Passo Fundo), FAPA (Agrária Cooperativa Research Foundation), and IAC (Agricultural Research of Campinas). The best selected lines sowed at the Londrina Experimental Station of IAPAR, were used to organize the crossing blocks aiming to combine best adaptation traits needed in the new cultivars.

OBJECTIVES

The main objectives of the oat breeding program are:

a) Grain yield increase;
b) Earliness;
c) Lodging resistance;
d) Resistance to the main diseases (rusts, leaf blight and blast);
e) Quality improvement; and
f) Wide adaptation including the subtropical regions of the Paraná state.

MATERIAL AND METHODS

The main breeding method used in the program was the Modified Pedigree, in which panicle bulk selections were practiced at the F2 to F3 generations followed by individual plants from F3 to F6. In the F3 generation, most advanced lines would be uniform and ready to participate in the institutional preliminary trials. First year preliminary trials were carried on in Londrina (North of the State), while second year trials were also evaluated at Santa Teresa do Oeste (West of the State) and in Ponta Grossa (South of the State), representing different environments for winter crops adaptation.

The IAPAR oat research program has been working cooperatively with the SL Food Company Quality Laboratory which has done annual analysis of main cultivars and breeding lines of the interest. The main quality performed analysis are: a) Moisture content; b) Lipids (%); c) Protein (%); d) β-glucan content, Thousand kernel weight (g); Dehulled grains (%), h) Hull (%), i) Losses in the dehulling process (%), and j) Grain hardness.

RESULTS AND DISCUSSION

The size of the program has been increasing considerably from 272 yearly average segregating populations in the period 1997-2003, to 548 populations in the period 2004-2010, to 1348 populations in the period 2011-2016. IAPAR has released two white oat cultivars named IPR Afrodisia in 2012 and IPR Artemis in 2016. Seed multiplication has been done in cooperation with Paraná Seeds Company. The VCU (Cultivation and Use Value) trials were organized every year by the Brazilian Commission of Oats Research and evaluated cooperatively by its members. Advanced lines were evaluated in 10 locations (five in Paraná, four in Rio Grande do Sul, and one in São Paulo States). Released cultivars were evaluated in 20 locations (eight in Paraná, six in Rio Grande do Sul, two in São Paulo and one in Santa Catarina States). There are 23 released cultivars under exploitation in Brazil in 2016. Eleven are from UFRGS, six are from UFPEL, three from UPF, two from IAPAR and one from FAPA.