Linear regression analysis between *Ceratitis capitata* (Wiedemann) and *Anastrepha fraterculus* (Weidemann) (Diptera: Tephritidae) captures and the incidence of fruit damage in Uruguay

Felicia Duarte[1], Soledad Delgado[2], María V. Calvo[2], Mónica Zimminov[2], Elina Zefferino[1], Flávio R. M. García[3], Iris B. Scatoni[2]
[1]Dirección General de Servicios Agrícolas-MGAP, Millán 4703, Montevideo, Uruguay;
[2]Facultad de Agronomía-UDELAR, Montevideo, Uruguay;
[3]Universidad Federal de Pelotas, Instituto de Biologia, Departamento de Ecologia, Zoologia e Genética, RS, Brasil.

INTRODUCTION

Ceratitis capitata and *Anastrepha fraterculus* are two fruit fly species (Diptera Tephritidae) of economic importance in Uruguay. The quarantine pest status of these species in several export destination markets imposes serious economic losses to Uruguayan citrus growers. The incidence of these pests has increased recently resulting considerable injury to citrus and deciduous fruit trees.

OBJECTIVE

The aim of this study was to determine the relationship between trap captures and levels of fruit damage in citrus and deciduous trees plantations.

METHODOLOGY

In October 2014, 76 Jackson traps baited with trimedlure and 83 McPhail traps baited with hydrolyzed protein were placed in three orchards including 22 varieties of 7 fruit trees species of citrus and deciduous fruit trees. Traps were monitored every two weeks until July 2016. The week previous harvest, 100 to 150 fruits per variety were randomly collected and taken to the laboratory. The fruits were placed individually in containers with sand and covered with voile until adult emergence, and fruit flies were identified. The fruit damage due to *C. capitata* and *A. fraterculus* was estimated as the percentage of incidence of fruit fly according fly specie, for the 22 fruit varieties.

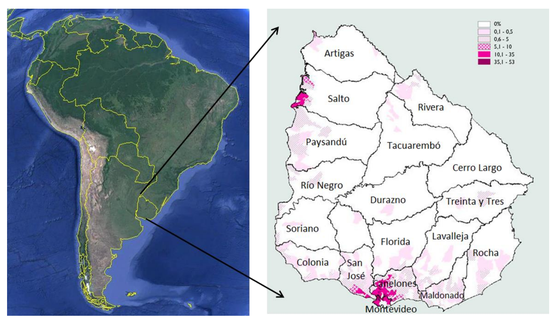

Fig. 1 Location of fruit production areas in Uruguay showing the percentage of productive area with fruit and vegetables

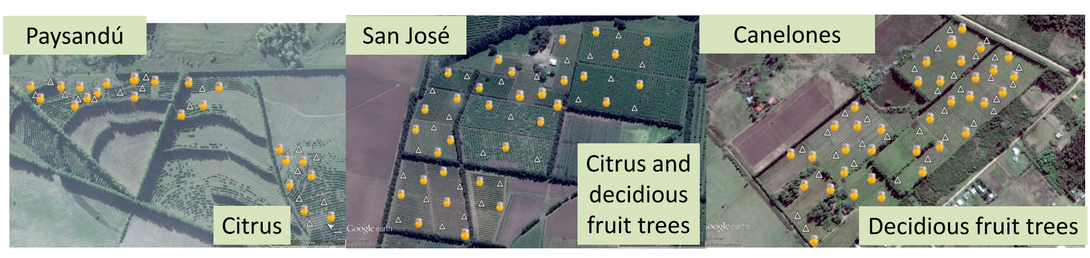

Fig. 2 Distribution of Jackson and McPhail traps in the field

Fig. 3 Jackson traps, McPhail traps, and collected fruit individually placed

RESULTS AND CONCLUSIONS

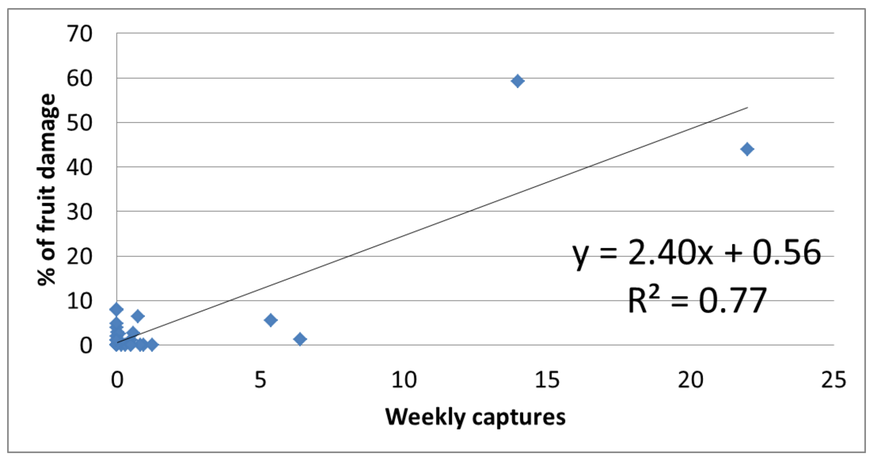

Fig. 4 Relationship between *C. capitata* captures in Jackson traps during the week prior to harvest and the incidence of fruit damage

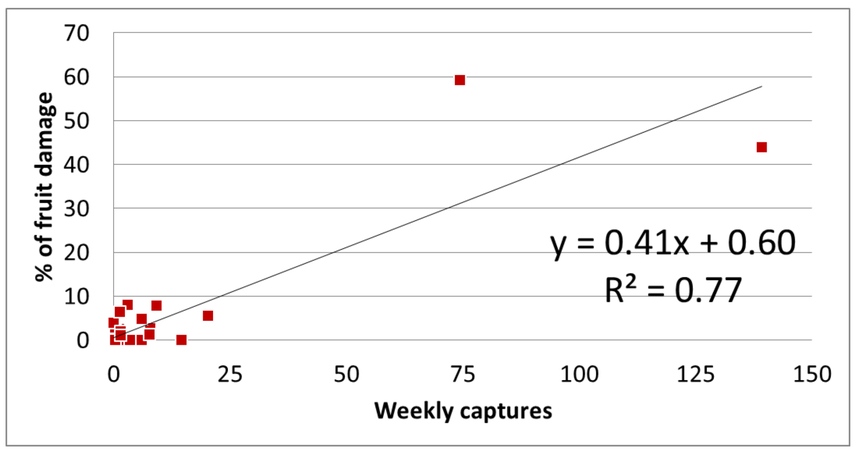

Fig. 5 Relationship between *C. capitata* captures in McPhail traps during the week prior to harvest and the incidence of fruit damage

Linear regression models were constructed for each fruit fly species considering damages and captures prior to harvest. For *C. capitata*, significant linear relationships were detected between fruit damage and captures in Jackson and McPhail traps (r2 = 0.77 for both). When weekly captures increased one capture, injury increased 2.4% and 0.4% for Jackson and McPhail traps, respectively. In contrast, for *A. fraterculus* fruit damage varied independently of captures in McPhail traps (r2 = 0.09).

References
-MGAP-DIEA .2014. Anuario Estadístico Agropecuario . Disponible en: http://www.mgap.gub.uy/portal/page.aspx?2,diea,diea-anuario-2014,O,es,0,2014
-Nascimento A.,Carvalho R., Malavasi A. 2000. Monitoramento populacional. In: Moscas das frutas de importância econômica no Brasil. Conhecimento básico e aplicado. 2000. Malavasi A., Zucchi R. (Eds.), Holos Editora, Ribeirao Preto, pp. 109-112.

Proyecto FPTA N° 289 financiado en el marco de la Convocatoria 2012, por el Instituto Nacional de Investigación Agropecuaria - INIA Uruguay