ESTUDIO DE SENSIBILIDAD AL DAÑO POR IMPACTO EN DURAZNO (ZEE LADY, ROBIN NIEL), CIRUELA (LARRY ANN) Y PERA (PACKHAM´S TRIUMPH), MEDIANTE EL IS-100 (INSTRUMENTED SPHERE).

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RESUMEN

El presente estudio se realizo durante la temporada 2006/2007, con la finalidad de determinar los umbrales de daño por impacto en duraznos, ciruelas y peras, mediante el IS 100.

En el caso de los carozos, se emplearon duraznos cv. Robin Niel y Zee Lady, separando el fruto en distintas zonas (punta, quilla, hombro y zona ecuatorial), con la finalidad de determinar la zona del fruto con una mayor sensibilidad al daño por impacto. En el caso de ciruelas se utilizó el cv. Larry Ann y el fruto fue evaluando a nivel de punta y zona ecuatorial.

Las alturas empleadas, para determinar la incidencia de daño por impacto en duraznos y ciruelas fueron las siguientes: 5 cm., 10 cm. y 15 cm. Por su parte, las superficies sobre las cuales se trabajo la fruta en duraznos y ciruelas correspondieron a: Placa Metálica, Tubo de PVC de 20 mm., Tubo de Fierro de 34 mm., Goma Mouse (Poliuretano, únicamente para la altura de caída de 15 cm.)

En peras se utilizó el cv. Packham's Triumph y las evaluaciones de daño por impacto se realizaron a nivel de zona ecuatorial. La fruta fue sometida a alturas de caída de 5 cm., 10 cm. y 15 cm sobre superficies de Goma Mouse (poliuretano), Madera, Placa Metálica, Tubo de Fierro (34 mm. Diámetro, 1 mm de espesor) y Tubo de PVC (20 mm diámetro, 1,6 mm espesor).

Los tratamientos de daño por impacto fueron aplicados dejando caer la fruta sobre las distintas superficies y alturas establecidas. Las distintas alturas se fijaron a través de cortes de madera, de un espesor conocido (2 y 1 cm.).

La fruta se dejó caer mediante un pequeño impulso, con lo cual se consiguió proporcionarle los golpes necesarios, según la zona preestablecida para cada tratamiento. Con la finalidad de asegurar de reconocer la zona del impacto, se espolvoreó talco en las distintas superficies, y luego se procedió a demarcar el perímetro de la zona con talco, es decir, la que recibe el impacto con un plumón permanente.

ABSTRACT

During the season 2006/2007, an assessment to determine the damage threshold by impact on peaches, plums and pears through the device IS 100 was carried out. Peaches cv. Robin Niel and cv. Zee Lady were used, by dividing the fruit in different areas (top, keel, shoulder and equatorial zone), to determine the most sensitive zone of the fruit to be damaged by impact. For the case of plums, fruit of the cv. Larry Ann was evaluated at level of top and equatorial zone. The heights used to determine the incidence of impact damage on peaches and plums were the following: 5 cm, 10 cm y 15 cm. By other hand, the type of surfaces used to test the impacts for both fruits were a metal plate, a 20 mm long PVC pipe, a 34 mm iron pipe, rubber band (Polyurethane, only for the fall from 15 cm). For pears, the cv. Packham's Triumph was used and the evaluations of the damage impact were done at level of the equatorial zone. The fruit was submitted at heights of fall of 5 cm, 10 cm y 15 cm on surfaces of rubber band (polyurethane), wood, metal plate, iron pipe (34 mm of diameter and 1 mm thick) and PVC pipe (20 mm of diameter and 1,6 mm thick). The treatments of damage by impact were applied by letting fall the fruit on the different surfaces and from established heights. The different heights were fixed using pieces of wood of 1 and 2 cm thick. The fruit was let fall with certain speed with the aim of getting the necessary blows, according to the pre-established zone per each treatment. To recognize the impact area, talc powder was used on the different surfaces. Then the perimeter of the fruit zone marked with talc, was outlined with a permanent whiteboard marker. To determine the areas of external bruising, the shaping diameters of the bruising were measured with a caliper. In the internal determinations a kind of browning on the impact zone was observed. For this case was necessary to peel with a knife the impact zone and then to proceed to measure the damaged area. Additionally the main indicators of maturity for peaches, plums and pears were evaluated. Among the main results obtained is possible affirm that the impact damage thresholds in

peaches vary between 64.3 and 176.7. Falls on PVC pipe surface showed less impact damage thresholds compared to falls on iron pipe surface. By other hand, falls on wood and metallic plates surfaces showed similar damage thresholds between them. The higher is the fall on the different surfaces the higher are G's and ΔV. For the peaches case, the zone of the fruit that showed the higher susceptibility to the impact damage is the shoulder followed by the keel. For peaches cvs. Robin Niel and Zee Lady the fruit of big size showed a higher severity of impact damage in comparison to fruit if middle size. Contradictory, for plums cv. Larry Ann, was not possible to detect differences at level of the size of the fruit. In peaches cv. Zee Lady was not possible quantify a reabsorption of the impact damage, in falls on metallic plate. However, the falls on PVC, from heights of 5 and 15 cm is feasible a reduction of the damaged area after 3 weeks of storage. For pears, fruit submitted to falls with flesh at room temperature on PVC pipes, iron and metal plate showed the highest values in terms of damaged area of the fruit, where falls from heights over 10 cm, implied affected areas upper to 0,5 cm2. By other hand, fruit treated with cold flash (0°C), showed about 1 cm2 of damaged area, in falls of 15 cm.