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# Co-Development of an Assisted Manual Harvesting Tool for Peach Palm That Avoids the Harvest in Heights

**Authors :** Mauricio Quintero Angel, Alexander Pereira, Selene Alarcón

**Abstract :** One of the elements of greatest importance in agricultural production is the harvesting; an activity associated to different occupational health risks such as harvesting in high altitudes, the transport of heavy materials and the application of excessive muscle strain that leads to muscular-bone disorders. Therefore, there is an urgent necessity to improve and validate interventions to reduce exposition and risk to harvesters. This article has the objective of describing the co-development under the ergonomic analysis framework of an assisted manual harvesting tool for peach palm oriented to reduce the risk of death and accidents as it avoid the harvest in heights. The peach palm is a palm tree that is cultivated in Colombia, Perú, Brasil, Costa Rica, among others and that reaches heights of over 20 m, with stipes covered with spines. The fruits are drupes of variable size. For the harvesting of peach palm, in Colombia farmers use the “Marota” or “Climber”, a tool in a closed X shape built in wood, that has two supports adjusted at the stipe, that elevate alternately until reaching a point high enough to grab the bunch that is brought down using a rope. An activity of high risk since it is done at a high altitude without any type of protection and safety measures. The Marota is alternated with a rod, which as variable height between 5 and 12 Meters with a harness system at one end to hold the bunch that is lowered with the whole system (bamboo bunch). The rod is used from the ground or from the Marota in height. As an alternative to traditional tools, the Bajachonta was co-developed with farmers, a tool that employs a traditional bamboo hook system with modifications, to be able to hold it with a rope that passes through a pulley. Once the bunch is hitched, the hook system is detached and this stays attached to the peduncle of the palm tree, afterwards through a pulling force being exerted towards the ground by tensioning the rope, the bunch comes loose to be taken down using a rope and the pulley system to the ground, reducing the risk and efforts in the operation. The bajachonta was evaluated in tree productive zones of Colombia, with innovative farmers, were the adoption is highly probable, with some modifications to improve its efficiency and effectiveness, keeping in mind that the farmers perceive in it an advantage in the reduction of death and accidents by not having to harvest in heights.

**Keywords :** assisted harvesting, ergonomics, harvesting in high altitudes, participative design, peach palm
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