

**ABSTRACT****THE DEVELOPMENT OF A HARVEST SYSTEM FOR CAPSULES OF OPIUM UNDER LABORATUARY CONDITIONS**

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2013, 120 sayfa

In this study, it is aimed to develop the system of harvesting opium capsule. For this aim, tension analyses have been done through the method of Finite Elements using the computer based design program. With the prototype system whose production was put into action at the end of the design, the laboratory experiments have been done on three different travel speed (1, 1.5 and 2 km/h ), three different retainer wheel speed number (70, 90 and 110 min<sup>-1</sup>) and single feeder helix speed (510 min<sup>-1</sup>). According to the criteria of full opium capsule rates, the length of opium stalk and the rates of opium which have been put to depot the performance have been determined. Within the working limits, three different working combinations have turned out with the findings obtained. As a result, at the travel speed of 1 km/h, the rate of opium capsule reaching the depot in 70 min<sup>-1</sup> retainer wheel cycle (%98.08) and at the travel speed of 2 km/h, the length of opium stalk in 70 min<sup>-1</sup> retainer wheel cycle (5.30 cm) and also at the travel speed of 2 km/h and 90 min<sup>-1</sup> retainer wheel cycle, the rate of undamaged opium capsule (%99.35) have been obtained. Then combinations have been compared in terms of cost and machine performance. According to the results of experiment analysis which have done to determine worker cost and wastage rate; the practice with which 2 km/h travel speed and 90 min<sup>-1</sup> retainer wheel cycle and also contains picking up the full capsules that are fall down to out of depot, has the lowest cost with 25.09 TL/da in the name of total wastage and worker cost. It is expected that the prototype opium harvesting system, which will pioneer in the development of capsule picking machine designed to work in fields, will contribute greatly to opium agriculture.

**Key words:** Opium, Opium Harvesting, Capsule Harvesting System