

Penentuan biaya transportasi minimal untuk pengangkutan hasil panen tandan buah segar (tbs) dengan metode pemrograman integer =
Determine the minimum transportation costs for the transport of harvested fresh fruit bunches (ffb) with integer programming methods

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Abstrak

Penelitian dilakukan pada industri kelapa sawit dimana saat ini permintaan pasar akan minyak sawit meningkat. Hal ini menuntut industri pengolahan kelapa sawit untuk selalu berusaha meningkatkan hasil produksinya. Pengoptimalan seluruh aspek didalam proses operasional kebun kelapa sawit dianggap penting khususnya sektor transportasi yaitu pengangkutan TBS.

Pengangkutan Tandan Buah Segar (TBS) berkaitan langsung dengan proses penentuan jadwal panen dan penjaminan mutu kelapa sawit hasil panen. Transportasi yang efisien akan menurunkan biaya produksi total, dimana salah satu komponen utama pada transportasi untuk mengurangi biaya adalah penentuan rute kendaraan. Masalah penentuan rute juga dikenal sebagai Vehicle Routing Problem.

Tujuan dari penelitian ini adalah menentukan biaya transportasi yang minimal dengan mengatur rute pengangkutan sehingga menghasilkan jarak tempuh total seminimal mungkin. Untuk penyelesaian masalah pada perusahaan kelapa sawit di Indonesia ini, dikembangkan model penyelesaian VRP menggunakan metode pemrograman integer.

Hasil dari penelitian ini adalah sistem penentuan rute penjadwalan truk harian dengan hasil rute usulan menggunakan jadwal pada satu hari terpadat menghasilkan jarak tempuh 158 km dan pengurangan biaya transportasi sebesar 20 tanpa ada penalti biaya melebihi jam kerja operasional kebun.

.....The research was conducted on the palm oil industry where currently market demand for palm oil is increasing. This requires the palm oil processing industry to always try to improve its production.

Optimizing all aspects of the operational process of oil palm plantations is considered particularly important in the transportation sector, namely transportation of FFB.

The transport of Fresh Fruit Bunches (FFB) is directly related to the process of determining harvest schedules and quality assurance of harvested palm oil. Efficient transportation will reduce total production costs, where one of the main components in transportation to reduce costs is determining the route of the vehicle. The problem of determining the route is also known as the Vehicle Routing Problem.

The purpose of this study is to determine the minimum transportation costs by regulating the transportation route so as to produce the minimum total mileage. To solve this problem for oil palm companies in Indonesia, a VRP settlement model was developed using an integer programming method.

The results of this study are a system for determining daily truck scheduling with the results of the proposed route using a schedule on one of the densest days resulting in a distance of 158 km and a reduction in transportation costs by 20 without any penalty fees exceeding the operational hours of the plantation.