

## **Preliminary study on designing optimal lining layout by metaheuristic approaches for optimizing planting areas**

### **ABSTRACT**

This paper presents an investigation on application of metaheuristic approaches to handle the optimization of planting areas with regards to Lining Layout Planning (LLP). Metaheuristic is approximate solution that sacrifice the guarantee of finding an optimal solution. However, it is an appropriate approach to be employed in two basic situations: 1. a problem may not has an exact method because of ambiguities in the problem statement, 2. a problem may has an exact solution but computational cost of finding it may be prohibitive. The optimization startegy in LLP is to optimize a planting area by looking for the best line direction to be assigned into determining blocks with attention to minimize unused space and maximize number of tree. However, there are many possible solutions to be analyzed will eventually spend high time is a challenge. Therefore, the applicabilty of approaches to overcome this problem was investigated and simulated result was reported. We found that the exact solution methods are suitable for LLP with one block but many blocks with weighted consideration will increase time exponentially and metaheuristic approaches are considered as the appropriate technique.

**Keyword:** Exact Method; Lining; Metaheuristic,; Optimization; Space Allocation