

## ABSTRACT

Selection of oil palm seedlings is highly determined by the value of the content in each of oil palm seedlings. The varieties and characteristics of oil palm seedlings make farmers should be selective in choosing the seedlings. The process of selecting oil palm seedlings in smallholder plantations is still done traditionally, so it is possible to choose based on the subjectivity of farmers. The purpose of this research is to improve the weakness of the Fuzzy C Means (FCM) - Xie Beni (XB) - Simple Additive Weighting (SAW) method in stability to produce the best clusters by proposing the Fuzzy C Means (FCM) - Partition Coefficient (PC) - Simple Additive Weighting (SAW) method to be applied in the Decision Support System (DSS) for the selection of oil palm seedlings.

In this research, Fuzzy C-Means (FCM) method was used in grouping the data of oil palm seedlings. Xie-Beni (XB) Index and Partition Coefficient (PC) Index were used in the process of selecting the best cluster of oil palm seedlings data and Simple Additive Weighting (SAW) was used in ranking the data of oil palm seedlings.

Based on the results of testing that have been done with sensitivity test on Fuzzy C-Means (FCM) method, Partition Coefficient (PC) Index, Simple Additive Weighting (SAW), and Fuzzy C-Means (FCM), Xie-Beni (XB) Index, Simple Additive Weighting (SAW). It showed that the Partition Coefficient (PC) Index was better because it was more stable in terms of changes in the optimum cluster value of oil palm seedlings compared to Xie-Beni (XB) Index. The value of PC index changed one time while the value of XB Index changed three times. This research also succeeded in developing a Decision Support System (DSS) of oil palm seedlings selection which was evaluation score was 4,3 in scale 5 from users.

**Keywords** – DSS, FCM, SAW, XB Index, PC Index, Cluster, Selection of Oil Palm Seedlings

## INTISARI

Pemilihan bibit kelapa sawit sangat ditentukan oleh nilai kandungan dalam masing-masing bibit kelapa sawit. Banyaknya varietas serta karakteristik bibit kelapa sawit membuat petani harus selektif dalam memilih bibit tersebut. Proses pemilihan bibit kelapa sawit dalam perkebunan rakyat masih dilakukan secara tradisional sehingga besar kemungkinan untuk memilih berdasarkan subyektifitas petani. Adapun tujuan penelitian ini adalah melakukan perbaikan pada kelemahan metode *Fuzzy C Means-Xie Beni-Simple Additive Weighting* dalam kestabilan menghasilkan *cluster* terbaik dengan mengusulkan metode *Fuzzy C Means-Partition Coefficient - Simple Additive Weighting* untuk diterapkan dalam Sistem Pendukung Keputusan pemilihan (SPK) bibit kelapa sawit.

Dalam penelitian ini metode *Fuzzy C-Means* (FCM) digunakan dalam mengelompokkan data bibit kelapa sawit sedangkan Indeks *Xie-Beni* (XB) dan Indeks *Partition Coefficient* (PC) digunakan dalam proses seleksi *cluster* terbaik data bibit kelapa sawit serta *Simple Additive Weighting* (SAW) digunakan dalam pemeringkatan data data bibit kelapa sawit.

Berdasarkan hasil pengujian yang telah dilakukan dengan uji sensitivitas pada metode *Fuzzy C-Means* (FCM), Indeks *Partition Coefficient* (PC), *Simple Additive Weighting* (SAW) dengan *Fuzzy C-Means* (FCM), Indeks *Xie-Beni* (XB), *Simple Additive Weighting* (SAW) menunjukkan bahwa Indeks *Partition Coefficient* (PC) lebih baik karena lebih stabil dari sisi perubahan keoptimalan nilai *cluster* bibit kelapa sawit dibandingkan Indeks *Xie-Beni* (XB). Indeks PC berubah nilainya sebanyak satu kali sedangkan Indeks XB berubah nilainya sebanyak tiga kali. Penelitian juga berhasil mengembangkan Sistem Pendukung Keputusan (SPK) pemilihan bibit kelapa sawit yang mendapat penilaian evaluasi 4,3 dalam skala 5 dari pengguna.

**Kata kunci** – SPK, FCM, SAW, Indeks XB, Indeks PC, *Cluster*, Pemilihan Bibit Kelapa Sawit