

ABSTRACT

Indonesia is one country that is often referred to as an agricultural country, therefore many of its inhabitants work as farmers to utilize existing natural resources. As time goes by, the weather changes in Indonesia are very difficult to predict which causes the farmers to difficult to produce their crops. This affects the production of farmers' harvest, one of which is tomatoes. This also causes the import process to occur and result in unstable agricultural commodity prices. Therefore it takes a way to predict the price of agricultural commodities. One of the algorithms in Soft Computing (SC) that is Grammatical Evolution (GE) is chosen because of its ability on prediction and optimization. In the GE algorithm process required data containing the recap on a few years earlier that is historical data. Historical data is obtained through agricultural or trade websites and agricultural or trade offices.

The GE algorithm is a language development of Genetic Programming for its individual representation. The language used in GE is Backus Naur Form (BNF). BNF has a grammar whose contents are $\{N, T, P, S\}$. N is a non-terminal set, T is the terminal set, P is pruction rules and S is start. The result of BNF will issue a product in the form of production rules or a function that will be used for individual representation for algorithm at GE. In this final project also analyzed the comparison of Grammatical Evolution performance with Surviving Generational Replacement and Steady State Survivors Selection Method.

Of the two types of survivor selection, Steady State has a greater chance of finding an optimal solution than Generational Replacement with a mape value of 24.67% for survival selection with Steady State and 25.59% for Generational Replacement survivor selection. However, Steady State has a higher probability of converging prematurely than Generational Replacement.

Keyword : Commodities, prices, historical data, BNF, GE, Steady State, Generational Replacment.