Introduction

Indonesia is the fourth biggest chili producer in the world, making up 5% of total global production. China comes in first (51%), followed by Mexico (8%), Turkey (7%), Spain (3%) and other countries (26%). In addition, chili is Indonesia's most important garden produce, which includes shallots, cabbage, leeks, and carrots [1]. West Java is the top chili-producing province in the country. The average level of chili consumption in Indonesia reaches 1.58 kg/capita/year [2] because chili is one of the kitchen spices that is consumed by Indonesians almost every day [1]. This proves that the chili is an important contributor to Indonesia's economy.

Nevertheless, the price of chili is highly volatile; it accounted for 0.32% of the 6.96% national inflation in 2010 [1]. One factor that causes fluctuating chili prices is that the market demand for chili is higher than the supply of chili produced, where the correlation between the amount of production and price is 70%. Another factor is the weather, especially rainfall. Chili is a plant that is easily damaged if it receives too much water. This can cause a decrease in production and the quality of chili produced, causing the price of chili to increase [3,4,5]. Therefore, research is needed to predict the price of chili based on the influence of the weather. With such predictions, farmers can determine the right time to plant chili. As a result, chili production can be maximized.

Other studies have forecasted the prices of agricultural commodities based on weather factors using the Bayesian Network algorithm. In the studies, data were divided into two classes, namely economic and non-economic prices, by comparing the production prices and the selling prices of farmers. The accuracy obtained was 83.5% for testing data and 82.5% for training data. Based on the obtained matrix configuration, the results predicted more major classes because the data was imbalanced [6]. Another study used the same data, that is a modified Artificial Neural Network optimized by a Nested Genetic Algorithm, yielding an accuracy of 81% [7]. In addition, research in the same field was done using the Functional Link Neural Network and Artificial Bee Colony algorithms with MAPE, obtaining an accuracy of 7.68% [8].

The Support Vector Machine (SVM) and Adaptive Neuro-Fuzzy Inference System (ANFIS) algorithms have been widely used to predict stock prices, Dengue Hemorrhagic Fever, and Seasonal rainfall forecasting [9,10,11,12,13].

This study presents the Prediction of Agricultural Commodity Prices in Bandung Regency using the SVM Algorithm optimized with ANFIS. This algorithm has been used in research to predict the location of subcellular proteins [14]. Studies have shown that better results were obtained by using the SVM algorithm and ANFIS compared to just using the SVM algorithm alone. Furthermore, more stable results were obtained and better predictions using unbalanced data were successfully made, so these algorithms are good solutions according to previous research [6].