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The Role of Organic Farming to the Improvement of Sustainable Agricultural Production in Southeast Sulawesi, Indonesia

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Abstract

Southeast Sulawesi, which consists of the five provinces in Sulawesi Island, is located in the eastern part of Indonesia where more than 80% of the population practices dry-land agricultural system. Red yellow podzolic soils are predominant soil type of the region characterized by low soil fertility with low organic matter, low soil pH, shallow top soil, low water holding capacity, low cation exchange capacity and low macro nutrients like N, P and K. Intensification, extensification, rehabilitation and diversification programs are currently among many efforts that have been implemented in order to increase agricultural crop production, but these have not yet been optimally satisfied due to the rapidly increasing population. Therefore, the need to seek out the suitable approach is compulsory. The application of organic farming has becoming urgently not only to enhance agricultural production by the utilization of organic biomass as sources of nutrients but also to preserve natural environment for soil and water conservation. The objectives of this paper are to describe the role of organic farming and potential use of biomass accumulated into plant tissues as organic mulch and nutrients derived from various plant species, to screen and examine selected indigenous species which are able to accelerate the accumulation of biomass during fallow. Recent study on the potential yield of natural vegetation biomass accumulated into plant tissues as sources of mulch and nutrients is exemplified. The effects of sole organic mulch or combined on tested crops, like maize, soybean, peanut that are planted either in monoculture or in multiple cropping system, are discussed. The influence of secondary vegetation biomass either utilized as mulch or incorporated into the soil on the growth of maize is also tested. In fallow management, enrichment planting using fast growing plant legumes or non-legumes and nitrogen-fixing trees and or cover crops is figured out. Based on various test crops conducted, it shows that the role of organic farming significantly improve the physical, chemical and biological soil properties and in turn to increase agricultural production sustainably.

Keywords: Cover crops, enrichment fallow, Indonesia, organic mulch, sustainability