

## INTISARI

Ketersediaan fosfat (P) di dalam tanah pada umumnya sangat rendah, karena P banyak dijerap oleh partikel lempung, Al dan Fe, serta alofan pada tanah Andisol. Bahan organik telah diidentifikasi sebagai faktor penting yang mempengaruhi erapan dan pelepasan P. Saat ini bahan organik banyak diberikan pada lahan sayuran, bahkan sistem pertanian organik yang hanya menggunakan bahan organik sebagai sumber hara banyak diaplikasikan pada lahan pertanian sayuran. Penelitian ini bertujuan untuk mengetahui pola erapan dan pelepasan P pada sistem pertanian organik dibandingkan dengan sistem pertanian konvensional pada lahan sayur di Lereng Gunung Merbabu, Kopeng. Jawa Tengah, dengan faktor kedalaman tanah pada masing-masing sistem yaitu 0-20 cm dan 20-40 cm. Laju peningkatan erapan yang paling tinggi terdapat pada sistem pertanian organik di kedalaman 20-40 cm. Laju peningkatan erapan terendah terdapat pada tanah konvensional dengan input bahan organik rendah di kedalaman 20-40 cm. Erapan P meningkat seiring dengan pemberian P yang dimasukkan ke dalam tanah pada sistem pertanian organik dan konvensional. Laju pelepasan tertinggi terdapat pada sistem pertanian organik sedangkan laju pelepasan terendah terdapat pada sistem pertanian konvensional dengan input bahan organik rendah. Tanah dengan sistem pertanian organik memiliki kemampuan menjerap P secara cepat tetapi juga dapat melepaskan secara cepat.

**Kata kunci: Erapan P, Pelepasan P, Tanah Andisol, Sistem Pertanian Organik**

## **ABSTRACT**

Availability of P is generally very low in Andisols, because P is strongly adsorbed by soil components such as humus and soil amorphous minerals. Organic materials have been identified as an influential factor in adsorption and release of soil P. Recently, most of vegetable farmers are motivated to apply organic materials to improve soil fertility and plant yield, and part of them convert their vegetable farm into organic farming systems. This study are aimed to characterize soil adsorption and release pattern of P in organic farming systems compared to conventional farming systems of vegetable farm in Merbabu Mountain, Central Java. Soil samples were collected from surface and subsurface layers of organic and conventional farming system. The result showed that the highest adsorption rate was found in organic farming systems at a depth of 20-40 cm. The lowest adsorption rate was found in conventional farming system with low input of organic matter at a depth of 20-40 cm. P adsorption has increased with the application of P to the soils in organic and conventional farming systems. We also found that soils of organic farming has higher rate of P release than conventional farming systems with low input of organic matter. We concluded that vegetables soils in organic farming system are not only highly capable of adsorbing P, but also capable of releasing P rapidly.

**Keyword : soil depth, organic matter, organic farming system, conventional system, andisols**