

RINGKASAN

Praktek agronomi seperti rotasi tanaman, pengolahan tanah, dan penggunaan tanaman penutup tanah merupakan tindakan efektif untuk menurunkan terjadinya degradasi tanah dan air. Jika dikelola dengan baik, tanaman penutup tanah dapat meningkatkan kadar air tanah antara 5-10%, serta meningkatkan ketersediaan hara NPK tanah melalui neraca haranya.

Penelitian bertujuan untuk mengetahui ketersediaan hara dan air di bawah tegakan campuran jenis gulma sebagai penutup tanah pada kondisi naungan dan tanpa naungan di kebun percobaan FP UISU. Penelitian dilaksanakan di areal kebun percobaan FP UISU, Medan, dengan ketinggian tempat ± 25 m dpl, topografi datar. Penelitian dilaksanakan pada Januari-April 2024. Metode penelitian menggunakan sistem survei dengan pengambilan contoh tanah secara komposit pada kedalaman 0-20 cm. Contoh tanah komposit tersebut selanjutnya dianalisis di laboratorium tanah PPKS Medan. Pengambilan contoh tanah dilakukan di bawah tegakan campuran gulma (G), yaitu kombinasi gulma *A. gangetica* dan *A. conyzoides* (G1), kombinasi gulma *N. biserrata* dan *A. gangetica* (G2), kombinasi gulma *N. biserrata* dan *A. conyzoides* (G3), yang ditanam pada kondisi tanpa naungan (N0) dan naungan (N1).

Hasil penelitian menunjukkan bahwa ketersediaan hara tanah setelah penanaman kombinasi jenis gulma yang ditanam pada kondisi tanpa naungan dan naungan mengalami penurunan walaupun ada beberapa hara yang menunjukkan peningkatan. Kondisi naungan (N1) meningkatkan pH tanah, ketersediaan N, dan P tanah, tetapi menurunkan ketersediaan K, dan Fe setelah penanaman kombinasi jenis gulma sebagai tanaman penutup tanah, sedangkan kondisi tanpa naungan (N0) menurunkan H, ketersediaan hara N, P, K, dan Fe serta ketersediaan air tanah setelah penanaman kombinasi jenis gulma sebagai tanaman penutup tanah. Penanaman kombinasi jenis gulma (G) sebagai tanaman penutup tanah dapat meningkatkan ketersediaan hara N, dan P masing-masing sebesar 5,13% dan 191,49% tetapi menurunkan ketersediaan hara K, dan Fe, serta pH dan ketersediaan air tanah setelah penelitian. Petak penelitian naungan dengan kombinasi jenis gulma *A. gangetica* dengan *A. conyzoides* (N1G1) mampu meningkatkan ketersediaan hara N dan P, masing-masing sebesar 61,53% dan 727,66% dibandingkan sebelum penelitian, sedangkan petak penelitian naungan dengan kombinasi jenis gulma *N. biserrata* dengan *A. conyzoides* mampu meningkatkan pH dan ketersediaan K tanah, yaitu masing-masing sebesar 13,11% dan 14,29%.

Kata Kunci: *A. gangetica*, *A. conyzoides*, *N. biserrata*, ketersediaan hara

SUMMARY

Agronomic practices such as crop rotation, tillage, and use of cover crops are effective measures to reduce soil and water degradation. If managed well, cover crops can increase soil water content by between 5-10%, as well as increase the availability of soil NPK nutrients through its nutrient balance.

*The research aims to determine the availability of nutrients and water under stands of mixed types of weeds as ground cover in shaded and unshaded conditions in the FP UISU experimental garden. The research was carried out in the UISU FP experimental garden area, Medan, with an altitude of ± 25 m above sea level, flat topography. The research was carried out in January-April 2024. The research method used a survey system by taking composite soil samples at a depth of 0-20 cm. The composite soil samples were then analyzed at the Medan PPKS soil laboratory. Soil sampling was carried out under a mixed stand of weeds (G), namely a combination of *A. gangetica* and *A. conyzoides* (G1), a combination of *N. biserrata* and *A. gangetica* weeds (G2), a combination of *N. biserrata* and *A. conyzoides* (G2). G3), which were grown under conditions without shade (N0) and shade (N1).*

*The results of the research showed that the availability of soil nutrients after planting a combination of weed types planted in conditions without shade and shade decreased although there were several nutrients that showed an increase. Shading conditions (N1) increase soil pH, soil N and P availability, but reduce K and Fe availability after planting a combination of weed species as cover crops, while non-shading conditions (N0) reduce H, N, P, K nutrient availability, and Fe as well as soil water availability after planting a combination of weed types as a cover crop. Planting a combination of weed types (G) as a cover crop can increase the availability of N and P nutrients by 5.13% and 191.49% respectively but decrease the availability of K and Fe nutrients, as well as pH and soil water availability after research. Shade research plots with a combination of the weed types *A. gangetica* and *A. conyzoides* (N1G1) were able to increase the availability of N and P nutrients, respectively by 61.53% and 727.66% compared to before the research, while shade research plots with a combination of weed types *N. biserrata* and *A. conyzoides* were able to increase soil pH and K availability, namely 13.11% and 14.29% respectively.*

Keywords: *A. gangetica, A. conyzoides, N. biserrata, nutrient availability*