

Potential Use of Weed *Wedelia Trilobata* (L.) Hitchc as an Alternative Forage Feed to Support Dairy Production

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Abstract— This study aims to find out and examine the potential use of wedelia weed as an alternative forage feed to support livestock production. This research was carried out from March to May 2024. Located at the Laboratory of Nutrition and Technology of Livestock Products of the Animal Husbandry Study Program, the Chemistry Laboratory of the Faculty of Agroindustry, Universitas Mercu Buana Yogyakarta (UMBY) and Argomulyo Village, Sedayu, Bantul, D.I. Yogyakarta. The research material uses unflowered wedelia weeds taken from the riverside and sengon wood plantations. The research method used is the survey method and conducting a nutrient quality test of wedelia weeds. The determination of weed samples is carried out by purposive sampling which is determined with certain considerations. The weed samples used came from the riverside and from the weeds of the sengon wood plantation by taking samples with a frame size of 1x1 m² as many as 8 samples. The observed variables are: (1); Weed production (kg), (2); The quality of *Wedelia Weed* Nutrients includes moisture content (%), crude protein (%), crude fiber (%), crude fat (%) and ash content (%). The data was tabulated and calculated using MS. Office Excel software and then descriptive analysis. The results showed that the average production of wedelia weed on the river outskirts was 1.90 kg/m² while in the sengon plantation area was 1.86 kg/m². The nutrient content of wedelia weed was 22.07% crude protein, 23.55% crude fiber, 13.46% water content, 9.71% ash content and 8.94% crude fat. Based on the results of the study, it can be concluded that wedelia weed has great potential to be used as an alternative forage feed and has good nutrient content for livestock.

Keywords— Potential, feed, wedelia weeds, production, livestock.

I. INTRODUCTION

Forage is the main feed material for the production of ruminant livestock such as cows, buffaloes, goats, sheep and others. Feed has a large contribution to livestock production costs, which is around 70-80% (Sudrajat et al., 2022). If the government declares meat self-sufficiency and wants to increase the number of ruminant livestock populations, it will require a lot of forage feed. As a result, if the availability of feed is not balanced, the production target will not be achieved. Currently, land

conversion is very high both for government infrastructure development and for housing development, which results in increasingly narrow land for agriculture and livestock. One of the solutions to increase forage production is to plant quality forage, in addition to planting quality forage, it can also use weeds as a substitute for forage feed (field grass/weed/planted grass).

Weeds are unwanted crops in crop production and their existence is detrimental to farmers. Weeds grow a lot on sleeping land, coasts, riversides, plantation areas, forestry and plantations. Weeds, if used properly, will provide quite a lot of benefits, including being used as ingredients for making organic fertilizers, vegetable pesticides, as ornamental plant seeds, as animal feed, herbal medicines and others. Weeds actually exist that are used as animal feed (Winara and Suhaendah, 2020), but there has not been much research on what weeds can be used as animal feed. One of the weeds that has the potential to feed ruminant animals is *wedelia trilobata* (L.) Hitchc.

Weed *wedelia trilobata* (L.) Hitchc is a plant species of the Asteraceae family native to tropical America (Rahman, 2013). These plants cause damage to ecosystems and can reduce the biodiversity of native plants (Macanawai, 2013). This weed grows vines and has bright yellow flowers. The research that has been carried out has studied the use of weeds for urban parks, herbal medicines, organic fertilizers and as a source of ruminant animal feed, but the information on the production potential and nutritional content of weeds that has been studied is only limited to the poaceae and Mimosaceae families (Wijaya et al., 2016); and (Winara and Suhaendah, 2020). Therefore, for the use of weeds as ruminant animal feed, it is necessary to have a complete research or study on its production potential and nutritional content. The results of this study are expected to be one of the solutions to feed problems, especially the provision of alternative forage feed and can provide references/information about the production and nutrient

content of wedelia weeds to support domestic livestock production.

II. MATERIALS AND METHODS

This research was carried out from March to May 2024. Located at the Laboratory of Nutrition and Technology of Livestock Products of the Animal Husbandry Study Program, the Chemistry laboratory of the Faculty of Agroindustry UMBY and Argomulyo Village, Sedayu, Bantul, D.I. Yogyakarta. The research material uses unflowered wedelia weeds taken from the riverside and sengan wood plantations. The research method used is the survey method and conducting a nutrient quality test of wedelia weeds.

The determination of weed samples was carried out by purposive sampling which was determined with certain considerations (Sigiyono, 2017). The weed samples used came from the riverside and from the weeds of the sengan wood plantation by taking samples with a frame size of 1x1 m² as many as 8 samples. The observed variables are: (1); Weed production (kg), (2); The quality of Wedelia Weed Nutrients includes moisture content (%), crude protein (%), crude fiber (%), crude fat (%) and ash content (%).

Data Analysis

Wedelia weed production data and data from the analysis of its nutrient content were tabulated and calculated using MS. Office Exel software and then descriptive analysis was carried out.

III. RESULTS AND DISCUSSION

Wedelia Trilobata (L.) Hitchc Weed Production

Weed wedelia trilobata (L.) Hitchc is a plant species of the Asteraceae family native to tropical America (Rahman, 2013). These plants cause damage to ecosystems and can reduce the biodiversity of native plants (Macanawai, 2013). Wedelia weeds grow vines and have bright yellow flowers. Wedelia thrives in areas with full sun. The more sunlight, the better the wedelia plant grows. This weed thrives in Indonesia and one of them is in Yogyakarta, especially in riverside areas and plantations. The following is the wedelia weed production data presented in Table 1.

TABLE 1. Wedelia weed production

No	Sample	Production Average (Kg/m ²)
1	Wedelia weed (Riverside)	1,90
2	Wedelia weed (sengan timber plantation)	1,86
Average		1,88

Description: Data processed in 2024

Based on the Table. 1 It can be seen that the production of Wedelia Trilobata (L.) Hitchc weed in the riverside area and sengan timber plantation area in Argomulyo, Sedayu, Bantul, D.I. Yogyakarta tends to be almost the same. In these areas, they both get good sunlight, so that wedelia weeds grow luxuriantly. This is in accordance with the opinion of Macanaway (2013) which states that wedelia weeds grow vines

and have bright yellow flowers and thrive in areas with full sun. The more sunlight, the better the wedelia plant grows.

When compared to other forage feeds such as field grass, wedelia weed production is almost the same, so wedelia weeds have good potential to be used as alternative feed for hijuan feed. The average field grass production is 1.5-2 kg/m² (Sari, 2021). The following is the documentation of wedelia weed presented in the Figure 1.



Figure 1. Weed Wedelia Trilobata (L.) Hitchc

According to Panggabean (2017) wedelia weed has the characteristics of taproots, rounded stems and includes wet stems with a length of 30 - 40 cm, incomplete leaves because they only have petioles and leaf blades, and bright yellow flowers, similar to sunflowers and smaller in size. In addition, wedelia weeds can reproduce both generatively and vegetatively, but they occur more vegetatively, namely from pieces of stems that spread due to the process of cutting, slashing or due to felling activities (Firmansyah and Pusparani, 2019). In addition to being used as an alternative forage feed, this plant has the potential to be a green path plant because this plant has been used as a ground cover plant and ornamental plant on city roads (Maimunah et al., 2020).

Nutrient Content/Chemical Quality of Wedelia Trilobata (L.) Hitchc

The nutrient content of feed ingredients describes the quality or quality of a feed ingredient. The results of the study on the nutrient content of wedelia weeds which include crude protein content, crude fiber, moisture content, ash content and crude fat content are presented in Table 2.

TABLE 2. Nutrient content of wedelia weed

No	Parameter	Average chemical quality of weeds
1	Crude Protein (%)	22,07
2	Crude Fiber (%)	23,55
3	Moisture content (%)	13,46
4	Ash content (%)	9,71
5	Crude fat content (%)	8,94

Source: Results of chemical laboratory tests of the Faculty of Agroindustry UMBY in 2024

Based on Table 1. It can be known that Wedelia weed has a good nutrient content, namely crude protein 22.07%, crude fiber 23.55%, moisture content 13.46%, ash content 9.71% and crude fat content 8.94%. The crude protein content of wedelia weeds is higher than that of king grass and natural/field grasses which only have a crude protein content of 10.07% and 4.70% (Tas'au and Nahak, 2016). Previous research has examined the use of weeds for urban parks, herbal medicines, organic fertilizers and as a source of feed ruminants and wedelia weeds also contain alkaloid compounds, steroids, terpenoids, phenols and saponins. In addition, wedelia weed also contains anti-fungal, antibacterial, antifeedant, and anti-inflammatory due to allergic reactions.

Crude fiber is a collection of all fibers that cannot be digested, and has components consisting of cellulose, pentose, lignin, and other components. The components of this crude fiber do not have nutritional value, but this fiber is very important for the process of facilitating digestion in the body so that the digestion process is smooth (peristaltic) (Tasry, 2022). In this study, it was known that the average coarse fiber of wedelia weeds was 23.55%.

Moisture content is a very important chemical laboratory test method in the food industry in determining the quality and security of food against possible damage. The higher the moisture content of a food, the more likely it is to be damaged (David, 2019). In this study, the average moisture content of wedelia weeds was 13.46%.

Moisture content is a very important chemical laboratory test method in the food industry in determining the quality and security of food against possible damage. The higher the moisture content of a food, the more likely it is to be damaged (David, 2019). In this study, the average moisture content of wedelia weeds was 13.46%.

Proteins are complex organic compounds that have a high molecular weight, such as carbohydrates and lipids (Tasry, 2022). The average crude protein content in this study was 22.07%. When compared to forage that is usually given to livestock such as kinggrass, odot and field grass, the protein content of wedelia weeds is no less good. Based on this, wedelia weeds can be an alternative forage feed for animal feed or as a mixed ingredient in compiling rations/complete feeds. According to Kimang et al., (2022) High crude protein levels are influenced by several factors, namely the type of feed ingredients used in the preparation of rations.

IV. CONCLUSION

Based on the results of the study, it can be concluded that wedelia weed has great potential to be used as an alternative forage feed and has a good nutrient content for dairy livestock.

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