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The effectiveness of phenoxaprop-p-ethyl herbicide 130 g/l on grass weeds and its effect on groundnut (*Arachis hypogea* L.) growth and yield

Uum Umiyati[1], Dedi Widayat[1], Yayan Sumekar[1], Salma Mawaris[2]
[1]Department of Agronomy, Faculty of Agriculture, Universitas Padjadjaran. Jalan Raya Bandung Sumedang km, Jatinangor, Sumedang, Indonesia
[2] Faculty of Agriculture, Universitas Padjadjaran. Jalan Raya Bandung Sumedang, Jatinangor, Sumedang, Indonesia

Abstract
The presence of weeds in peanut crops has been demonstrated to result in a reduction in yields. Weeds can cause competition for growing space, water, sunlight, and nutrients and become hosts for pests and diseases in peanut plants. The purpose of this study is to determine the effective dose to control weeds in peanut plantations and to determine the effect of applying phenoxaprop-p-ethyl herbicide 130 g/l on peanut growth and yield. From December 2023 to April 2024, experiments ranging from tillage to observation of peanut yield were conducted at Ciparanje Experimental Farm, Faculty of Agriculture, Padjadjaran University. This experiment employed a Randomized Group Design with six treatments and four replications and obtained 24 experimental plots. The treatments of phenoxaprop-p-ethyl herbicide 130 g/l included doses of 1.50 l/ha; 2.00 l/ha; 2.50 l/ha; 3.00 l/ha; manual weeding 1 time; and control. The results showed that fenoxaprop-p-ethyl herbicide 130 g/l can suppress the growth of *E. indica, C. dactylon, P. conjugatum, S. plicata, D. ciliaris, C. kyllingia,* some broadleaf weeds and total weeds at doses of 1.50 - 3.00 l/ha. Phenoxaprop-p-ethyl herbicide 130 g/l did not cause poisoning symptoms or affect the growth and yield of peanuts.

Keywords: Efficacy, *P. conjugatum*, Phytotoxicity, Weed control

Introduction

Groundnut (*Arachis hypogaea* L.) is a legume crop with strategic value in national food as a protein and vegetable oil source (Sianipar *et al*., 2020) [22]. This is due to the increasing demand for food, industrial raw materials, and animal feed. Ferawati & Syam (2021) [6] stated that peanuts are consumed in various forms, such as fried or boiled, as well as vegetable and sauce ingredients. In addition, peanuts are also used as raw materials in industry, including for manufacturing butter, cheese, soap, and oil (Rina *et al*., 2021) [19]. The cake, a by-product of peanut oil production, can be converted into income through a fermentation process with the help of fungi (Syahfitri *et al*., 2019) [23]. Groundnut roots can be used as biofertilizer, due to the presence of nodules on groundnut roots caused by the symbiosis of rhizobium bacteria. Therefore, peanut root nodules can be utilized due to the presence of rhizobium bacteria (Andana *et al*., 2023) [3]. In other words, peanuts have multipurpose functions, so the availability and productivity of peanuts in Indonesia have played a vital role in responding to food and industrial needs that can contribute significantly to the Indonesian economy. Groundnut farmers face obstacles in cultivation, namely the presence of weeds because the presence of weeds in groundnut crops can cause low yields (Triyono *et al*., 2021) [26].

Weeds are plants that are present in cultivated land and are considered detrimental to humans in a certain population, requiring control measures (Rizal *et al*., 2023) [18]. The influence of weeds on plants can occur directly, such as competition for nutrients, water, light, and growing space. Meanwhile, indirectly, some weeds can become hosts for pests and diseases. Vera *et al*. (2020) [28] stated that the presence of weeds causes peanut plants to be less able to utilize resources such as water, nutrients, light, and growing space optimally, thus ultimately reducing the yield of peanut plants. Uncontrolled weeds in peanut crops will result in a significant reduction in yield. This is in line with the research of Nainggolan & Sebayang (2023) [13] which shows that the average yield of dry weight pods per hectare of peanut plants without weed control is 1 ton/ha, while with weed control it reaches 3.20 tons/ha, which means there is a 68.75% decrease in yield. *Weed control* is an effort to reduce or suppress the growth of weed populations to a certain level so that weeds do not harm the growth and production of cultivated plants. Weed control needs to be done so that cultivated plants continue to develop and get maximum results without experiencing interference due to the presence of weeds in the agricultural area.

Weed control in peanut crops can be done through mechanical, technical culture, and chemical methods (Triyono *et al*., 2021) [26]. Mechanical weed control involves using tools or human labor to remove weeds from agricultural areas physically. Technical culture control involves changes in crop cultivation techniques or farming systems to reduce weed growth, such as spaced planting. Meanwhile, chemical control involves using herbicides or other chemicals to inhibit growth or kill existing weeds. Using herbicides to control weeds has become the primary option, especially on large farms experiencing labor shortages. Herbicides can enter plant tissues through various means, including absorption through plant roots and also through penetration through stomata (Aditiya, 2021) [1]. The main advantage of herbicides in weed control is their higher effectiveness and efficiency than mechanical control methods.

Using herbicides can control weeds in bean cultivation, one of which is herbicide with the active ingredient phenoxaprop-p-ethyl. Phenoxaprop, which belongs to the aryloxyphenoxypropionate family of herbicides, is a post-emergent herbicide (Namrata *et al*., 2020) [15]. The action of this herbicide on weeds is carried out by interfering with fatty acid synthesis through inhibition of Acetyl-CoA carboxylase in plant chloroplasts (Tandon, 2019) [25]. One example is cowpea with the use of phenoxaprop-p-ethyl provides effective control against and does not cause phytotoxicity and produces a yield of 2,285 kg/ha which is not significantly different from weed control with manual weeding treatment of 2,469 kg/ha (Fontes *et al.,* 2019). Weed control is beneficial in increasing peanut growth and yield. Based on the research of Shilpa & Malligawad (2019) [21], it is known that the use of herbicide phenoxaprop-p-ethyl 9.3% EC at 100 g/ha can reduce the population of grass weeds, does not cause phytotoxicity, and produces higher dry pod yields and peanut seed yields compared to the treatment without weed control. Using phenoxaprop-p-ethyl did not cause phytotoxicity symptoms such as leaf injury / scorching, vein clearing / chlorosis, wilting, epinasty and hyponasty. The yield of dry pods with the use of phenoxaprop-p-ethyl reached 3,630 kg/ha, and the yield of peanut seeds reached 2,685 kg/ha, while the yield of dry pods and peanut seeds in the treatment without weed control only reached 3,245 kg/ha and 2,381 kg/ha. The research conducted used higher active ingredients than the research conducted by Shilpa & Malligawad. Differences in the concentration of this active ingredient have the potential to influence the results or plant responses observed, considering that higher concentrations can generally provide stronger effects, both in terms of efficacy and possible side effects.

Some herbicides may be more effective against certain types of weeds, so it is essential to choose the appropriate herbicide to control the type of weed. According to the recommendations, the use of herbicide doses has the potential to help maintain or even increase crop production with more efficient cost inputs. Therefore, using the active ingredient type and the correct herbicide dose must be understood to get effective results.

Materials and Methods

The research was conducted at Ciparanje Farm of the Faculty of Agriculture in Jatinangor District, Sumedang Regency, West Java Province. The research was conducted from December 2023 to April 2024. The experimental site is located in an area with climate type C3 according to the Oldeman classification, with a soil type of Inceptisol and pH of 6.15.

The materials used were semi-automatic knapsack sprayers, T-jet nozzles, measuring cups, ovens, scales, meters, plastic, plant marker labels, books and stationery, and cameras. The materials used in this study included groundnut seeds of the Situraja variety, urea fertilizer, SP-36 fertilizer, and KCl fertilizer, as well as TiGrass 130 EW herbicide (active ingredient: Fenoxaprop-p-ethyl 130 g/l).

The research method used a Randomized Group Design, and there were six treatments. Each treatment was repeated four times, and 24 experimental units were used. The experimental plots measured 1.5 m x 4 m. The herbicide treatment used herbicide made from active phenoxaprop-p-ethyl 130 g/l with several doses including 1.50 l/ha, 2.00 l/ha, 2.50 l/ha, and 3.00 l/ha. Meanwhile, the manual weeding treatment was done mechanically by hand, while the control treatment was not controlled. All treatments were conducted once and simultaneously three weeks after planting (WAP). Quantitative data processing was analyzed using the variance analysis method using SASM-Agri software. If the results showed significantly different effects, Duncan's further test was conducted at the 5% confidence level using SASM-Agri software.

Results and Discussion

Vegetation Analysis

This means that it aims to determine the diversity and dominance of weeds. In vegetation analysis, the SDR value is used to identify the dominant weeds growing on the land (Rahmadi *et al*., 2023) [17]. The results of the vegetation analysis (Table 1) were generated by calculating the Sum of the Dominant Ratio (SDR).

Based on the results of vegetation analysis in Table 1, it shows that in peanut crops, 14 species of weeds are identified from 3 different groups, including one species of weed group, five species of grass weeds with SDR, and eight species of broadleaf weeds. The diversity of weeds that grow on peanut cultivation land can be influenced by several factors, including environmental conditions such as soil fertility, sunlight, temperature, humidity, and rainfall, as well as crop cultivation methods such as tillage, plant density, and cultivation patterns (Imaniasita *et al*., 2020) [9]. The SDR data in Table 1 shows that *P. conjugatum* weed has the highest SDR. *P. conjugatum* has a high chance to grow and reproduce due to the large number of seeds produced by each individual and the ease of dispersal. Therefore, this plant can be found in open and slightly protected areas (Lawalata, 2022) [11].

Table 1. Vegetation Analysis

No.	Weed Spesies	Type	SDR (%)
1.	*Paspalum conjugatum* Berg.	Grasses	14.82
2.	*Eleusine indica* (L.) Gaertn.	Grasses	11.05
3.	*Cynodon dactylon* (L.) Pers.	Grasses	10.11
4.	*Digitaria ciliaris* (Retz.) Koel.	Grasses	10.02
5.	*Setaria plicata* (Lamk) T. Cooke	Grasses	10.02
6.	*Cyperus kyllingia* Endl.	Teki	9.38
7.	*Ageratum conyzoides* L.	Broadleaf	9.16
8.	*Alternanthera sessilis* (L.) R.Br.	Broadleaf	6.30
9.	*Alternanthera philoxeroides* (Mart.) Griseb	Broadleaf	4.54
10.	*Galinsoga parviflora* Cav.	Broadleaf	3.69
11.	*Mimosa pudica* Linn.	Broadleaf	3.48
12	*Phyllanthus niruri* L.	Broadleaf	2.89
13.	*Acmella uliginosa* (Sw.) Cass.	Broadleaf	2.74
14.	*Commelina diffusa* Burm F.	Broadleaf	1.80

Weed Dry Weight

Dry Weight of Weeds *E. indica*. *E. indica* is a weed from the Poaceae family (Utami *et al*., 2020) [27]. The dose treatment of phenoxaprop-p-ethyl herbicide 130 g/l, ranging from a dose of 1.50 l/ha to a dose of 3.00 l/ha at 3 WAA and 6 WAA, demonstrated no significant difference from the manual weeding treatment. However, it significantly differed from the control treatment (Table 2). The results demonstrate that the fenoxaprop-p-ethyl herbicide at a dose of 130 g/l was effective in suppressing the growth of *E. indica* weeds. Application of fenoxaprop-p-ethyl effectively reduced grassy weeds in rice (Dash *et al*., 2021) [4].

Dry Weight of Weeds *C. dactylon*. *C. dactylon* is an annual weed (Yasi *et al*., 2022) [30]. Table 2 shows that the dry weight of *C. dactylon* weeds in the 130 g/l fenoxaprop-p-ethyl herbicide treatment was lower than that of the other treatments, indicating that the tested herbicides can control *C. dactylon* weeds at both the lowest and highest doses. The use of phenoxaprop-p-ethyl herbicide in peanut crops has effectively suppressed annual grass weeds' growth (Shilpa & Malligawad, 2019) [21].

Dry Weight of Weeds *P. conjugatum.* The results showed that the herbicide treatment of phenoxaprop-p-ethyl 130 g/l at 6 WAP with a dose of 1.5 l/ha was not significantly different from manual weeding and control (Table 2). P. conjugatum has creeping rhizomes, producing additional erect stems on each hill (Palandi, 2022) [16]. Phenoxy-p-ethyl is a systemic herbicide. The active ingredient in systemic herbicides is transported to all parts of the weed plant, reaching the roots and growth points to kill weeds at the source (Sari, 2020) [20]. The active ingredient of phenoxaprop-p-ethyl herbicide at 1.50 at 6 WAP has yet to reach the rhizomes. Therefore, using this herbicide at low doses has yet to be able to control *P. conjugatum* weeds, but starting from a dose of 2.00 l/ha to a dose of 3.00 l/ha can control these weeds. Meanwhile, at 9 WAP, all treatments of phenoxy-p-ethyl 130 g/l herbicide phenoxaprop-p-ethyl 130 g/l herbicide effectively controlled *P. conjugatum* weeds at the various doses tested. The manual treatment did not show significant differences from the control treatment. This is due to the rhizomes of *P. conjugatum* weeds that are not entirely removed during the weeding process, so the weeds can grow back quickly. Paspalum conjugatum is a grass weed that belongs to the Poaceae family and is an annual weed (Palandi, 2022) [16]. Shilpa & Malligawad (2019) [21] It is known that the use of phenoxaprop-p-ethyl 9.3% EC 100 g/ha in soybean (*Glycine max*) crops can reduce the number of weeds and weed biomass, making it effective in controlling annual grassy weeds.

Table 2. Dry Weight of Weeds *E. indica, C. dactylon, P. conjugatum*

Treatment	Dosage (l/ha)	Dry Weight *E. indica*		Dry Weight *C. dactylon*		Dry Weight *P. conjugatum*	
		3 WAA	6 WAA	3 WAA	6 WAA	3 WAA	6 WAA
A	1.50	0.00 b	0.01 b	0.00 b	0.00 b	0.92 ab	1.14 b
B	2.00	0.00 b	0.00 b	0.00 b	0.00 b	0.00 b	0.00 b
C	2.50	0.00 b	0.00 b	0.00 b	0.00 b	0.05 b	0.09 b
D	3.00	0.08 b	0.00 b	0.00 b	0.06 b	0.00 b	0.41 b
E	-	0.13 b	1.27 b	0.35 b	0.24 b	0.35 b	2.41 ab
F	-	3.77 a	4.07 a	1.78 a	2.72 a	1.71 a	3.65 a

Notes: Mean values marked with the same letter in the same column indicate not significantly different at the 5% level according to Duncan's Test. WAA = Week after herbicide application

Dry Weight of Weeds *S. plicata.* As illustrated in Table 3, applying phenoxaprop-p-ethyl herbicide (130 g/l) at 3 WAA did not yield statistically significant differences compared to the manual weeding treatment. However, it did show notable contrasts with the control treatment, particularly at the lower and higher dosage levels. *S. plicata* has long fibrous roots, creeping stems, and knuckles (Lisdayani *et al*., 2022) [12]. This allows the parts left in the soil to grow back, resulting in a treatment that was not significantly different from the control treatment at 3 WAA.

The application of phenoxy prop herbicide 130 g/l to peanut crops produced an average dry weight of *S. plicata* weeds that was significantly different from the control treatment, so phenoxy prop herbicide 130 g/l, starting from a dose of 1.50 l/ha to the second dry weight observation, was effective in suppressing *S. plicata* weeds. Phenoxaprop-p-ethyl herbicide is a systemic post-emergent herbicide that effectively controls narrow-leaf weeds (Aisyah *et al*., 2022) [2]. *S. plicata* weeds belong to the class of narrow-leaved weeds, namely grass species, so they can be controlled by these herbicides.

Dry Weight of Weeds *D. ciliaris.* Analysis in Table 3 shows that at 6 WAP, the control and manual weeding treatments were not significantly different at 3 WAA because when weeding, weed seeds fall and remain on the surface or in the soil, germinating and growing into weeds later. However, all 130 g/l phenoxaprop-p-ethyl herbicide treatments reduced *D. ciliaris* weed populations.

Meanwhile, at the age of groundnut of 9 WAP, phenoxyaprop-p-ethyl 130 g/l herbicide treatments ranging from doses of 1.50 l/ha to 3.00 l/ha showed lower average dry weight yields compared to mechanical weed control. With manual weed pulling and no weed control, the population of *D. ciliaris* will continue to increase because it has many seeds so that it will grow again. Observations of 6 WAP and 9 WAP of all 130 g/l phenoxaprop-p-ethyl herbicide treatments effectively suppressed the growth of D. *ciliaris* weeds. This aligns with research conducted by Deivasigamani (2016) [5] in the control treatment, the biomass of *Digitaria* sp. Weeds were 97.40 g, while in the herbicide treatment, the biomass was 30.47 g, so the biomass of *Digitaria* sp. weeds was reduced by 66.93 g. The herbicide treatment is effective in suppressing the growth of *D. ciliaris* weeds.

Dry Weight of Weeds *C. kyllingia.* Based on Table 3 at 3 WAA, phenoxaprop-p-ethyl 130 g/l could not control teki because the herbicide treatment's dry weight was the same as the manual weeding treatment's and the control treatment's dry weight. According to Hafsah *et al*. (2020) [7], teki is a tough weed to control because it is very adaptive and forms stolons and tubers that can reach a depth of one meter. At 3 WAA, teki weeds could not be controlled by phenoxaprop-p-ethyl herbicide.

The herbicide treatment of phenoxaprop- p-ethyl 130 g/l at a dose of 1.50 l/ha, 2.00 l/ha, and 3.00 l/ha was not significantly different from the manual weeding treatment, and the herbicide treatment of phenoxaprop- p-ethyl 130 g/l at a dose of 2.50 l/ha, but significantly different from the control treatment at 6 WAA. Meanwhile, for phenoxaprop-p-ethyl 130 g/l dose of 2.50 l/ha, there was a significant difference between the manual weeding treatment and the control treatment. This shows that the herbicide fenoksaprop-p-ethyl 130 g/l starting from a dose of 1.50 l/ha has effectively suppressed the growth of *C. kyllingia*. In line with the research of Nalfin *et al*. (2018) [14], phenoxaprop-p-ethyl can cause poisoning in weeds such as *C. iria*, causing poisoning of 94.25%, and *C. difformis*, causing poisoning of 89.25%in rice fields.

Table 3. Dry Weight of Weeds *S. plicata, D. ciliaris, C. kyllingia*

Treatment	Dosage (l/ha)	Dry Weight *S. plicata*		Dry Weight *D. ciliaris*		Dry Weigh *C. kyllingia*	
		3 WAA	6 WAA	3 WAA	6 WAA	3 WAA	6 WAA
A	1.50	0.00 b	0.00 b	0.00 b	0.00 c	1.22 a	1.53 bc
B	2.00	0.00 b	0.00 b	0.00 b	0.00 c	0.46 a	0.20 bc
C	2.50	0.00 b	0.00 b	0.00 b	0.00 c	0.05 a	0.12 c
D	3.00	0.00 b	0.00 b	0.00 b	0.00 c	0.40 a	1.23 bc
E	-	0.43 ab	0.31 b	0.51 ab	0.77 b	0.67 a	1.82 ab
F	-	1.00 a	3.72 a	0.74 a	1.50 a	1.59 a	3.42 a

Notes: Mean values marked with the same letter in the same column indicate not significantly different at the 5% level according to Duncan's Test. WAA = Week after herbicide application

Dry Weight of Total Broadleaf Weeds. Applying phenoxaprop-p-ethyl herbicide 130 g/l at 3 WAA was not significantly different from the manual weeding and control treatments (Table 4). Herbicides that inhibit ACCase are divided into three groups, namely aryloxyphenoxypropionates (FOPs), cyclohexanodiones (DIMs), and phenylpyrazoles (DENs). All three herbicides have specific activity on grass weeds, but some broadleaf weeds can be controlled, such as from the Geraniaceae, Brassica, and Arabidopsis families (Takano *et al*., 2020) [24]. Phenoxaprop- p-ethyl belongs to the Aryloxyphenoxy propionate class.

All 130 g/l phenoxy-p-ethyl herbicide treatments at 6 WAA were not significantly different from the mechanical control but significantly different from the control plot (Table 4). According to Nalfin *et al*. (2018) [14], weeds proliferate to produce weed seeds in the thousands. In the control treatment, weeds were allowed to grow without any control, so the number of pre-existing weeds became quite large, allowing their growth even faster. As a result, weed seed production became exceedingly abundant in a relatively short period.

Total Weed Dry Weight. The total weeds in this experiment included grass, weeds, and broad leaves. Analysis Table 4 shows that at 3 WAA and 6 WAA, phenoxaprop-p-ethyl herbicide 130 g/l and manual weeding significantly differed from the control treatment. The treatment of phenoxaprop-p- ethyl herbicide 130 g/l at 6 WAA showed that the higher the dose, the lower the weed's dry weight. According to Iskandar & Yudiawati (2022) [10], the higher the dose, the greater the ability to suppress weed growth. Several studies mention that phenoxaprop-p-ethyl herbicide effectively controls grass weeds by reducing the number of weeds and weed biomass. Aisyah *et al*. (2022) [2] stated that phenoxaprop-p-ethyl herbicide effectively controls grass weeds, which are included in post-emergence systemic herbicides.

Table 4. Dry Weight of Total Broadleaf Weeds and Total Weeds

Treatment	Dosage (l/ha)	Dry weight of Total Broadleaf Weeds		Total Weed Dry Weight	
		3 WAA	6 WAA	3 WAA	6 WAA
A	1.50	1.41 a	8.63 b	3.55 bc	11.30 bc
B	2.00	1.37 a	10.16 b	1.83 bc	10.36 bc
C	2.50	0.97 a	6.75 b	1.07 c	6.95 c
D	3.00	1.55 a	5.76 b	2.03 bc	7.45 c
E	-	1.22 a	8.75 b	3.65 b	15.56 b
F	-	2.53 a	16.69 a	13.11 a	35.77 a

Plant Height. The phenoxaprop-p-ethyl 130 g/l herbicide treatment at a dose of 2.00 l/ha, 2.50l/ha, and 3.00 l/ha was not significantly different from the manual weeding treatment and the control treatment. Meanwhile, the phenoxaprop-p-ethyl 130 g/l herbicide treatment at a dose of 1.50 l/ha was not significantly different from manual weeding, and the phenoxaprop-p-ethyl 130 g/l herbicide treatment at a dose of 2.00 l/ha, 2.50l/ha, and 3.00 l/ha, but significantly different from the control treatment. At 6 WAA, the phenoxaprop-p-ethyl 130 g/l herbicide treatment starting from a dose of 1.50 was not significantly different from the manual weeding treatment but significantly different from the control treatment. In the control treatment, there were more weeds because the weeds were allowed to grow without weeding an herbicide application. The type of weeds and the higher number of individuals will cause the nutrients needed to be more. During the growth phase, there is higher competition for water absorption, nutrients, and growth space between weeds and peanut plants. The competition between weeds and peanuts can disturb the height of peanut plants (Nainggolan & Sebayang, 2023) [13]. This can be seen in Table 6; the height of peanut plants in the control treatment had the lowest height at 3 WAA and 6 WAA.

Number of Tetrapholiate Leaves. The herbicide treatment of phenoxaprop- p-ethyl130 g/l at 6 WAP was not significantly different from the manual weeding and control treatments (Table 6). According to Zannah *et al*. (2023) [31] sunlight intensity affects photosynthesis, an important process in chlorophyll formation and food production by plants. Optimal light allows plants to produce more chlorophyll, which supports growth and an increase in the number of leaves. In other words, the number of plant leaves is affected by sunlight intensity. At 6 WAP, the crowns of weeds and plants have not covered each other, so the absorption of sunlight intensity is well absorbed, and the needs of peanut plants are still sufficient. Meanwhile, at 9 WAP, the herbicide treatment of phenoxaprop-p-ethyl 130 g/l at a dose of 1.50 l/ha was not significantly different from manual weeding but significantly different from the control treatment. Weed growth in the control is higher, so the crowns of weeds and plants will cover each other, which will cause competition between weeds and plants to get sunlight. Seed Yield per Plant (g). Table 6 shows that all phenoxaprop-p-ethyl herbicide 130 g/l treatments were not significantly different from the mechanical control but significantly different from the control plot. Competition between weeds and peanuts can reduce the number of pods and dry weight per plant, causing a decrease in peanut seed yield. The presence of weeds that are not controlled will result in competition for the same resources, such as growing space, water, nutrients, and sunlight between weeds and peanuts, which can cause a decrease in peanut production. This is in line with research conducted by Murrinie in the Pati region that the presence of weeds in peanut crops can result in a decrease in fresh pods/plant by 34.8%, dry pod weight/plant by 37.4%, seed weight/plant by 30.8% (Triyono *et al*., 2021) [26].

Phytotoxicity is a condition in which plants experience damage or stress due to chemical exposure, which can interfere with plant growth and yield because it causes abnormalities such as brown spots or spots on leaves, wilting, or death of plant tissue (Wati *et al*., 2021) [29]. In this study, phenoxaprop-p-ethyl herbicide did not cause phytotoxicity in peanut plants. This can be seen from the seed yield, which is similar to the manual weeding treatment. Therefore, using phenoxaprop-p-ethyl herbicide is safe and does not negatively impact plant growth, so plants can still grow and produce seeds well.

Table 5. Effect on Plant Height, Number of Leaves, and Seed Yield

Treatment	Dosage (l/ha)	Plant Height		Number of Leaves		Seed Yield
		3 WAA	6 WAA	3 WAA	6 WAA	
A	1.50	32.54 a	47.57 a	30.65 a	51.42 a	6.12 a
B	2.00	29.53 ab	45.83 a	34.00 a	51.29 a	6.14 a
C	2.50	26.98 ab	44.45 a	31.59 a	52.71 a	6.55 a
D	3.00	26.89 ab	43.75 a	34.48 a	53.44 a	6.81 a
E	-	25.51 ab	45.02 a	33.88 a	55.15 a	5.91 a
F	-	22.55 b	39.81 b	28.07 a	41.69 b	4.12 b

Notes: Mean values marked with the same letter in the same column indicate not significantly different at the 5% level according to Duncan's Test. WAA = Week after herbicide application

Conclusion

Phenoxaprop-p-ethyl herbicide 130 g/l ranging from doses of 1.50 l/ha to 2.50 l/ha can affect the dry weight of weeds, especially grasses in peanut crops, namely *E. indica, C. dactylon, P. conjugatum, S. plicata,* and *D. ciliaris*, teki, namely *C. kyllingia*, total broadleaf weeds, and total weeds, but does not cause phytotoxicity in peanuts. The application of this herbicide also resulted in optimal groundnut growth and yield.

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