Table 2 Effect of mulching material on leaf number of okra at East Rukum, Nepal, 2024

Treatments	25 DAS	40 DAS	60 DAS
Black plastic mulch	5.4750[a]	19.600[a]	27.58[a]
Control	4.9500[b]	14.58[ab]	20.58[ab]
Mustard straw	4.8000[b]	13.48[ab]	19.68[b]
Banmara	4.5125[b]	14.28[ab]	20.78[ab]
Sawdust	4.7125[b]	9.98[b]	17.40[b]
Leaf litter	4.6750[b]	11.58[b]	15.88[b]
LSD (0.05)	0.4837	5.962	7.091
SEM (±)	0.162	0.818	0.974
F-probability	0.0097*	0.05*	0.0449*
CV%	6.708	28.84	23.498
Grand Mean	4.85	13.91	20.31

Note: LSD = Least Significant Difference; CV (%) = Coefficient of Variation; DAS = Days after sowing; SEM = Standard Error of the mean; Means followed by the same letter(s) within each column are not significantly different at 5% level of significance by DMRT, ** and * indicate significance at <0.01 level and significance at <0.05 level respectively

3.3 Yield parameter and productivity

The results showed that the average fruit weight was highest (245.80 g) under black plastic mulch, which was significantly superior to mustard straw, banmara, sawdust, and leaf litter mulches, but statistically similar to the control plot (193.70 g) (Table 3). The lowest fruit weight (129.85 g) was recorded under leaf litter mulch. Average fruit length was also significantly affected by mulching. The longest fruits (14.91 cm) were obtained under black plastic mulch, followed by leaf litter (13.76 cm) and control plots (13.67 cm). The shortest fruits (12.88 cm) were recorded in mustard straw mulch. The productivity was highest under black plastic mulch (14.897 Mt/ha), followed by the control plot (11.739 Mt/ha), mustard straw (9.289 Mt/ha), banmara (9.831 Mt/ha), sawdust (8.433 Mt/ha), and leaf litter (7.87 Mt/ha), respectively. Increased productivity under black plastic mulch is likely associated with larger and longer fruits, higher fruit set, and improved microclimate conditions, leading to enhanced overall yield.

Table 3 Effect of mulching materials on yield parameters and productivity of okra at East Rukum, Nepal, 2024

Treatments	25 DAS	40 DAS	60 DAS
Black plastic mulch	245.80[a]	14.91167[a]	14.897[a]
Control	193.70[ab]	13.67250[ab]	11.739[ab]
Mustard straw	162.20[b]	12.87583[b]	9.289[b]
Banmara	153.25[b]	13.53425[b]	9.831[b]
Sawdust	139.15[b]	13.06667[b]	8.433[b]
Leaf litter	129.85[b]	13.76167[ab]	7.87[b]
LSD (0.05)	69.70379	1.199951	4.27
SEM (±)	9.537208	0.162517	1.41
F-probability	0.02674*	0.03556*	0.0307*
CV%	27.37785	5.838235	27.39
Grand Mean	170.6583	13.6371	10.343

Note: LSD = Least Significant Difference; CV (%) = Coefficient of Variation; DAS = Days after sowing; SEM = Standard Error of the mean; Means followed by the same letter(s) within each column are not significantly different at 5% level of significance by DMRT, ** and * indicate significance at <0.01 level and significance at <0.05 level respectively

4 Discussion

The result presented in Table 1 shows that black plastic mulch had the tallest plant height at 25 DAS, 40 DAS, and 60 DAS. These findings are in accordance with (Chaudhary et al., 2023), who reported the highest plant height under black plastic mulch at each stage. At the beginning of the growing season, the remaining treatments did not show significant differences in plant height. The improved growth under black plastic mulch can be