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## The Rooting Depth, Root Biomass and Its Vertical Distribution Regularity of Alfalfa in Different Growing Years in Beijing Plain

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## The rooting depth , root biomass and its vertical distribution regularity of alfalfa in different growing years in Beijing Plain

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**Key words :** alfalfa , rooting depth , root biomass , root distribution , Beijing Plain

**Introduction** This research was aimed at finding the rooting depth , root biomass and its vertical distribution regularity of alfalfa (*Medicago sativa* L .) in different growing years in Beijing Plain and providing evidence for the cultivation of alfalfa in this area .

**Material and methods** The soil profiles method (Chen Bao-shu , *et al* .1991) was used for determining the rooting depth and root biomass of the Golden Empress alfalfa in different growing years in Beijing Plain .

**Results and analysis** The results were shown in Tables 1 and 2 .

**Table 1** The rooting depth and root biomass of alfalfa in different growing years in Beijing Plain .

Growing year (year)	0 .75	1 .2	2 .5	3	4	4 .75
Rooting depth(m)	1 .2a	1 .6b	2c	2d	1 .8c	2d
Root biomass(MgDM/hm <sup>2</sup> )	2 .96a	4 .74c	6 .38d	3 .05a	3 .78b	10 .11e

Note :Different small letters in the same row indicate significant differences at  $P < 0 .05$  .

**Table 2** The root biomass rate in different soil layers of different growing years alfalfa in Beijing Plain .

Soil layer (cm)	Growing year (year)					
	0 .75	1 .2	2 .5	3	4	4 .75
0~20	78 .38%	70 .04%	60 .81%	65 .57%	69 .84%	70 .82%
20~40	9 .80%	12 .03%	13 .17%	16 .72%	12 .96%	13 .45%
40~60	7 .77%	8 .44%	9 .09%	6 .89%	8 .20%	8 .11%
60~80	2 .70%	4 .43%	6 .58%	3 .61%	4 .50%	3 .96%
80~100	1 .01%	2 .95%	4 .08%	2 .62%	2 .12%	1 .58%
100~120	0 .34%	1 .27%	2 .82%	1 .64%	1 .06%	0 .69%
120~140		0 .63%	1 .88%	0 .98%	0 .53%	0 .59%
140~160		0 .21%	0 .94%	0 .98%	0 .53%	0 .40%
160~180			0 .47%	0 .66%	0 .27%	0 .30%
180~200			0 .16%	0 .33%		0 .10%

**Discussion and conclusion** Combined with the other scholastic's research , we reach the conclusion that the rooting depth of alfalfa growing less than 2 .5 years increased annually , and that growing more than 2 .5 years were stable in Beijing Plain . With the growing year longer , the root biomass of the alfalfa increased year by year . The reason that the root biomass of alfalfa growing 3 and 4 years were lower should be no fertilization . The rate of the alfalfa root biomass in different soil layer decreased as the depth increased .

### Reference

Chen Bao-shu , Fu Yi-kun , Zhang Pu-jin , *et al* , (1991) . A Experiment and Practice Guide Book for Rangeland and forage Science . Lanzhou : Gansu Science and Technology Publisher .198—202 .