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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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**Presenter Information**

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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 .