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## **Yield trait comparison of twenty two Alfalfa cultivars**

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**Key words:** alfalfa, yield trait, yield, nutritive value

**Introduction** Alfalfa is a quality perennial legume pasture with deeply distributing roots and commonly known as the king of pastures. Now most of the alfalfa cultivars that are planted in northwest China are poorly resistant to pests and disease and have low yields so that they are compromised in their extension and adoption in production. Therefore, it is imperative to introduce high-quality and highly resistant alfalfa cultivars for crop production restructuring and animal husbandry development in arid and semi-arid regions of Northwest China.

In 2002, The research group of the study introduced 19 foreign alfalfa cultivars and planted them with domestic alfalfa cultivars Zhongmu 1, Guanzhongmuxu and Guyuanzhuhua to compare such traits as hay yield and quality and adaptability of the twenty two alfalfa cultivars in order to screen the alfalfa cultivars suitable to be extended and adopted in arid and semi-arid regions and provide materials for alfalfa breeding and supply references to the development of prairie-culture industry in west China.

**Materials and Methods** The trial farmland ( $34^{\circ}21' N$  and  $108^{\circ}10' E$ , Elevation of 454.8m) was located in the experiment plot north of Yangling International Exhibition and Convention Center. The experiment plot has deep soil, which has an organic matter content of 15.0 g/kg, a total nitrogen of 56mg/kg, an phosphorus content of more than 3.4 mg/kg, and an available potassium content of 165mg/kg and pH of 8.26.

Twenty two alfalfa cultivars were chosen for the trial, of which there were 19 improved alfalfa cultivars introduced from abroad and four native breeding cultivars of China.

**Results and discussions** The 3 year comparison trial of different alfalfa cultivars tested productive capacities of 19 alfalfa cultivars introduced from abroad and three Chinese alfalfa cultivars, Zhongmu 1, Guanzhongmuxu and Guyuanzhuhua under the rainfall of about 620 mm. Results of the trial showed that most of the introduced alfalfa cultivars grew and performed well in central Shaanxi, presenting strong ecological adaptability and higher hay yields and high nutritional values than Chinese landrace cultivars which agrees with the results that Wang Chengzhang et al obtained in their study.

The twenty two alfalfa cultivars were ranked in terms of their hay yields, crude protein contents, crude fiber contents and digestibility. Sanditi took the first position of productive capacity, followed by Affinity, Haygrazer, Total, Victoria. These can be extended and planted in a large area in northwest China.

As a perennial legume pasture with high quality, high yield and strong resistance, Alfalfa has a performance period of about seven years. The productive capacities of the alfalfa cultivars were obtained by conducting the trial under natural circumstances without irrigation and fertilization all the year around. Therefore, alfalfa can be properly irrigated and fertilized with small amounts of fertilizers to further improve its yield and quality and speed up the progress of farmers and herdsmen getting rid of poverty and become better off.

**Conclusions** A three year comparative trial was conducted in Yangling to comparatively analyze major yield traits of twenty two domestic and foreign alfalfa cultivars (*Medicago sativa* L.). Its results showed that the foreign alfalfa cultivars generally grew well in central Shaanxi and their productive capabilities were commonly superior over those of the landrace alfalfa cultivars. Of the twenty two alfalfa cultivars, Algonquin had the best yield traits, followed by Affinity, Haygrazer, Total, Victoria, and these cultivars were worth being extended and adopted in large areas in central Shaanxi.