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## Study on determinate and indeterminate growth habit of alfalfa

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**Key words** : alfalfa , determinate type , infinite type , characteristic

**Introduction** Growth habit of alfalfa includes erect , semi-erect and grovel types (Gen Hua-zhu ,1995) which belong to morphous nature without ecological association The research found that determinate and indeterminate growth habits of Alfalfa existed and were similar to that of soybean stem .

**Materials and methods** Experiment materials including 42 introduced and local cultivars of alfalfa distributed in semi-arid area of Gansu have been observed and compared for various traits under conditions of irrigation and dry farming .

**Results and discussion** For determinate type , the overlap stage between generative organ growing and nutritive organ growing is short after reproductive growth begins . When nutrition growth is close to end , the growing point of alfalfa stem appears a white globule because of dehydration . If supplied with sufficient water and fertilizer , the crown will develop new branches quickly to form configuration of new branches mixed with old ones . For indeterminate type , the overlap stage between generative organ growing and nutritive organ growing is longer after reproductive growth starts . When nutrition growth is near its end , the growing point of alfalfa stem also shows the appearance of a white globule because of low moisture content . If supplied with sufficient water and fertilizer , the old branches of crown will form new growing points again , and continue to develop quickly and take dominant possession . For intermediate type under irrigation some materials show indeterminate type . However , given dry farming it also performs determinate type .

Typical determinate materials regenerate from root crown quickly and the new branches largely emerge in the flowering stage . Typical indeterminate materials regenerate slowly and the new crown branches largely emerge in two ways : from crown and from leaf axil of old branches . Maximum plant height increase and dry matter(DM) accumulation of determinate materials are earlier than that of indeterminate , so determinate materials are suitable to early use .

Seed maturity of determinate materials is at equal pace and harvest time is controlled more easily than indeterminate ones . Because of blooming stage of indeterminate materials is longer than determinate materials , its seed production is subjective to effect of water and its mature period at discordance . Factors affecting grass production are very complicated . In this study , determinate and intermediate materials on the condition of irrigation can produce forage higher than indeterminate materials , but much lower than the indeterminate on the condition of dry farming .

**Conclusions** Growth habit of alfalfa stem may be divided by types of determinate , indeterminate and intermediate . There are many obvious distinctions which determine the traits of different types . Further investigation on cultivation and seed production of the respective types are necessary .

### Reference

Hua-zhu Gen et al . ,1995 . Chinese Alfalfa . *Beijing Agriculture publishing house of China* , 27-28 .