

Title           Drying and quality characteristics of different components of alfalfa  
Author         Xianzhe Zheng, Yiyuan Jiang and Zhongli Pan  
Citation       2005 ASAE Annual International Meeting, Tampa Convention Center, Tampa, Florida, 17-20 July  
                  2005, Paper Number 056185  
Keywords      alfalfa; drying temperature; drying rate; quality; modeling

### **Abstract**

This study investigated the effect of air temperature (100°C – 200°C) and velocity (0.15m/s – 0.45m/s) on drying characteristics and quality of different alfalfa components. The chopped alfalfa components, including stems, crushed stems, crushed stems with attached leaves, and leaves were used for the study. The moisture losses under different drying conditions and times were measured. The quality of dried products, including color, protein, and fiber content was also examined. The leaves and uncrushed stems had the highest and lowest drying rates among the four components. The increase of drying temperature and air velocity resulted in higher drying rates of all components. But the increase also caused high difference in moisture contents of leaves and stems of dried stems with attached leaves. The activation energies of stems, crushed stems, crushed stems with attached leaves and leaves were 387.6, 346.6, 411.0, and 606.7 kJ/mol, respectively. Based on the test results, to achieve high drying rate and desirable product quality of alfalfa a combination of 160°C temperature and 0.3m/s air velocity is suggested.