The following three articles are the winning entries in the 1987 American Society of Agronomy Student Essay Contest. Winning essays formerly were published in the Society's *Crops and Soils Magazine*. Since that magazine has ceased publication, the *Journal of Production Agriculture* volunteered to step into the breach and carry the winning 1987 essays.

These papers are not intended to present scientific research. The contest is a writing exercise which dispenses with the formalities of normal scientific papers. Sixteen essays were submitted to the contest after preliminary judging in the plant and soil science departments of colleges and universities around the country.

**First Place**

The 1980s Approach to Hay Processing

James N. McNelly II

The new wave for processing hay is not by conventional baling but by cubing or pelleting the hay. Cubing and pelleting alfalfa straight, or by using a mixture of alfalfa, corn gluten, and corn in the Total Mixed Rations (TMR) aspect, have given the feed industry and market something to talk about. The new product has improved handling, transportation, storage, and feeding.

The cubing industry began in the West and is working its way into the Midwest. Before cubing was developed, hay was processed by baling and dehydration. Transportation and storage of conventional bales was very expensive because of the bulkiness—more bulk, less tonnage in the storage space. Alfalfa can also be dehydrated and ground into meal. It is a very dusty process and handling of the product can be a problem. The storage and transportation of alfalfa meal was a great improvement over conventional baling—less bulk, more tonnage. A problem with meal, however, is that it packs tightly in storage bins and is unable to flow evenly in the bins.

Cubes and pellets have numerous advantages over conventional bales and dehydration. Like meal, cubes require less space and are very easy to store and transport. They are also much easier to handle than meal, which is dust free because the leaves are not ground to dust by excessive handling. They generally have less clogging in storage bins, and they are more easily utilized in the feed industry. Cubes typically demand a smaller storage space of conventional bales and feeding loss is less with cubes. Although there are many advantages of cubed alfalfa, the price is about the same as that of conventionally-baled, high quality alfalfa.

There are two types of cubers, stationary and mobile. Stationary cubers are the plants in which the producer brings the forage to the plant for processing. Mobile cubers go directly out into the field to process the forage. Mobile cubers require arid conditions, where the alfalfa will sun-cure to 10 to 12% moisture in the field. These cubers are limited to large commercial operations. Mobile units require tremendous amounts of energy to operate and are very expensive to purchase and maintain. These cubers are designed to handle alfalfa almost like grain. The production capacity of the cubers is high, about 3.6 tons-per-hour.