ALFALFA and red clover seed production under Iowa conditions is a somewhat hazardous enterprise. The reasons are not difficult to find. First of all, the climate is not the most ideal for consistent and high yields of legume seed. In stand establishment, some of the climatic factors begin to show their influence. For example, in a 20-year period at the Iowa Agricultural Experiment Station, partial to complete failure to establish red clover because of dry springs occurred in at least 5 years. Another factor, winter injury, especially when coupled with diseases, often causes sufficient loss in stands that little or no seed production is possible.

But, even if stand establishment and winter survival are excellent, bad weather may still prevent a good seed crop. Consider summer rainfall as a factor of importance. Early June rains may prevent harvest of the first crop for hay at the proper stage. Experiments with red clover (7) have shown that the best possibilities for a good seed crop result when the first crop is cut before full bloom, usually from June 5 to 12 in central Iowa. Then too, the weather when the second crop blooms and the seed crop is developing is extremely important.

Bright, clear, warm weather favors the activity of pollinating insects so essential for seed production in both red clover and alfalfa. In central Iowa the average rainfall during July, August, and September is more than 11 inches, which means there may be many wet, dull days when bees are not very effective as pollinators.

Rain, after the seed crop is made, also may prevent saving the crop. Unless handled carefully, considerable shattering may occur, and general seed quality may be seriously lowered. Harvesting methods, therefore, are especially important in a humid climate.

These conditions help to explain, in part at least, the low average yields of both red clover and alfalfa in Iowa and in the Midwest in general. Farmers have harvested an average of more than 100 pounds of red clover for seed each year during the period 1937 to 1946 inclusive, with an average yield per acre of only 47 pounds of seed. While some counties in the eastern and southern parts of the state are relatively consistent heavy producers, the yield considerably from year to year and many farmers do not know on July 15 whether or not they have any clover for seed.

In alfalfa seed production Iowa has played only a small part, with an average of 13,000 acres annually during the period 1937 to 1946, and an average yield per acre of 56 pounds. Because of the shortage of seed of well adapted varieties in the last few years, there has been an increasing possibility of extending alfalfa seed production in Iowa, and in fact in all of the Midwest region.

In contrast to these low yields, much higher yields have been produced in some of the western seed producing areas. In Idaho, red clover has produced an average of 290 pounds per acre and alfalfa, 103 pounds per acre. California and Colorado both have a record of much higher average alfalfa seed, approximately 200 pounds per acre. Climatic conditions in this area are quite different from those in the Corn Belt, with an extremely dry climate during the late summer, and a rather large range in temperature.

Another factor in seed production is the damage to the growing crop and to the developing buds and flowers caused by destructive insects. Potato leafhoppers (Empoasca fabae), aphids, grasshoppers (Adelphocoris spp.), and several species of beetles, are all important in preventing the realization of a good seed crop.

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