NOTES

AFTERNOON VS. MORNING CUTTING OF ALFALFA

The gains for afternoon cutting of alfalfa reported in recent articles by O. F. Curtis seem to the writer to be too good to be true. Whether or not his conclusions are valid will finally be decided by additional data, which the writer has not been in a position to obtain. There is evidence now available, however, which should at least give pause before we promise farmers a quarter of a ton more hay, containing nearly double as much sugar and starch, for cutting hay in the afternoon instead of in the morning.

It is generally accepted that there is more sugar and starch in the leaves of any ordinary plant in the late afternoon than in the early morning. Hence, the questions raised by these articles are: (1) How much more dry matter is present in the evening than in the morning? (2) What happens to this extra sugar and starch during ordinary hay curing?

In studies by the writer and associates on alfalfa production in Ohio, only a few net increases as great as 150 pounds of hay per acre per day were obtained—most of them were under 100 pounds.

Thomas and Hill, to whom Curtis refers, have made the most accurate quantitative study of photosynthesis and respiration in alfalfa known to the writer. They report nine experiments over a total of 279 days, conducted under irrigation in Utah, with soil and weather conditions more favorable for growth of alfalfa than in the humid East. The average of these nine experiments, calculated to pounds per acre, was a gross increase in dry matter of 272 pounds per acre per day, and a respiration at night of about 32 pounds of dry matter, leaving a net increment of 240 pounds per acre per day. Of this, an average of 75 pounds was recovered in the tops, and an average of 165 pounds was assumed to have been translocated to the roots.

None of these average figures for daily increment of alfalfa come very close to the 512 pounds per acre reported by Curtis. Even the largest single day’s dry matter accumulation out of the 279 reported by Thomas and Hill, quoted by Curtis, lacks nearly 100 pounds of equaling Curtis’ average.

However, let us assume for a moment that 512 pounds of dry matter per acre per day are produced from morning to evening. What could

1Curtis, Otis F. The food content of forage crops as influenced by the time of day at which they are cut. Jour. Amer. Soc. Agron., 36:401–416. 1944.
4The food content of forage crops as influenced by the time of day at which they are cut. Mimeoographed, June 14, 1943.