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Light is Fuel for Plant Growth

by Jim Manring

Light is one of the most important factors influencing plant growth and one that we do the least about. The approximate true altitude (angle) of the sun at noon on various dates--41 degrees North Latitude was given in Colorado Flower Growers Bulletin 100. The highest angle was for June 21, and the lowest for December 21. As the true altitude decreases the days become shorter and the intensity of the sun decreases.

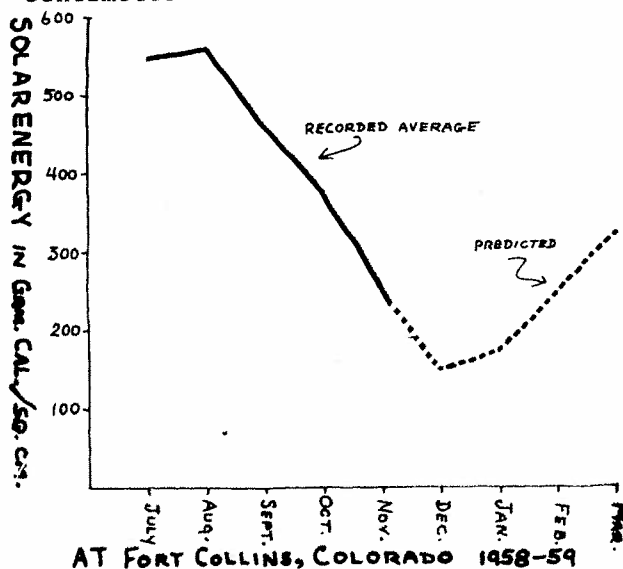
At Colorado State University we are now using a pyrliometer, an accurate instrument for measuring the amount of solar energy which strikes a horizontal target. The target consists of two surfaces, one white and the other black. The white area reflects solar energy while the black absorbs it. An electrical impulse caused by the difference in heat-light properties between the two colored areas transmits a millivolt current to a 24-hour recorder. Periodically we measure the amount of current recorded and convert to gram calories per square centimeter--the usual means of expressing solar energy.

The amounts of solar energy and light are so closely correlated that they may

be used interchangeably. As the solar energy factor is so important to plant growth, we will regularly report the light received at Fort Collins. Records for solar energy from July 1, 1958 to date:

	Total solar energy*	Average per day	Highest day	Lowest day
July	16,411	547	758	336
August	17,315	558	720	300
September	13,340	460	640	247
October	11,638	375	501	69
November	7,498	249	371	98

*All data in gram calories per square centimeter



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Days of highest light intensity occurred early in the month, usually the first clear day, with intensity dropping as the month progressed. Light decreased rapidly in November as shown by the following measurements all of which were made on clear days:

November 1	371	grm.cal.
9	326	grm.cal.
22	297	grm.cal.
28	266	grm.cal.

There was less light on sunny days after November 9, than there was on the cloudiest days in July. Although the sun's angle was lower in August than in July, more total solar energy was received in August. This was due to a prolonged cloudy period in July. The accompanying chart shows the average solar energy by months with predicted light for the next four months.