Estimating Daily Green Leaf Area Index for Corn In Virginia

by

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(ABSTRACT)

A model to predict the daily green leaf area index (GLAI) for corn has been developed for Indiana conditions. Using daily maximum and minimum temperatures the GLAI was predicted for the vegetative stage, reproductive and grain filling stage, and the leaf senescing stage of corn. Predictions of GLAI for corn can be made on a daily basis from the day corn is planted until it is harvested for grain.

The GLAI model was tested under Virginia conditions using green leaf area measurements collected from corn plants grown on Davidson silty clay loam, Davidson silty clay, and Mayodan sandy loam soils in the Piedmont region of the State. Maximum and minimum temperature data were also collected at the three sites. Measurements were made for two growing seasons using corn hybrid Pioneer 3369A, three plant population densities and two irrigation schedules. Short duration temperature data were also collected to compare with the daily maximum and minimum temperature data for the Mayodan site. Also a combination of soil temperature at 10 cm depth and air temperatures were used for the temperature functions accumulated from date of planting at the Mayodan site.

Results of this study show that the predicted and measured GLAI values compare favorably under irrigated conditions on the Davidson soil. The results were not as favorable on the irrigated corn on the Mayodan soil. When the corn is subjected to severe moisture stress on either soil, GLAI cannot be predicted with this model. Short duration temperature data resulted in a better prediction of GLAI on the Mayodan soil. When applying nitrogen fertilizer to the corn through the irrigation system through the grain filling stage, the measured GLAI values compared favorably with the predicted GLAI values. However, the application of nitrogen and sulfur fertilizer together resulted in GLAI being maintained above that predicted for a longer period of time during the grain filling stage before its decline.

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INTRODUCTION

Total plant growth and final yield are influenced by the amount of solar radiation intercepted by the green leaves. Thus, it is necessary to estimate Green Leaf Area Index especially in circumstances where some weather-crop models are used to predict plant growth and yield (Dale et al., 1980).

Green Leaf Area Index is the ratio of the area of one side of the green leaves of a plant to the area of the soil surface allocated to that plant. A more meaningful way of analyzing growth in crops became greatly emphasized after the introduction of the leaf area index concept. A flat layer of leaves over a unit area would reflect 10% of the incoming radiation, absorb 80%, and transmit about 10% to the next leaf area. Leaves are not always oriented in a flat layer, so the leaf area index serves as an indicator of the surfaces available for light absorption and it also provides a more useful way for discussing the photosynthetic potential of any given crop rather than evaluating the leaf area per plant. This may have a lot of variation as plant population, plant distribution or variety is changed (Mitchell, 1970). With the Green Leaf Area Index model, decisions can be made concerning when to irrigate and time and frequency of fertilizer application. With good decisions on when to irrigate, crop quantity and quality can be improved, water-energy use can also be reduced. Successful moisture management is also time-saving for farm managers through integration of irrigation management into other farming operations. With fertilizer applications, good management deci-

sions are important if the supply of each nutrient needed for optimum growth at all stages is to be maintained.

OBJECTIVES

The overall objective of this study was to test in Virginia the Green Leaf Area Index (GLAI) model developed for corn in Indiana. The specific objectives are:

1. to test the GLAI model on two soil types in Virginia,

2. to test the GLAI model using two irrigation schedules,

3. to test the GLAI model using daily maximum and minimum temperature and short duration temperature data, and

4. to test the GLAI model using air temperatures only and a combination of soil and air temperatures.

REVIEW OF LITERATURE

Weather variables need to be considered if one is to assist in the interpretation of field experiments and to encourage more efficient use of our valuable climatic resources. The variables that may limit plant growth and development are light, moisture and temperature (Coelho and Dale, 1980). In order to predict the increase in dry matter of total above ground corn from the time the growing point rises above the soil surface to silking, an energy crop growth variable was developed (Coelho and Dale, 1980).

The prediction model described by Dale et al. (1980) was developed using three phenological periods based on a temperature function from date of planting to day t. Temperature Function (FT) according to Coelho and Dale (1980) are as follows:

$$FT = 0.027T - 0.162; \quad 6C \leq T < 21C, \quad [1a]$$

$$FT = 0.086T - 1.41; \quad 21C \leq T < 28C, \quad [1b]$$

$$FT = 1.0 \quad ; \quad 28C \leq T < 32C, \quad [1c]$$

$$FT = -0.083 + 3.67 \quad ; \quad 32C \leq T < 44C, \quad [1d]$$

$$FT = 0; \quad ; \quad 6C > T \geq 44C. \quad [1e]$$

where T = temperature

C = centigrade

The daily FT values were estimated as the mean of the temperature functions for the maximum and minimum temperatures as in Eq. [2].

$$FT = (FT_{max} + FT_{min})/2 \quad [2]$$

where FT_{max} = temperature function at daily maximum temperature

FT_{min} = temperature function at daily minimum temperature

The leaf area index (LAI) during the first period (planting to silking) was described by a logarithmic function of population and summation of temperature function (Dale et al., 1980). This function is:

$$LAI_t = [P(LA_{max})]/[10\ (1 + LA_{max}/0.01)\ \exp(-B\Sigma FT_t)] \quad [3]$$

where

P = plant population (thousands of plants/ha)

LA_{max} = plant maximum leaf area, m^2 (function of P)

$$= 0.9 - 0.003P \quad [4]$$

10 = a constant required to convert thousands of plants/ha to plants/m^2

0.01 = assumed magnitude of leaf area at time zero in m^2

B = growth rate parameter (function of ΣFT_t)

$$= 0.06 + 0.004\ \Sigma FT_t \quad [5]$$

ΣFT_t = accumulated sum of temperature function from the date of planting to day t ($\Sigma FT = 37$, established value)

In order to predict GLAI for the second period (from silking to the beginning of leaf senescence, equation [6] was used (Dale et al., 1980). The equation is:

$$LAI = LAI_1 - M(\Sigma FT - 37) \quad [6]$$

where

LAI_1 = the green leaf area index calculated at the end of the first period.

$M = 0.0008\ P - 0.015$ [7]

Equation [8] was used to predict LAI for the third period which is the rapid leaf senescing period. The equation is:

$$LAI = LAI_2 - 0.15D \quad [8]$$

where

LAI_2 = the leaf area index predicted at the end of period 2 at $\Sigma FT = 58$

D = the number of days past the date on which $\Sigma FT \geq 58$

Besides the prediction model of Dale et al. (1980) and Coelho and Dale (1980) other models have been developed to study crop growth and development. Duncan (1975) and Reetz and Hollinger (1980) used physiological models to study the effect of light, moisture, and temperature on crop growth and development from planting to maturity. Thompson (1969) used statistical regression models to predict state average crop yields using monthly state averages of temperature and total precipitation. Models that are intermediate between the physiological and multiple re-

gression approaches have also been developed. Three weather and soil variables were analyzed to determine their daily contributions to final wheat yield as a function of biometeorological time scale (Baier, 1973). Biometric methods for fitting plant growth curves in time have been the Gompertz (Winsor, 1932) and the logistic (Grossman, 1969) equations. These curves fit the initial LAI increase and do not handle the LAI decline after it has reached its maximum. Hunt and Parson (1974), however, developed a standardized regression analysis to fit both increasing and decreasing segments of LAI curves on linear time.

Coelho (1978) developed a model of temperature function (FT) to predict corn (Zea mays L.) silking date based on soil maximum and minimum temperatures at 10 cm depth from planting until $\Sigma FT = 12$ and then air temperatures. Silking date was established as the date when $\Sigma FT = 37$. The temperature function and experimental data were also used in the development of a method to estimate Leaf Area Index (LAI) for corn in Tippecanoe County, Indiana.

To predict dates of silking and corn hybrid maturity, four other thermal indexing methods have been used: 1) ΣGDD; 2)ΣMGDD; 3) ΣCHU; and 4) ΣDAYS (Coelho and Dale, 1980). The Growing Degree Day (GDD) index or ΣGDD is the oldest and most commonly used index for predicting dates of flowering and maturity. The GDD for a given day is defined as the difference between the daily mean temperature, estimated as the average of the daily maximum and minimum temperatures which for corn is 10C (Gilmore and Rogers, 1958). The Modified Growing Degree Days (MGDD) index or ΣMGDD is presently used by the National Weather Service and in the National Weekly Weather and Crop Bulletin (Barger, 1969). This method provides a

curvilinear plant response function similar to that of Lehenbauer's (1914). The Corn-Heat Unit (CHU) as defined by Brown (1975) is a function of temperature in which the maximum and minimum temperatures were considered separately. The last method (ΣDAYS) was the number of calendar days from planting to silking. Cross and Zuber (1972) compared 22 thermal unit methods for predicting the number of days from planting to corn pollen shed. The CHU, MGDD, and "effective degree" methods were three of the methods evaluated. They found that the heat stress method was best, although its advantage over the MGDD method was very slight.

Denmead and Shaw (1960) reported that the most critical stage in the development and yield of corn is the silking stage. They reported that moisture stress at silking reduced yield by 50%, with the most effects on reduction in the number of kernels per ear. Moisture stress before silking reduced yield by 25%; and after silking, grain yield was reduced by 21%. Ritchie and Hanway (1982) refer to silking as the R1 stage in corn development. They reported that R1 begins when any silks are visible outside the husks. In another study, Shaw (1974) calculated the daily ratios of actual to potential evapotranspiration (ET/PET) for the period 40 days before to 45 days after silking and concluded that experimental corn yields were highly correlated with a plant moisture-stress index.

In a study conducted by Reddy (1972) on moisture use by two corn hybrids at four plant populations, high plant populations were found to utilize slightly more moisture even though the differences with the low plant populations were not statistically significant. He also found that leaf area and LAI values were lower during the first year of the study than in the second. The different climatic conditions prevailing during

the crop growth period of these years resulted in the highly significant differences in leaf areas and LAI values in the various plant populations.

Leaf area index (LAI) is an important factor in describing crop canopies. Accurate measurements of LAI are laborious and time consuming. Many methods of measuring LAI of corn which have been reported vary greatly in their accuracy, precision, bias, and ease of measurement. Daughtry and Hollinger (1983) examined the magnitude of plant-to-plant variability of leaf area of corn plants selected from uniform plots and evaluated four representative methods for measuring LAI. They found that variability or experimental error could be due to the measurement technique employed and by non-uniformity within the plot.

In another study, Wolf et al. (1972) reported that the most acceptable method of leaf area determination should be adhered to for a given species. The importance of the leaf area index (LAI) is in relation to interception of light for maximum growth. Any LAI below 1 will allow some light energy to fall onto the soil, but due to natural display of leaves the LAI must be above 1 before most of the light will be intercepted. Many methods have been used to determine the area of leaves, and each researcher uses the method that works best for a given crop (Wolf et al., 1972). Methods available for the determination of leaf area include leaf outline on graph paper, planimetric, gravimetric and dot counting methods (Marshall, 1968). Other methods include air flow interception and linear measurements to leaf area.

Hunter (1977) showed that plants established under the long photoperiod were larger and had more leaves and greater leaf area. The concept that in short season regions the selection of genotypes with

greater leaf area should result in increased yield was supported by his work. In another study on leaf area, Nunez and Kamprath (1969) reported that leaf area index increased linearly as the plant population of corn increased from 34,500 to 69,000 plants per hectare. The leaf area per plant, however, decreased as the plant population increased. In a study conducted in Iowa, Eik and Hanway (1965) reported that increasing the availability of nutrients, especially nitrogen, early in the season increased the number of leaves formed per plant and also increased the rate of leaf emergence and leaf area expansion.

MATERIALS AND METHODS

The evaluation of the Green Leaf Area Index (GLAI) model in Virginia on selected soils was accomplished by using weather and GLAI data. The soils selected were the Davidson silty clay loam (Rhodic Paleudult, clayey, Kaolinitic, thermic) in 1983 (as described in the Appendix, Table 10) and the Davidson silty clay (Rhodic Paleudult, clayey, Kaolinitic, thermic) in 1984 (as described in the Appendix, Table 11) and the Mayodan sandy loam (Typic Hapludult, clayey, Kaolinitic, thermic) in 1983 (as described in the Appendix, Table 12).

The Davidson soil sites were located at the Piedmont Research Station, Orange, Virginia. The Mayodan soil site was located at the Southern Piedmont Research and Continuing Education Center, Blackstone, Virginia.

For the growing seasons in 1983 and 1984 at the Davidson site, corn Hybrid Pioneer 3369A was planted in 76-cm rows and thinned to 64,000 plants/ha for the high plant population density, and 54,000 plants/ha for the low plant population density. For the growing season in 1983 at the Mayodan site, corn Hybrid Pioneer 3369A was planted in 61-cm rows and thinned to 54,000 plants/ha for the high plant population density and 44,000 plants/ha for the low plant population density.

For fertilizer application, nitrogen and sulfur fertilizers were applied through the irrigation system at the Mayodan site in 1983 and at the Davidson site in 1984 (Table 1). Only nitrogen fertilizer was applied through the irrigation system at the Davidson site in 1983. To use the GLAI model, soil/air temperature and air temperature values were obtained

Table 1. Application of nitrogen and sulfur fertilizers to the test plots in 1983 and 1984.

Date	Fertilizer kg ha^{-1} (lbs A^{-1})	
	Nitrogen	Sulfur
MAYODAN SANDY LOAM		
05/03/83 (Preplant)	67.2 (60)	-- --
06/13/83 (Irrigation)	44.8 (40)	6.4 (5.7)
06/20/83 (Irrigation)	84.0 (75)	12.0 (10.7)
06/27/83 (Irrigation)	84.0 (75)	12.0 (10.7)
07/25/83 (Irrigation)	168.0 (150)	24.0 (21.4)
DAVIDSON SILTY CLAY LOAM		
04/19/83 (Preplant)	33.6 (30)	-- --
06/17/83 (Irrigation)	44.8 (40)	-- --
06/17/83 (Irrigation)	44.8 (40)	-- --
06/30/83 (Irrigation)	44.8 (40)	-- --
07/11/83 (Irrigation)	44.8 (40)	-- --
07/19/83 (Irrigation)	22.4 (20)	-- --
07/29/83 (Irrigation)	22.4 (20)	-- --
DAVIDSON SILTY CLAY		
04/19/84 (Preplant)	33.6 (30)	-- --
06/04/84 (Irrigation)	44.8 (40)	6.4 (5.7)
06/08/84 (Irrigation)	44.8 (40)	6.4 (5.7)
06/15/84 (Irrigation)	44.8 (40)	6.4 (5.7)
06/29/84 (Irrigation)	44.8 (40)	6.4 (5.7)
06/13/84 (Irrigation)	44.8 (40)	6.4 (5.7)

from the Mayodan site in 1983; and air temperature values were obtained from the Davidson site in 1983 and 1984. Green Leaf Area (GLA) measurement data were collected in 1983 at the Mayodan site and in 1983 and 1984 at the Davidson site. At the two sites in 1983, GLA measurements were taken from 64 permanent corn plants, 32 corn plants for the high plant population and 32 corn plants for the low plant population. One-half of each corn plant population was irrigated, and the other half was not irrigated. Similar procedures for measurements were undertaken for the Davidson site in 1984, the only site where corn was grown, except that 80 permanent corn plants were measured instead, forty from the high plant population and forty from the low plant population.

For the Mayodan site in 1983, predicted GLAI values were obtained by the use of daily maximum and minimum soil/air temperatures and by the use of air temperatures alone. Predicted GLAI values obtained with soil/air and air temperature data taken at ten-minute intervals (short duration) were used to compare with the measured GLAI values.

In each plot, four plants were marked for measurements. The same plants were measured repeatedly each week to avoid plant to plant variability. After calculating the GLAI at the two sites, graphs were plotted to show the GLAI, ΣFT, and number of days after $\Sigma FT = 58$ relationships.

The GLAI measurements were described in three periods. The first period (vegetative stage) was described by a logarithm function of population against summation of temperature function (equation [3]). Equation [6] was used to predict GLAI for the second period (reproductive and grain filling stage), and equation [8] was used for the third period which is the rapid leaf senescing stage. Measurements for GLAI calcu-

lations began when $\Sigma FT \geq 12$ and continued on a weekly basis until leaf senescence. The length and maximum width of each leaf not in the whorl was measured using a cloth tape, and a factor of 0.75 was used to correct the rectangular area to the actual corn leaf area. The percent green was determined by visually estimating the proportion of the leaf that was green in comparison to the part that was not using a scale of zero to one. This factor was multiplied by the actual corn leaf area to give the actual green leaf area of the corn leaf.

The daily temperature function (FT) was determined utilizing equation [2]. The daily values of FT were summed from date of planting (t=1) to Day t (ΣFT_t) and used as the phenological time variable to predict $GLAI_t$ on Day t. When available, the soil temperature at 10 cm depth was utilized for FT calculations until the $\Sigma FT = 12$. After $\Sigma FT \geq 12$, then the air temperatures were used for calculations of ΣFT. When soil temperatures were not available, air temperatures were utilized for all calculations of ΣFT.

To determine how well the measured GLAI values fit the predicted values, a relationship was established between Green Leaf Area Index, summation of temperature functions, and number of days after $\Sigma FT \geq 58$. To derive the measured values, an average of the green leaf area values was found per plot and then converted to green leaf area index by the use of the ratio of number of plants per hectare to plants per acre. To derive the predicted values, equation [3] was used to derive the values for the first period, equation [6] for the second period 2, and equation [8] for the third period.

RESULTS AND DISCUSSION

Data on Green Leaf Area (GLA) measurements were collected from the full season corn hybrid (Pioneer 3369A) grown under optimum fertility conditions in 1983 and 1984. The measured values of GLAI were compared with the predicted values.

The measured and predicted GLAI values for corn grown under irrigated and non-irrigated conditions on a Davidson silty clay loam are reported in Table 2 and Figures 1 and 2 for the 1983 crop year. The measured GLAI values for the irrigated and non-irrigated corn were very close for the first three weeks of leaf measurements on the high plant population and for the first four weeks on the low plant populations. After this, the measured values for the irrigated and non-irrigated corn were not the same because of moisture stress. As evidenced by the GLAI measurements in Figures 1 and 2, moisture stress appeared in the high plant population approximately one week earlier than it did in the low plant population. Measured values were not obtained from the non-irrigated corn after the seventh week of the growing season because the non-irrigated corn plants were blown over by a windstorm on July 20, 1983.

The measured GLAI values lagged the predicted GLAI values during the vegetative stage ($12 \leq \Sigma FT \leq 37$) by approximately seven days (Fig. 1 and 2 and Table 2). For the irrigated corn at both plant populations during the silking and grain filling period and the leaf senescing period, the measured and predicted values agreed very closely with each other (Fig.

Table 2. Comparison between predicted and measured green leaf area index of corn hybrid Pioneer 3369A on Davidson soil in 1983 at 64,000 and 54,000 plants/hectare using daily maximum and minimum air temperatures.

		64,000 PLANTS/HA			54,000 PLANTS/HA			
			I[#]	NI[##]		I[#]	NI[##]	PHEN[•]-
DAP[*]	ΣFT_t[°]	PGLAI[+]	MGLAI[++]	MGLAI[++]	PGLAI[+]	MGLAI[++]	MGLAI[++]	PERIOD
32	12	0.22	--	--	0.19	--	--	1
50	22	1.22	0.52	0.57	1.05	0.47	0.58	1
57	26	2.39	1.26	1.31	2.07	1.19	1.37	1
64	30	3.52	2.24	2.12	3.08	2.08	2.28	1
71	35	4.22	3.42	2.99	3.71	2.98	3.05	1
75	37	4.40	--	--	3.87	--	--	2
78	39	4.31	4.24	3.32	3.81	3.64	3.32	2
85	44	4.16	4.31	3.20	3.68	3.68	2.91	2
92	48	3.99	3.97	2.83	3.56	3.52	2.70	2
99	52	3.84	3.91	--	3.44	3.44	--	2
106	57	3.68	3.93	--	3.31	3.40	--	2
109	58	3.64	--	--	3.28	--	--	3
	NUMBER OF DAYS AFTER ΣFT=58							
113	4	3.04	3.47	--	2.68	2.84	--	3
120	11	1.99	3.22	--	1.63	2.70	--	3
127	18	0.94	1.97	--	0.58	1.75	--	3

[#]I = irrigated

[##]NI = non-irrigated

[*]DAP = days after planting

[°]ΣFT_t = summation of temperature function

[+]PGLAI = predicted green leaf area index

[++]MGLAI = measured green leaf area index

[•]PHEN = phenological

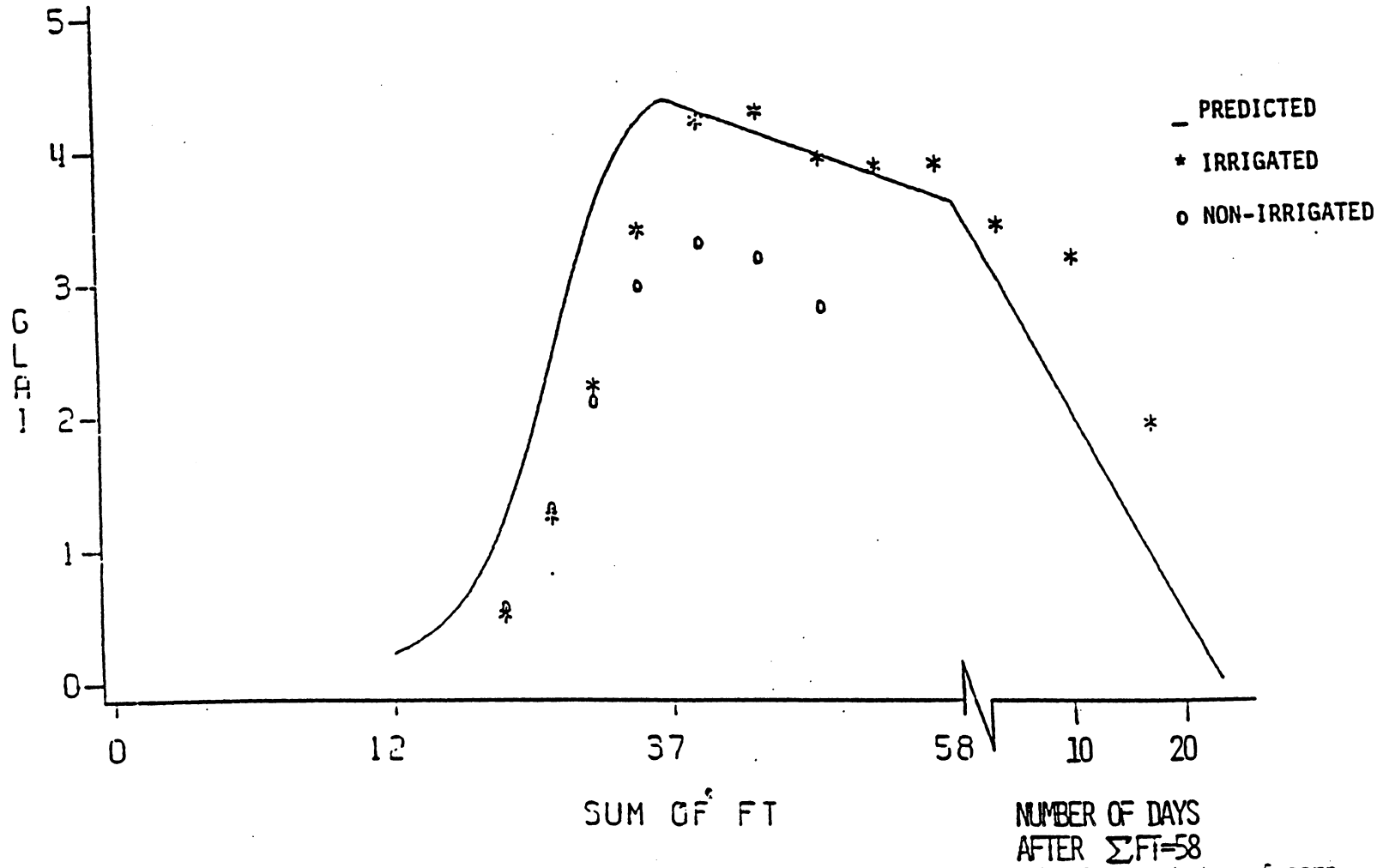

Fig. 1. Relationship between predicted (Dale et al., 1980) and measured green leaf area index of corn hybrid Pioneer 3369A versus summation of temperature function using daily maximum and minimum air temperatures and number of days after ΣFT=58 for Davidson soil in 1983 at 64,000 plants/hectare.

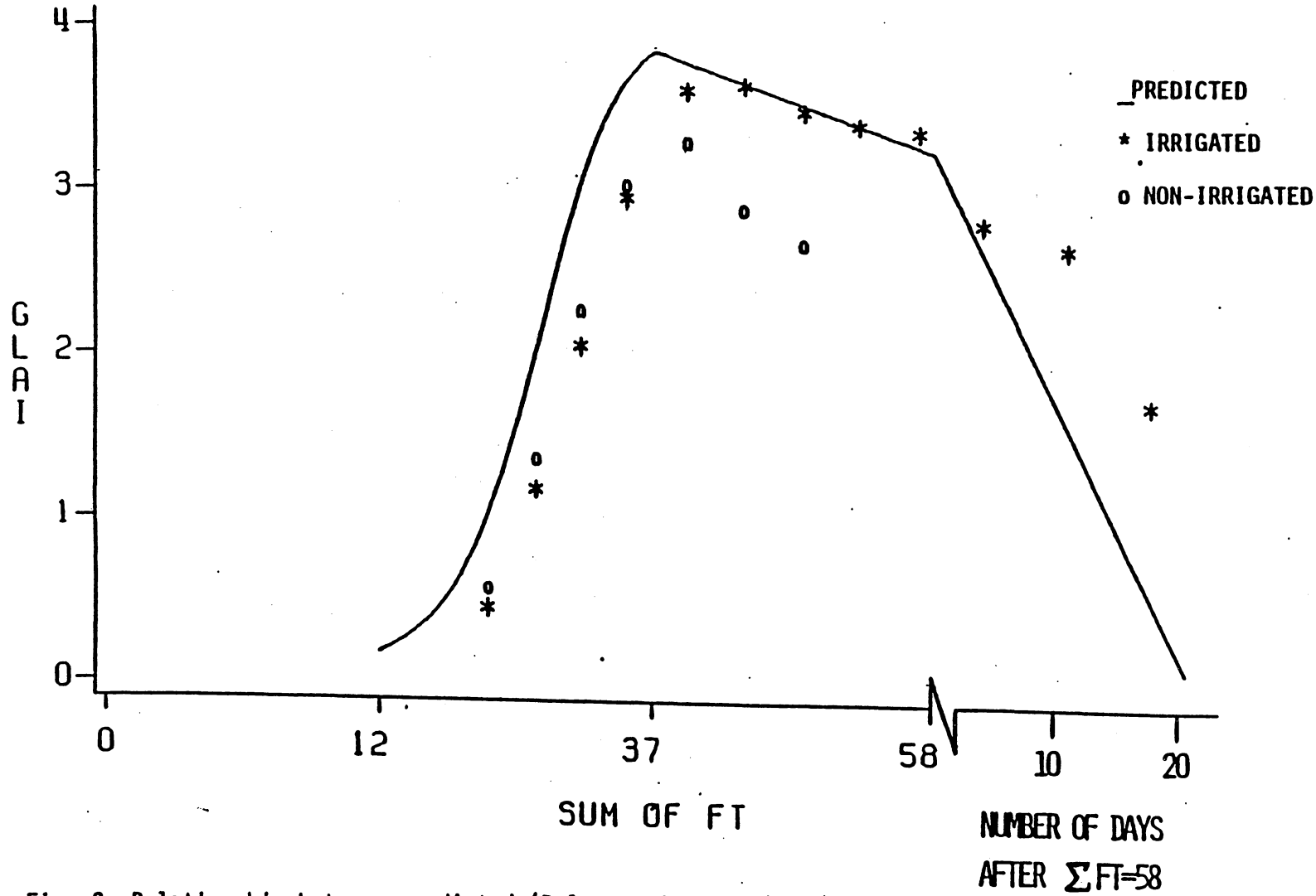

Fig. 2. Relationship between predicted (Dale et al., 1980) and measured green leaf area index of corn hybrid Pioneer 3369A versus summation of temperature function using daily maximum and minimum air temperatures and number of days after ΣFT=58 for Davidson soil in 1983 at 54,000 plants/hectare.

1 and 2, and Table 2). For the non-irrigated corn, the measured values were well below the predicted values.

For the 1984 growing season, the measured and predicted GLAI values for corn grown under irrigated and non-irrigated conditions on a Davidson silty clay are reported in Table 3 and Figures 3 and 4. The measured GLAI values for the non-irrigated corn plants are considerably below the measured GLAI values for the irrigated corn plants throughout the growing season. The difference between the two values increased with time during the growing season.

The measured GLAI values lag the predicted GLAI values by approximately 4-6 days for the vegetative stage (Table 3). During the grain filling stage, the measured GLAI values exceed the predicted values. The measured GLAI values also appear to level off rather than decline like the predicted values.

The predicted values for the Davidson silty clay loam and Davidson silty clay in 1983 and 1984 were based on daily maximum and minimum air temperatures.

The results of the 1984 growing season from the Davidson silty clay shows that the measured GLAI values did not compare as well with predicted GLAI values did during the 1983 growing season. The vegetative stage compared favorably during the two growing seasons. The reproductive and grain filling, and leaf senescing stages in 1983 compared favorably with predicted, while those in 1984 did not. One major reason for the discrepancy, especially during the reproductive and grain filling stage, could be due to the use of a nitrogen and sulfur fertilizer in 1984 whereas only a nitrogen fertilizer was used in 1983. The added sulfur

Table 3. Comparison between predicted and measured green leaf area index of corn hybrid Pioneer 3369A on Davidson soil in 1984 at 64,000 and 54,000 plants/hectare using daily maximum and minimum air temperatures.

		64,000 PLANTS/HA			54,000 PLANTS/HA			
			I[#]	NI[##]		I[#]	NI[##]	PHEN[•]-
DAP[*]	ΣFT_t[°]	PGLAI[+]	MGLAI[++]	MGLAI[++]	PGLAI[+]	MGLAI[++]	MGLAI[++]	PERIOD
32	12	0.22	--	--	0.19	--	--	1
53	23	1.57	0.95	0.53	1.35	0.74	0.44	1
60	28	2.85	1.83	1.13	2.48	1.46	0.81	1
67	32	3.91	3.09	1.89	3.43	2.64	1.35	1
74	36.6	4.38	4.28	2.65	3.85	3.55	1.95	1
75	37	4.40	--	--	3.87	--	--	2
81	42	4.23	4.48	3.10	3.74	3.69	2.26	2
88	46	4.08	4.51	3.03	3.62	3.65	2.37	2
95	50	3.93	4.40	3.07	3.51	3.65	2.29	2
103	55	3.73	4.20	2.99	3.35	3.58	2.27	2
108	58	3.64	--	--	3.28	--	--	3
	NUMBER OF DAYS AFTER ΣFT=58							
109	1	3.49	4.47	3.11	3.13	3.66	2.37	3
116	8	2.44	4.30	3.02	2.08	3.51	2.28	3
123	15	1.39	4.03	2.99	1.03	3.14	2.22	3
131	23	0.19	2.03	2.02	--	1.52	1.19	3
137	29	--	1.49	1.47	--	1.04	0.91	3
144	36	--	0.48	0.51	--	--	--	--
151	43	--	0.19	--	--	--	--	--

[#]I = irrigated

[##]NI = non-irrigated

[*]DAP = days after planting

[°]ΣFT_t = summation of temperature function

[+]PGLAI = predicted green leaf area index

[++]MGLAI = measured green leaf area index

[•]PHEN = phenological

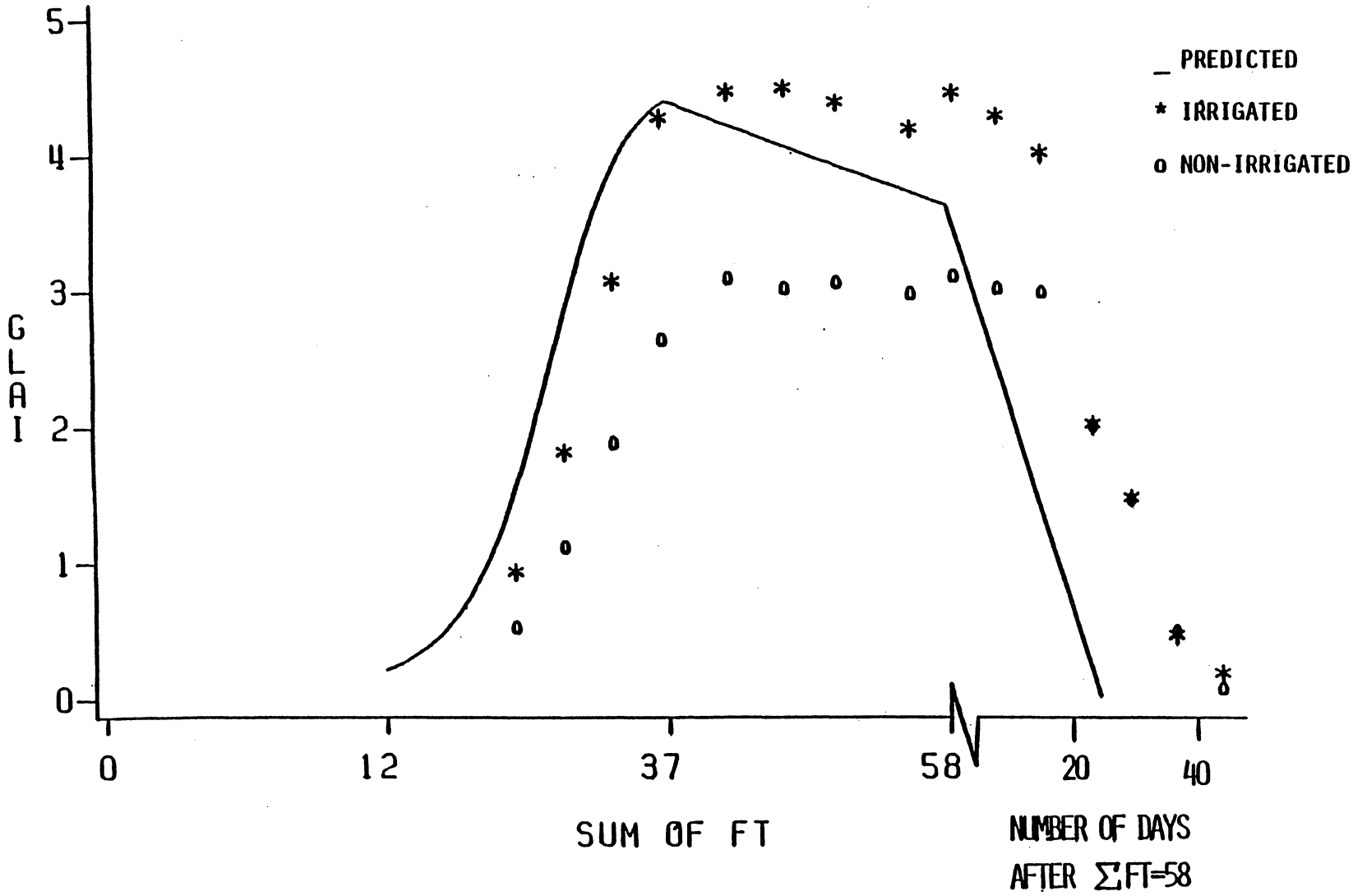

Fig. 3. Relationship between predicted (Dale et al., 1980) and measured green leaf area index of corn hybrid Pioneer 3369A versus summation of temperature function using daily maximum and minimum air temperatures and number of days after ΣFT=58 for Davidson soil in 1984 at 64,000 plants/hectare.

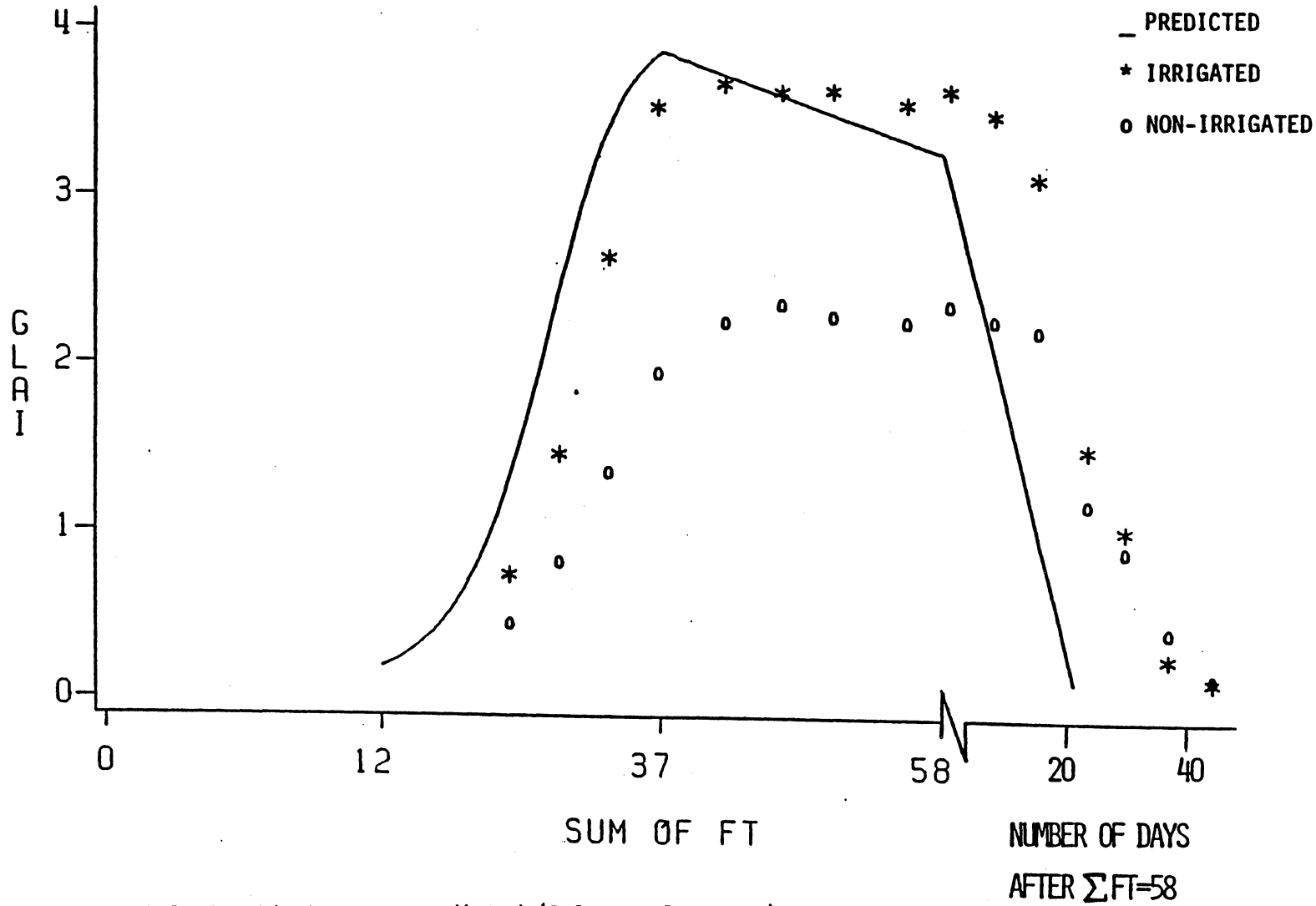

Fig. 4. Relationship between predicted (Dale et al., 1980) and measured green leaf area index of corn hybrid Pioneer 3369A versus summation of temperature function using daily maximum and minimum air temperatures and number of days after ΣFT=58 for Davidson soil in 1984 at 54,000 plants/hectare.

could be responsible for the GLAI being maintained for a longer period of time before it begins to decline.

The measured and predicted GLAI values for corn grown under irrigated and non-irrigated conditions on a Mayodan sandy loam are reported in Tables 4 through 7 and Figures 5 through 12 for the 1983 crop year.

Overall, results for the 1983 crop year show a close agreement between measured and predicted GLAI during the vegetative and leaf senescing stages. During the reproductive and grain filling stage, the measured and predicted GLAI values do not show a close agreement. The green leaf area is maintained for a longer period of time before it begins to decline. This is attributed to the introduction of sulfur into the irrigation system, similar to that done on the Davidson soil in 1983. After the fourth week, no data was available for the non-irrigated corn because of a windstorm that blew the plants over on July 20, 1983.

The measured and predicted GLAI values for the irrigated and non-irrigated corn on Mayodan soil in 1983 using daily maximum and minimum soil/air temperatures are reported in Table 4 and Figures 5 and 6 for the 1983 crop year. The measured GLAI values for the irrigated and non-irrigated corn were fairly close for the first week on the high plant population (Fig. 5) and much closer on the low plant population (Fig. 6) during the first week. After this, the measured value for the irrigated and non-irrigated corn became farther apart because of moisture stress. Moisture stress on both plant populations became more dominant after the first week.

During the vegetative stage ($12 \leq \Sigma FT \leq 37$), the irrigated GLAI values lagged the predicted by approximately six days, while the non-

Table 4. Comparison between predicted and measured green leaf area index of corn hybrid Pioneer 3369A on Mayodan soil in 1983 at 54,000 and 44,000 plants/hectare using daily maximum and minimum soil/air temperatures.

		54,000 PLANTS/HA			44,000 PLANTS/HA			
			I[#]	NI[##]		I[#]	NI[##]	PHEN[•]-
DAP[*]	ΣFT_t[°]	PGLAI[+]	MGLAI[++]	MGLAI[++]	PGLAI[+]	MGLAI[++]	MGLAI[++]	PERIOD
26	12	0.19	--	--	0.16	--	--	1
53	29	2.69	1.53	1.18	2.26	1.35	1.11	1
60	33	3.52	2.74	1.72	2.98	2.29	1.62	1
67	37	3.87	3.12	2.16	3.29	2.68	2.07	2
74	42	3.74	3.23	1.88	3.19	2.91	1.84	2
81	46	3.61	3.22	--	3.10	2.94	--	2
88	50	3.49	3.59	--	3.02	3.13	--	2
95	55	3.36	3.65	--	2.92	3.22	--	2
101	58	3.28	--	--	2.86	--	--	3
	NUMBER OF DAYS AFTER ΣFT=58							
102	1	3.13	3.59	--	2.72	3.12	--	3
109	8	2.08	2.48	--	1.66	2.15	--	3
116	15	1.03	1.50	--	0.62	1.43	--	3
123	22	--	0.58	--	--	0.55	--	3

[#]I = irrigated

[##]NI = non-irrigated

[*]DAP = days after planting

[°]ΣFT_t = summation of temperature function

[+]PGLAI = predicted green leaf area index

[++]MGLAI = measured green leaf area index

[•]PHEN = phenological

Table 5. Comparison between predicted and measured green leaf area index of corn hybrid Pioneer 3369A on Mayodan soil in 1983 at 54,000 and 44,000 plants/hectare using daily maximum and minimum air temperatures.

		54,000 PLANTS/HA			44,000 PLANTS/HA			
			I[#]	NI[##]		I[#]	NI[##]	PHEN[•]-
DAP[*]	ΣFT_t[°]	PGLAI[+]	MGLAI[++]	MGLAI[++]	PGLAI[+]	MGLAI[++]	MGLAI[++]	PERIOD
30	12	0.19	--	--	0.15	--	--	1
53	26	2.02	1.53	1.18	1.69	1.35	1.11	1
60	30	3.09	2.74	1.72	2.61	2.29	1.63	1
67	35	3.73	3.12	2.16	3.17	2.68	2.07	1
71	37	3.87	--	--	3.29	--	--	2
74	39	3.81	3.23	1.88	3.25	2.91	1.84	2
81	44	3.68	3.22	--	3.15	2.94	--	2
88	48	3.56	3.59	--	3.07	3.13	--	2
95	53	3.43	3.65	--	2.97	3.22	--	2
102	56	3.32	3.59	--	2.89	3.12	--	2
105	58	3.28	--	--	2.87	--	--	3
	NUMBER OF DAYS AFTER ΣFT=58							
109	4	2.68	2.48	--	2.26	2.15	--	3
116	11	1.63	1.50	--	1.22	1.43	--	3
123	18	0.58	0.58	--	0.16	0.55	--	3

[#]I = irrigated

[##]NI = non-irrigated

[*]DAP = days after planting

[°]ΣFT_t = summation of temperature function

[+]PGLAI = predicted green leaf area index

[++]MGLAI = measured green leaf area index

[•]PHEN = phenological

Table 6. Comparison between predicted and measured green leaf area index of corn hybrid Pioneer 3369A on Mayodan soil in 1983 at 54,000 and 44,000 plants/hectare using short duration soil/air temperatures.

		54,000 PLANTS/HA			44,000 PLANTS/HA			
			I[#]	NI[##]		I[#]	NI[##]	PHEN[•] -
DAP[*]	ΣFT_t[°]	PGLAI[+]	MGLAI[++]	MGLAI[++]	PGLAI[+]	MGLAI[++]	MGLAI[++]	PERIOD
29	12	0.19	--	--	0.15	--	--	1
54	27	2.18	1.53	1.18	1.82	1.35	1.11	1
61	31	3.29	2.74	1.72	2.78	2.29	1.63	1
68	35	3.79	3.12	2.16	3.22	2.68	2.07	1
71	37	3.87	--	--	3.29	--	--	2
75	41	3.76	3.23	1.88	3.22	2.91	1.84	2
82	46	3.62	3.22	--	3.11	2.94	--	2
89	51	3.47	3.59	--	3.00	3.13	--	2
96	56	3.32	3.65	--	2.89	3.22	--	2
99	58	3.28	--	--	2.86	--	--	3
	NUMBER OF DAYS AFTER ΣFT=58							
103	4	2.68	3.59	--	2.26	3.12	--	3
110	11	1.63	2.48	--	1.21	2.15	--	3
117	18	0.58	1.50	--	0.16	1.43	--	3

[#]I = irrigated

[##]NI = non-irrigated

[*]DAP = days after planting

[°]ΣFT_t = summation of temperature function

[+]PGLAI = predicted green leaf area index

[++]MGLAI = measured green leaf area index

[•]PHEN = phenological

Table 7. Comparison between predicted and measured green leaf area index of corn hybrid Pioneer 3369A on Mayodan soil in 1983 at 54,000 and 44,000 plants/hectare using short duration air temperatures.

		54,000 PLANTS/HA			44,000 PLANTS/HA			
			I[#]	NI[##]		I[#]	NI[##]	PHEN[•]-
DAP[*]	ΣFT_t[°]	PGLAI[+]	MGLAI[++]	MGLAI[++]	PGLAI[+]	MGLAI[++]	MGLAI[++]	PERIOD
34	12	0.19	--	--	0.15	--	--	1
54	24	1.50	1.53	1.18	1.25	1.35	1.11	1
61	29	2.71	2.74	1.72	2.28	2.29	1.63	1
68	33	3.53	3.12	2.16	2.99	2.68	2.07	1
74	37	3.87	--	--	3.29	--	--	2
75	38	3.83	3.23	1.88	3.26	2.91	1.84	2
82	43	3.68	3.22	--	3.15	2.94	--	2
89	49	3.54	3.59	--	3.01	3.13	--	2
96	54	3.39	3.65	--	2.94	3.22	--	2
103	57.9	3.27	3.59	--	2.86	3.12	--	2
104	58.0	3.27	--	--	2.86	--	--	3
	NUMBER OF DAYS AFTER ΣFT=58							
110	6	2.37	2.48	--	1.93	2.15	--	3
117	13	1.32	1.50	--	0.91	1.43	--	3
124	20	0.27	0.58	--	-0.14	0.55	--	3

[#]I = irrigated

[##]NI = non-irrigated

[*]DAP = days after planting

[°]ΣFT_t = summation of temperature function

[+]PGLAI = predicted green leaf area index

[++]MGLAI = measured green leaf area index

[•]PHEN = phenological

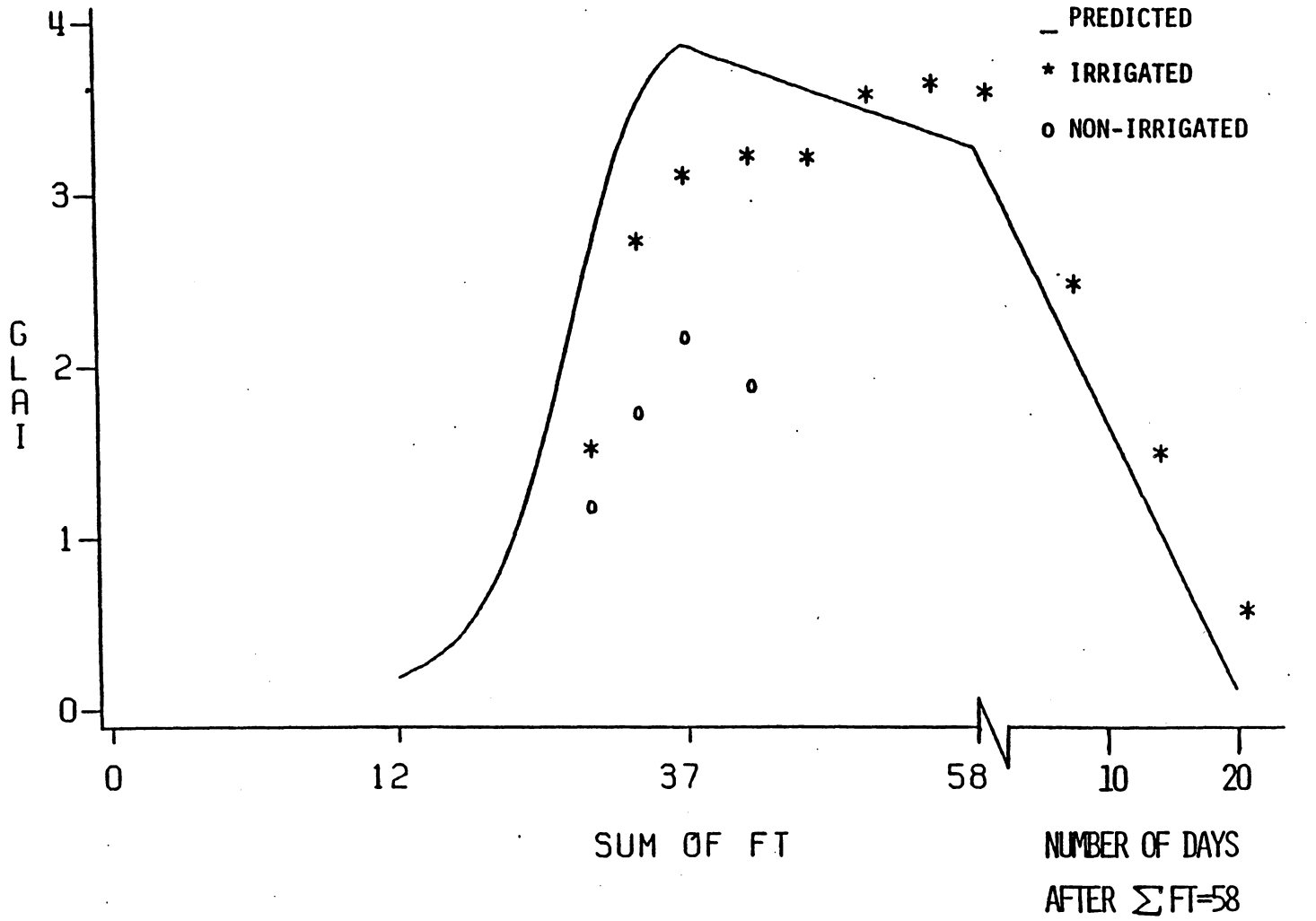

Fig. 5. Relationship between predicted (Dale et al., 1980) and measured green leaf area index of corn hybrid Pioneer 3369A versus summation of temperature function using daily maximum and minimum soil/air temperatures and number of days after ΣFT=58 for Mayodan soil in 1983 at 54,000 plants/hectare.

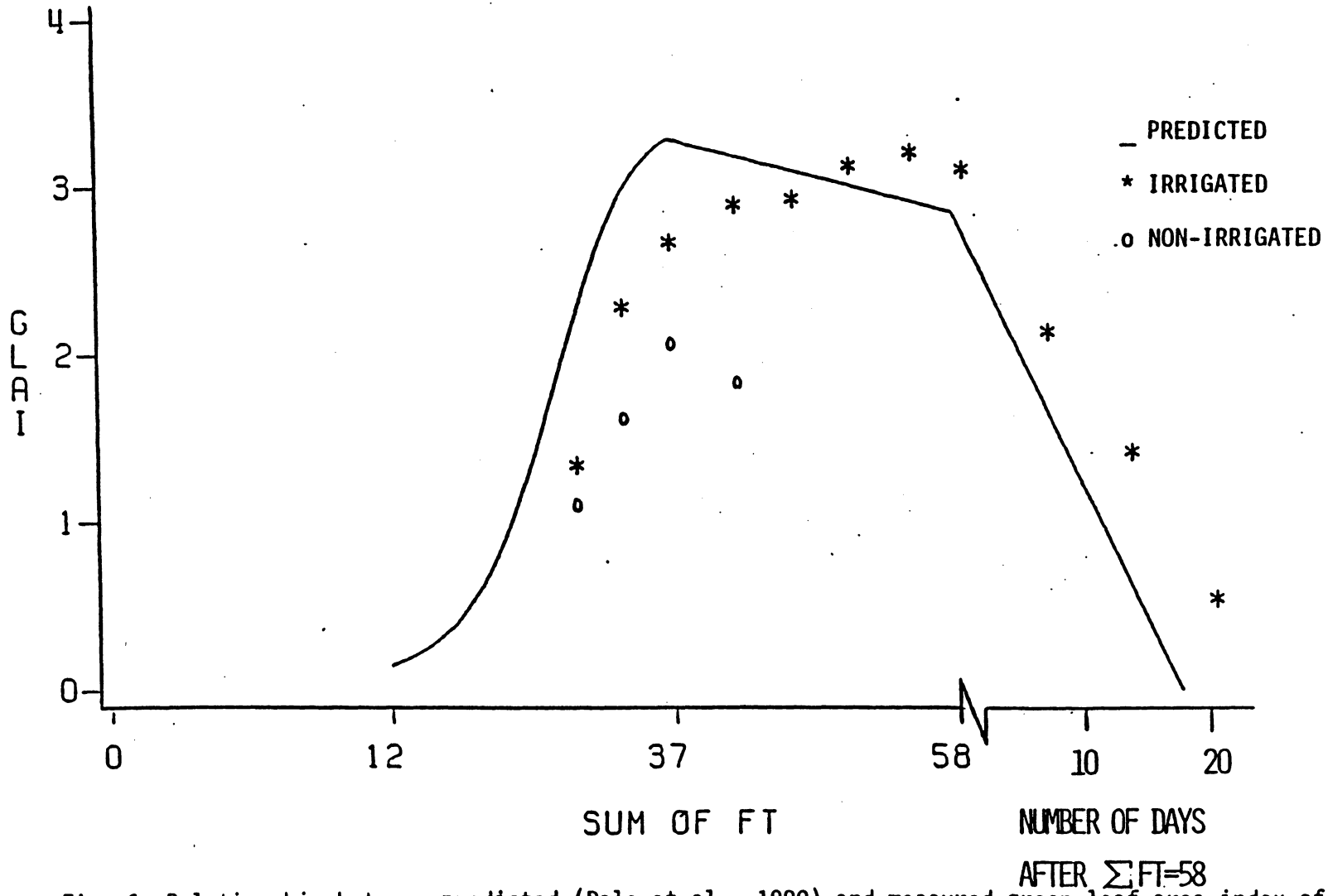

Fig. 6. Relationship between predicted (Dale et al., 1980) and measured green leaf area index of corn hybrid Pioneer 3369A versus summation of temperature function using daily maximum and minimum soil/air temperatures and number of days after ΣFT=58 for Mayodan soil in 1983 at 44,000 plants/hectare.

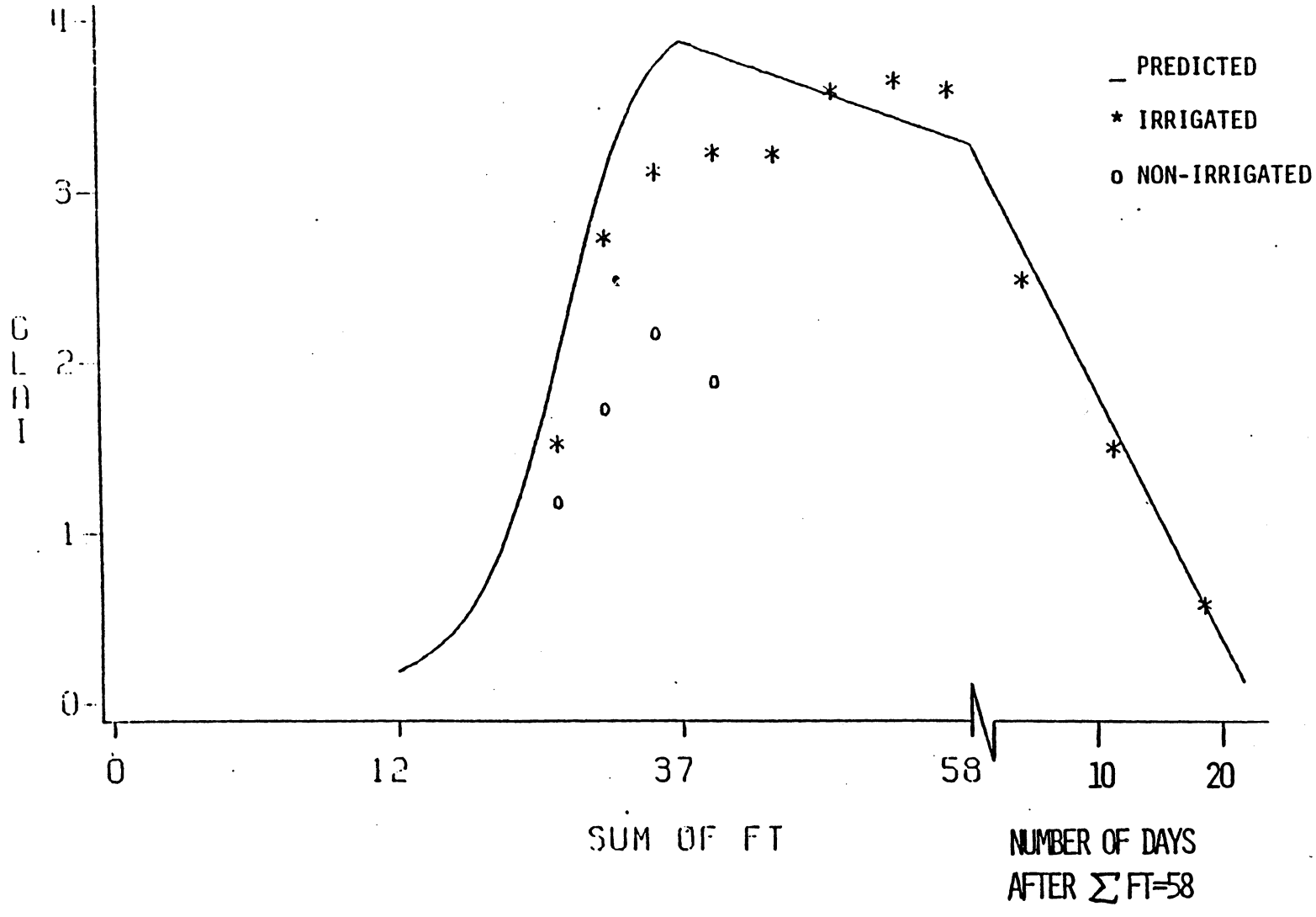

Fig. 7. Relationship between predicted (Dale et al., 1980) and measured green leaf area index of corn hybrid Pioneer 3369A versus summation of temperature function using daily maximum and minimum air temperatures and number of days after ΣFT=58 for Mayodan soil in 1983 at 54,000 plants/hectare.

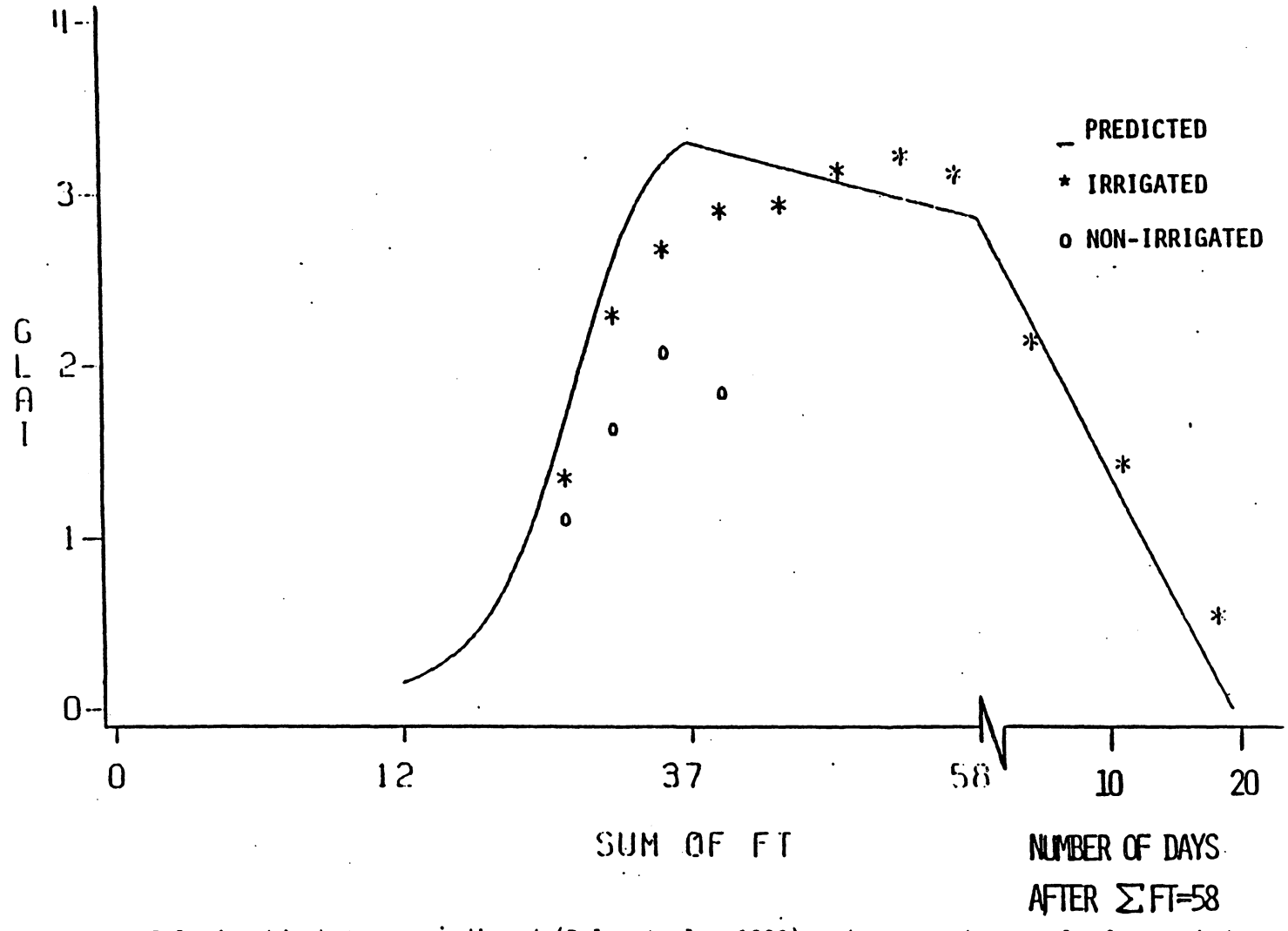

Fig. 8. Relationship between predicted (Dale et al., 1980) and measured green leaf area index of corn hybrid Pioneer 3369A versus summation of temperature function using daily maximum and minimum air temperatures and number of days after ΣFT=58 for Mayodan soil in 1983 at 44,000 plants/hectare.

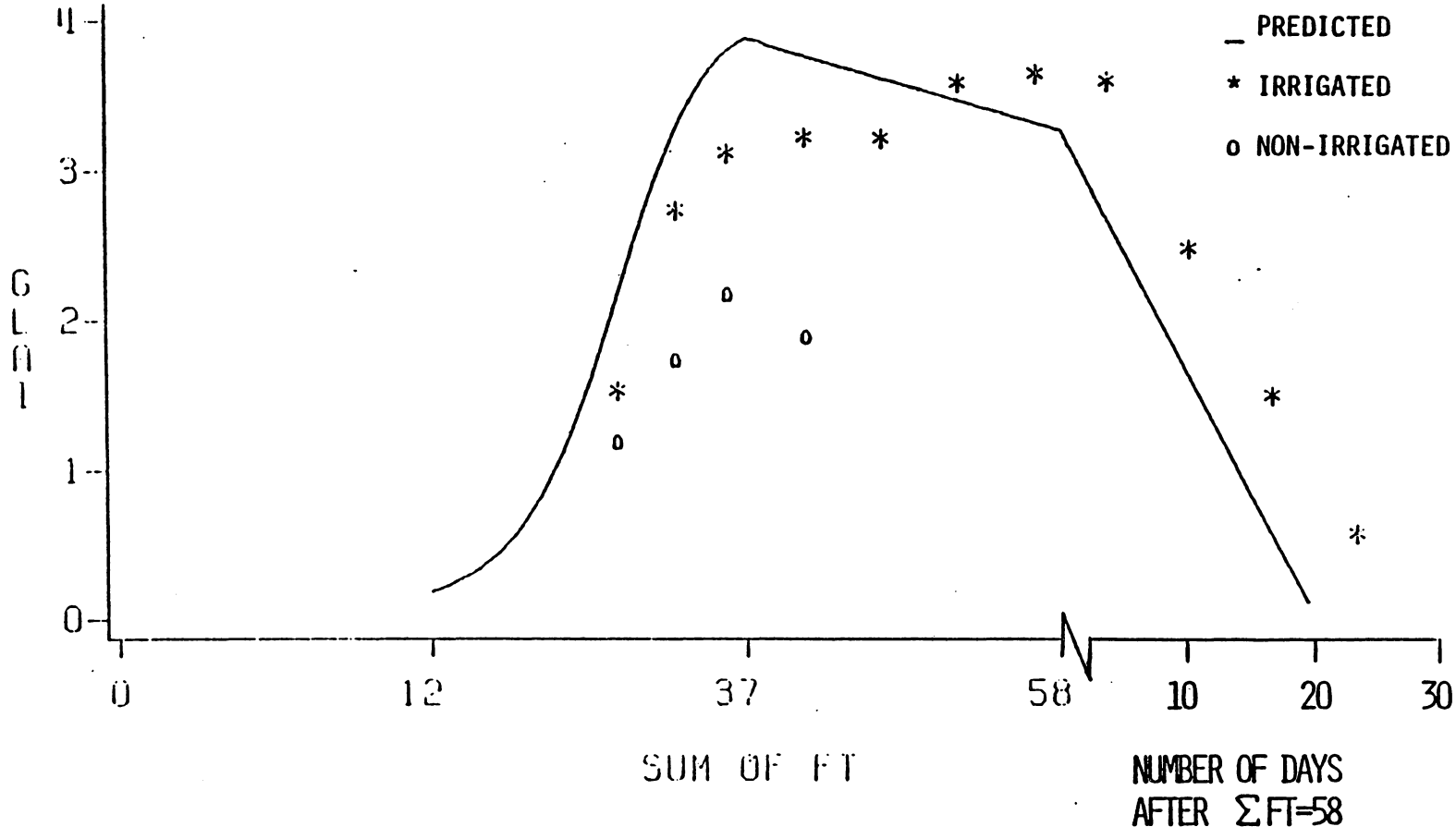

Fig. 9. Relationship between predicted (Dale et al., 1980) and measured green leaf area index of corn hybrid Pioneer 3369A versus summation of temperature function using short duration soil/air temperatures and number of days after ΣFT=58 for Mayodan soil in 1983 at 54,000 plants/hectare.

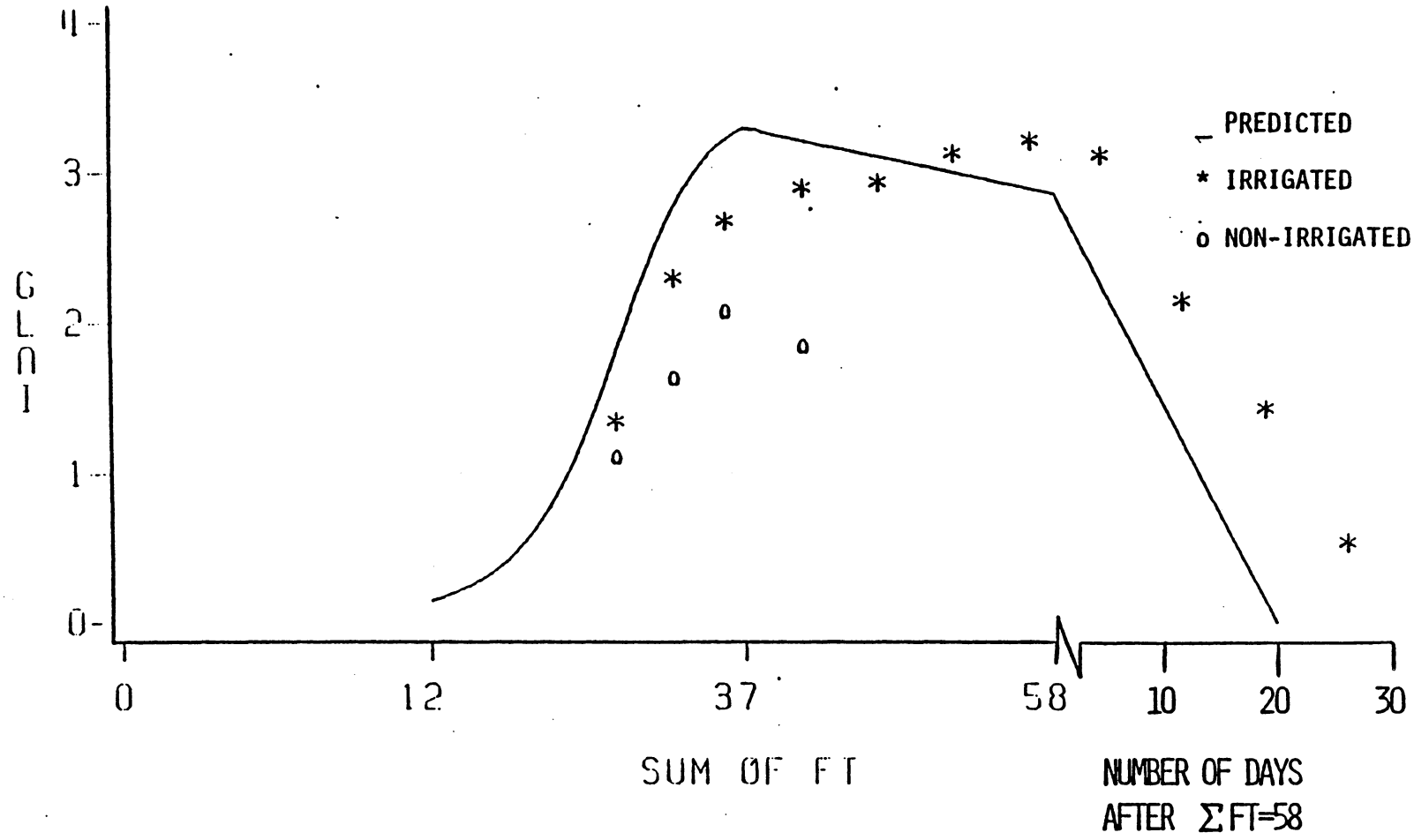

Fig.10. Relationship between predicted (Dale et al., 1980) and measured green leaf area index of corn hybrid Pioneer 3369A versus summation of temperature function using short duration soil/air temperatures and number of days after ΣFT=58 for Mayodan soil in 1983 at 44,000 plants/hectare.

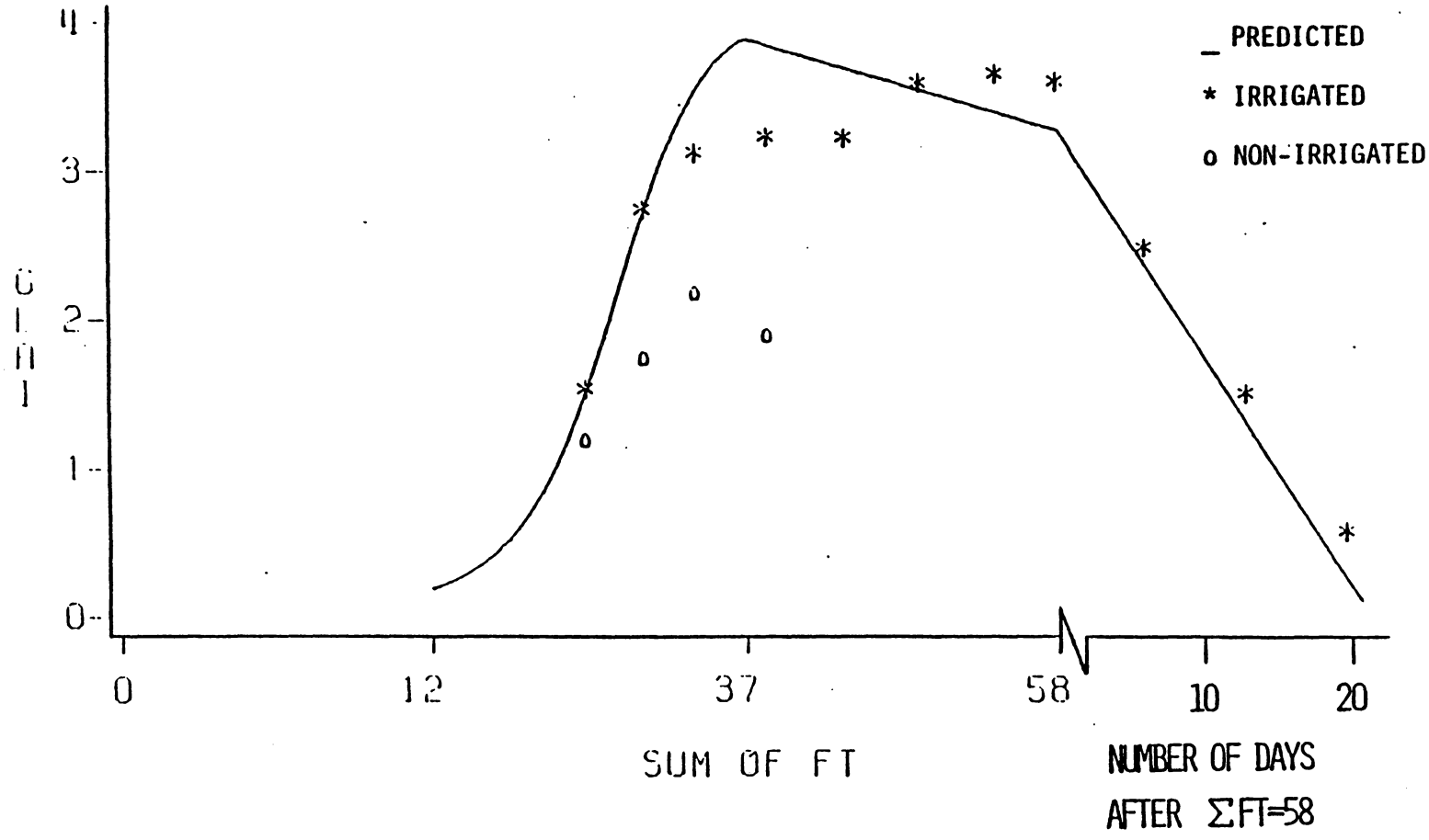

Fig. 11. Relationship between predicted (Dale et al., 1980) and measured green leaf area index of corn hybrid Pioneer 3369A versus summation of temperature function using short duration air temperatures and number of days after ΣFT=58 for Mayodan soil in 1983 at 54,000 plants/hectare.

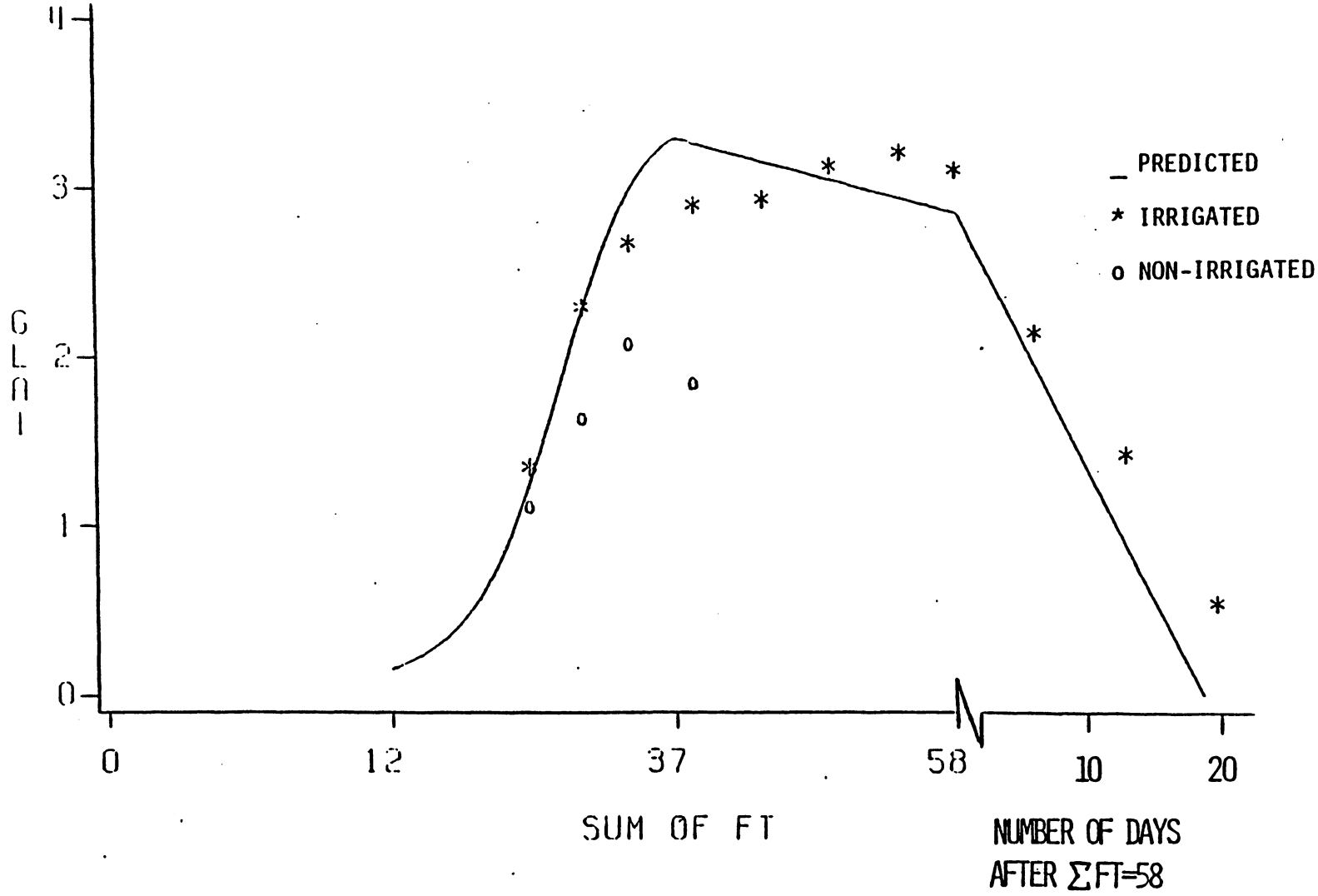

Fig. 12. Relationship between predicted (Dale et al., 1980) and measured green leaf area index of corn hybrid Pioneer 3369A versus summation of temperature function using short duration air temperatures and number of days after ΣFT=58 for Mayodan soil in 1983 at 44,000 plants/hectare.

irrigated GLAI values lagged the predicted by approximately nine days (Fig. 5 and 6 and Table 4).

For the irrigated corn during the reproductive and grain filling period ($37 \leq \Sigma FT \leq 58$) the measured and predicted GLAI values at both plant populations did not agree. The irrigated corn maintained a longer green leaf area during this period, while the predicted values declined. During the leaf senescing period (number of days after $\Sigma FT = 58$), the measured GLAI values for the irrigated were much closer to predicted at high plant population than at the low plant population.

The measured and predicted GLAI values for the irrigated and non-irrigated corn on Mayodan soil using daily maximum and minimum air temperatures are reported in Table 5 and Figures 7 and 8 for the 1983 crop year. During the vegetative stage ($12 \leq \Sigma FT \leq 37$), the irrigated GLAI values lagged the predicted by three days , while the non-irrigated GLAI values lagged the predicted by five days during the first week of measurements. The lag time became greater with increase in summation of temperature function for the non-irrigated corn. The irrigated GLAI values, although under predicted, agreed fairly well with the predicted, while the non-irrigated did not at both plant populations (Fig. 7 and 8). For the irrigated corn at both plant populations during the reproductive and grain filling period, the measured GLAI values were less than the predicted values during the first part of the period, whereas the measured values were greater than the predicted values during the latter part of the period.

During the leaf senescing stage, the measured and predicted GLAI values agreed well with each other at both plant populations (Fig. 7 and

8, Table 5).

The measured and predicted GLAI values for the irrigated and non-irrigated corn on Mayodan soil using short duration soil/air temperatures are reported in Figures 9 and 10 and Table 6 for the 1983 crop year. It appears from Figures 9 and 10 and Table 6 that the predicted GLAI values are shifted approximately two days too early. However when short duration air temperature only is used, the predicted and measured values agree well, especially during the vegetative and leaf senescence periods (Fig. 11 and 12, Table 7).

Results from the study on the Mayodan soil in 1983 show that using air temperatures only to predict GLAI values gave a better estimate than using soil/air temperatures. This is evidenced from the comparison of the soil/air and air daily maximum and minimum temperature method of predicting green leaf area index for Mayodan soil (Fig. 13 and 14) for high and low plant populations. The study shows that when daily maximum and minimum air temperatures are used to predict GLAI values, the irrigated corn and predicted GLAI values compare favorably (Fig. 13 and 14), but when daily maximum and minimum soil/air temperatures are used, the irrigated and predicted GLAI values predict GLAI too soon.

Comparison of the soil/air and air short duration methods for predicting green leaf area index for Mayodan soil in 1983 at high and low plant populations are shown in Figures 15 and 16. The data shows that when short duration air temperatures are used to predict GLAI values, the irrigated corn and predicted GLAI values compare favorably, but when short duration soil/air temperatures are used to predict GLAI values, the irrigated and predicted GLAI values do not compare as well (Fig. 15 and 16).

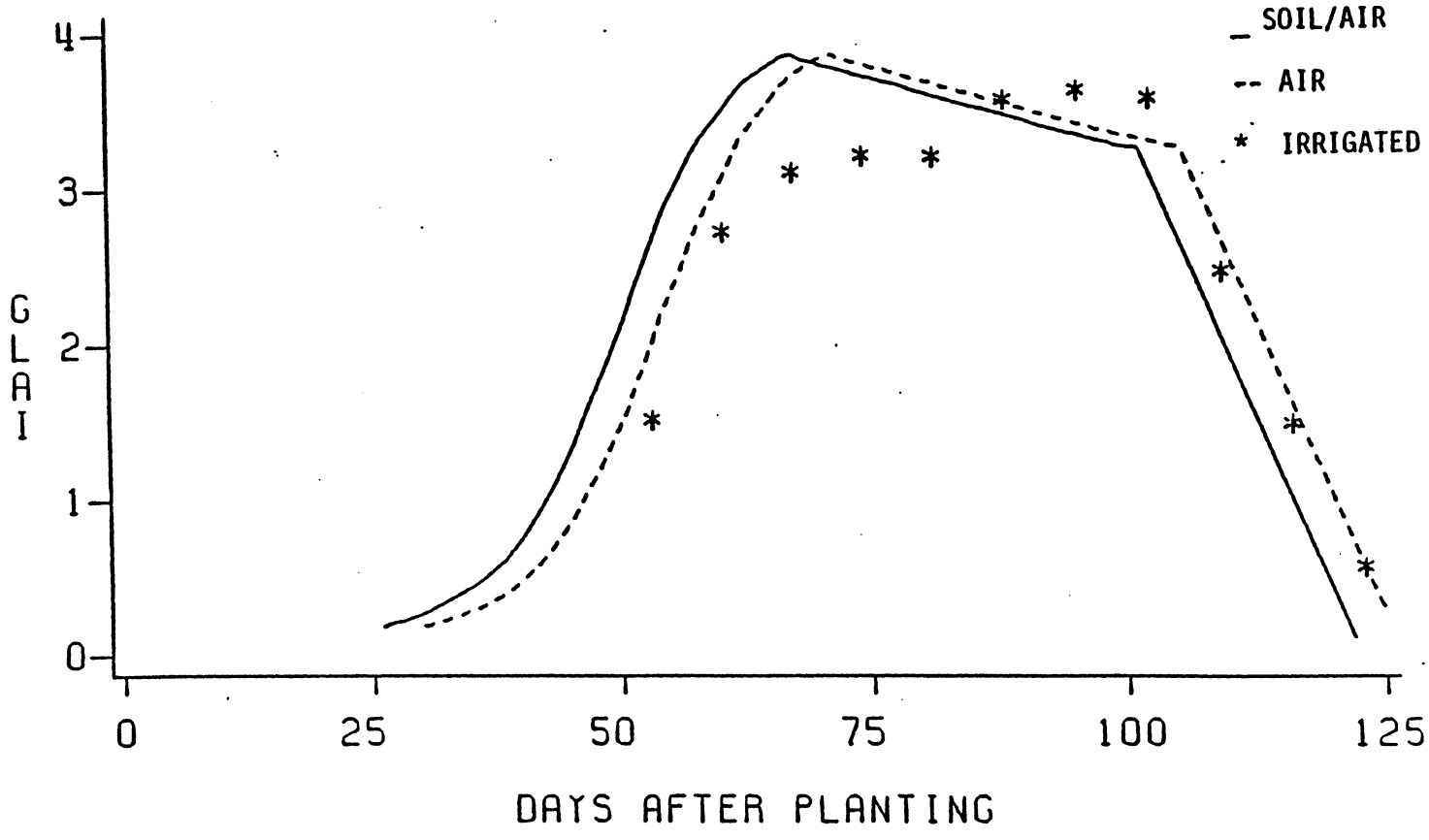

Fig. 13. Comparison of the daily maximum and minimum soil/air and air temperature methods for predicting green leaf area index of corn hybrid Pioneer 3369A versus days after planting for Mayodan soil in 1983 at 54,000 plants/hectare.

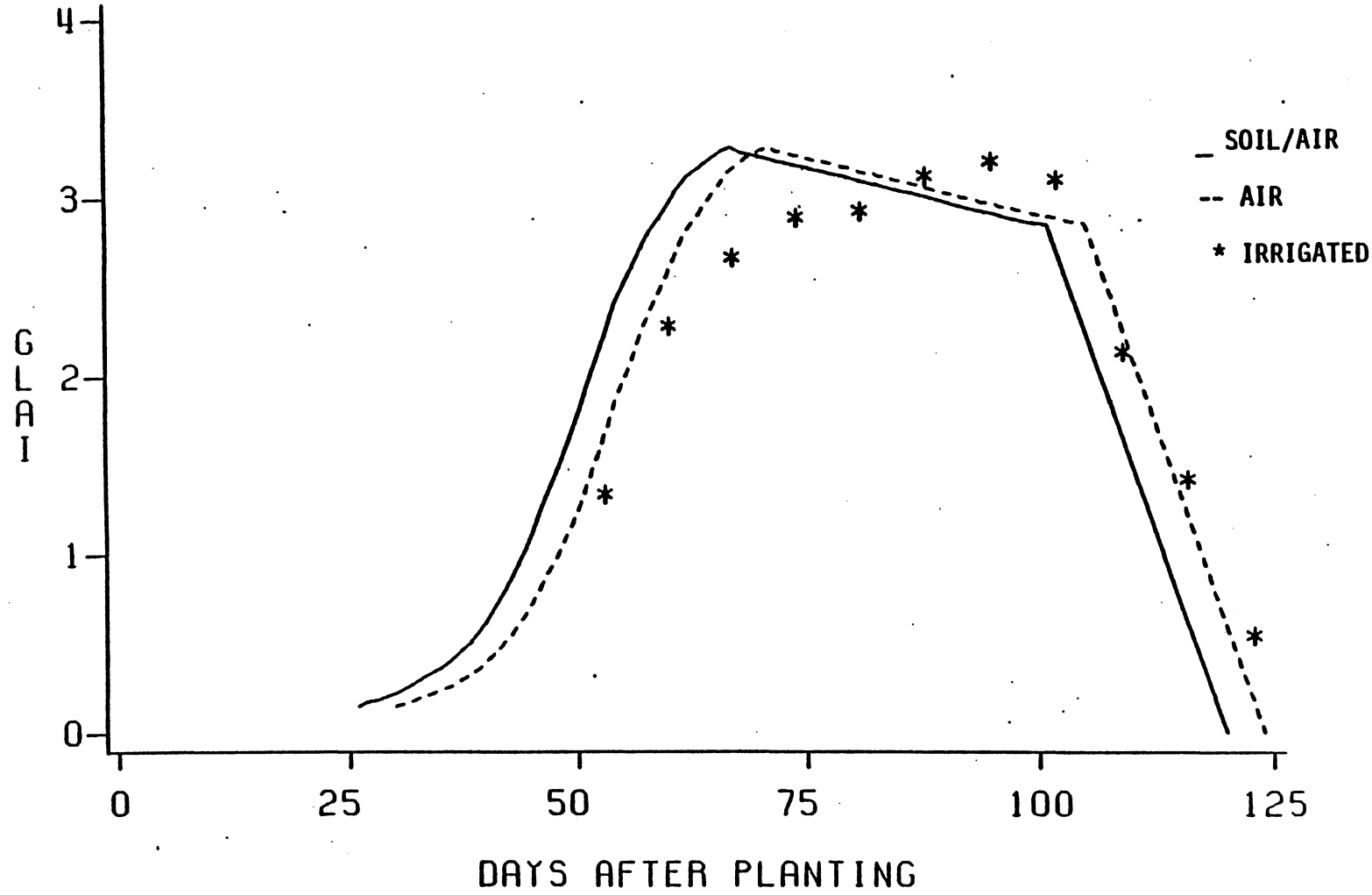

Fig. 14. Comparison of the daily maximum and minimum soil/air and air temperature methods for predicting green leaf area index of corn hybrid Pioneer 3369A versus days after planting for Mayodan soil in 1983 at 44,000 plants/hectare.

Use of short duration air temperature alone gave better results.

Comparison of the maximum and minimum soil/air temperatures and short duration soil/air temperatures for predicting GLAI values are shown in Figures 17 and 18. The study shows that when short duration soil/air temperatures are used to predict GLAI, the irrigated and predicted GLAI values compare most favorably only during the vegetative stage. When maximum and minimum soil/air temperatures are used to predict GLAI, the irrigated and predicted GLAI values compare favorably during the leaf senescence stage. During the reproductive and grain filling stage, soil/air temperatures for daily maximum and minimum, and short duration methods do not compare very well with predicted.

Comparison of the daily maximum and minimum air temperatures and short duration air temperatures for predicting GLAI values for Mayodan soil in 1983 are shown in Figures 19 and 20. The study shows that when short duration air temperatures are used to predict GLAI values, the irrigated and predicted GLAI values compare favorably during the vegetative and leaf senescing stages. However, when daily maximum and minimum air temperatures are used to predict GLAI values, the irrigated and predicted GLAI values do not agree very closely with each other at high and low plant densities.

Results from the study of the Mayodan soil in 1983 show that using air temperatures gives a better estimate of predicted GLAI values than using soil/air temperatures. The study also shows that using short duration air temperatures to predict GLAI values gives a better estimate of GLAI values during the vegetative and leaf senescing periods than using maximum and minimum air temperatures (Fig. 19 and 20). Computed temper-

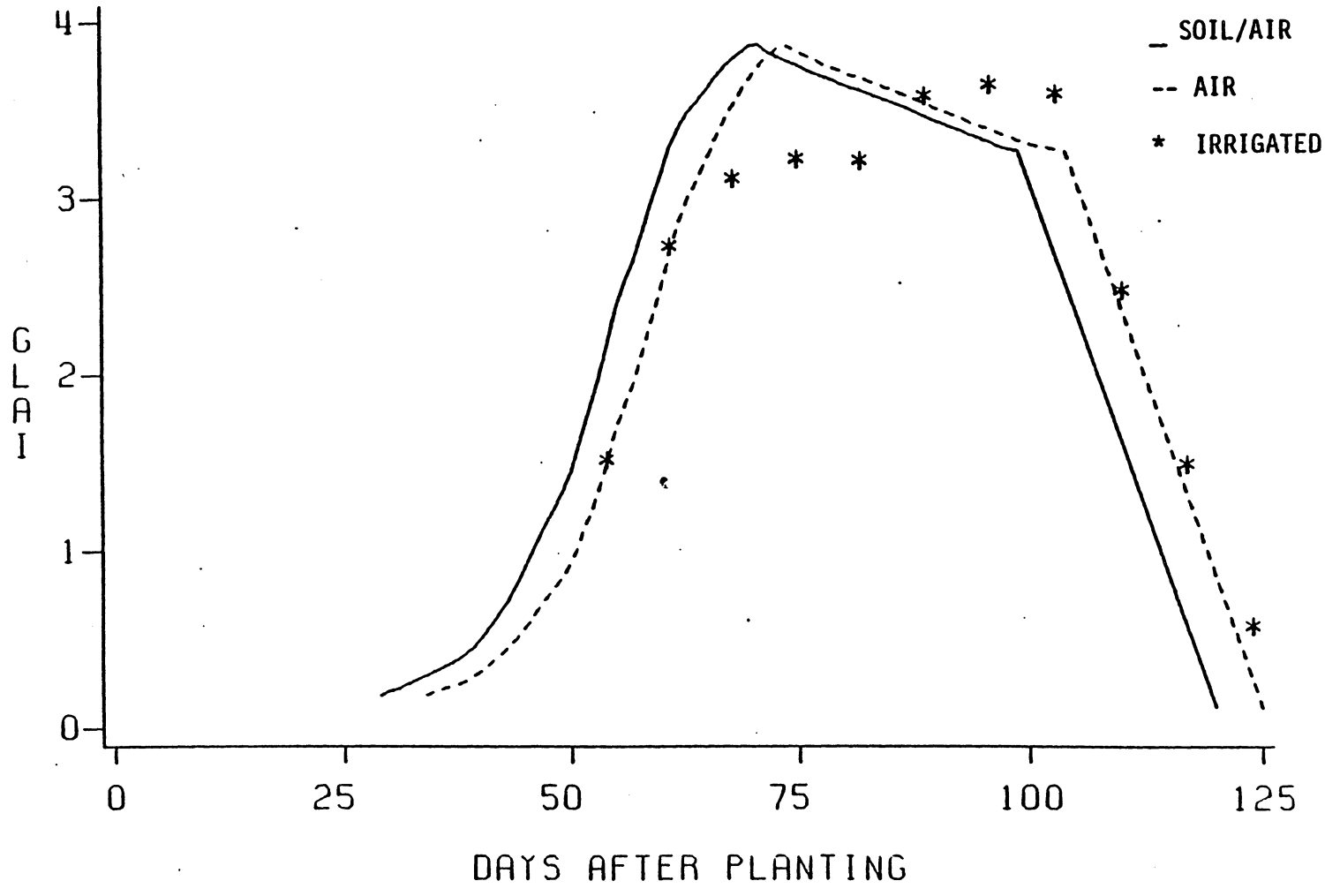

Fig. 15. Comparison of the short duration soil/air and air temperature methods for predicting green leaf area index of corn hybrid Pioneer 3369A versus days after planting for Mayodan soil in 1983 at 54,000 plants/hectare.

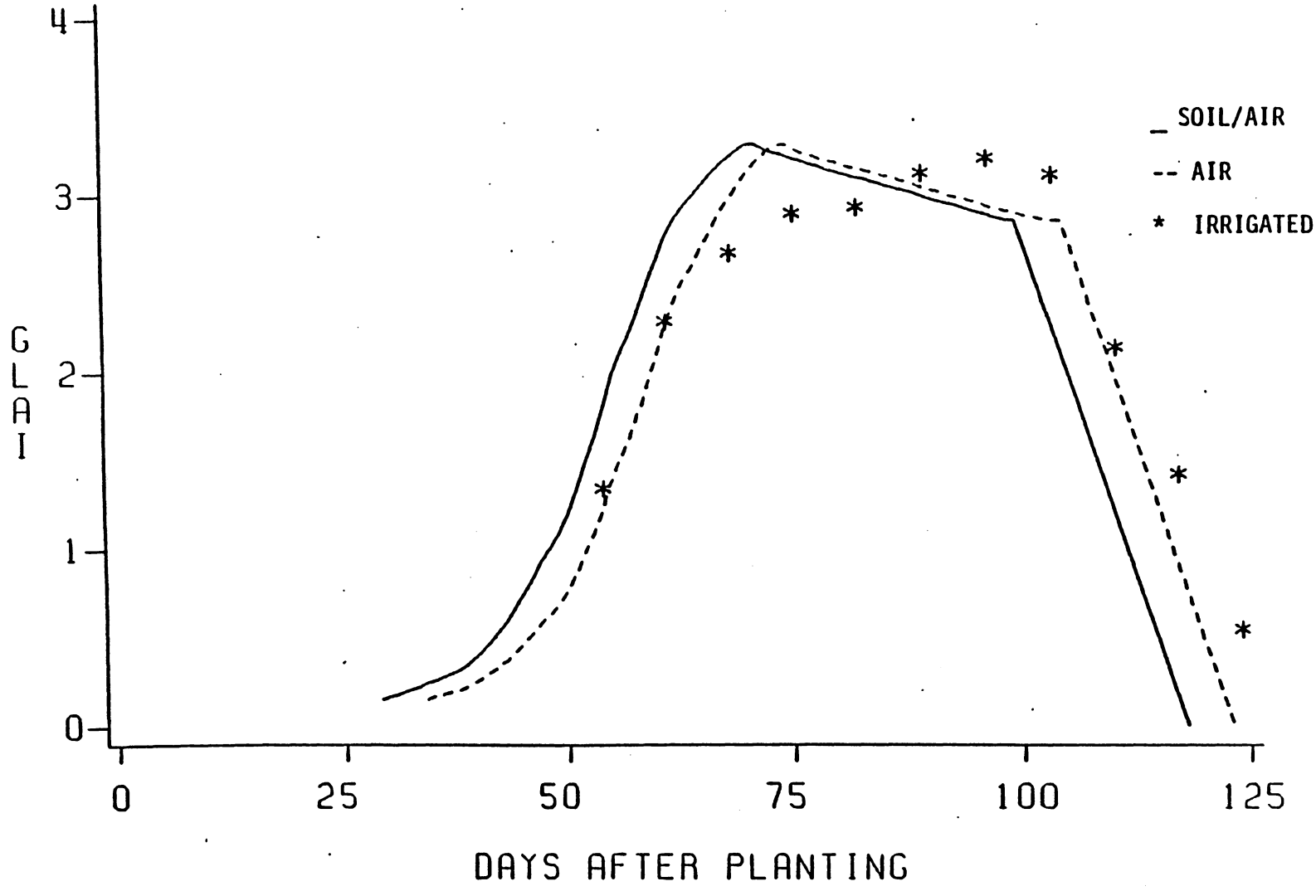

Fig. 16. Comparison of the short duration soil/air and air temperature methods for predicting green leaf area index of corn hybrid Pioneer 3369A versus days after planting for Mayodan soil in 1983 at 44,000 plants/hectare.

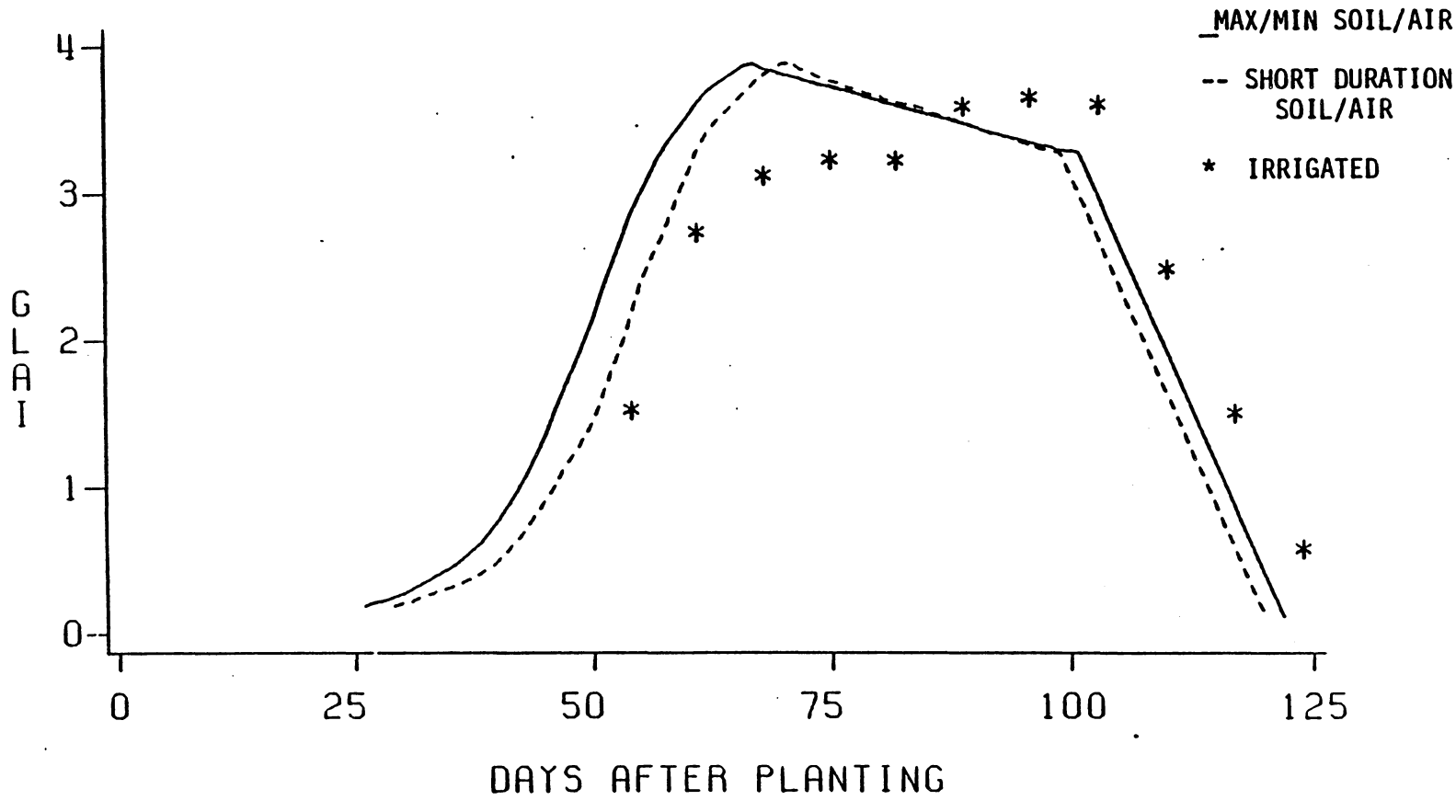

Fig. 17. Comparison of the daily maximum and minimum soil/air temperature and short duration soil/air temperature methods for predicting green leaf area index of corn hybrid Pioneer 3369A versus days after planting for Mayodan soil in 1983 at 54,000 plants/hectare.

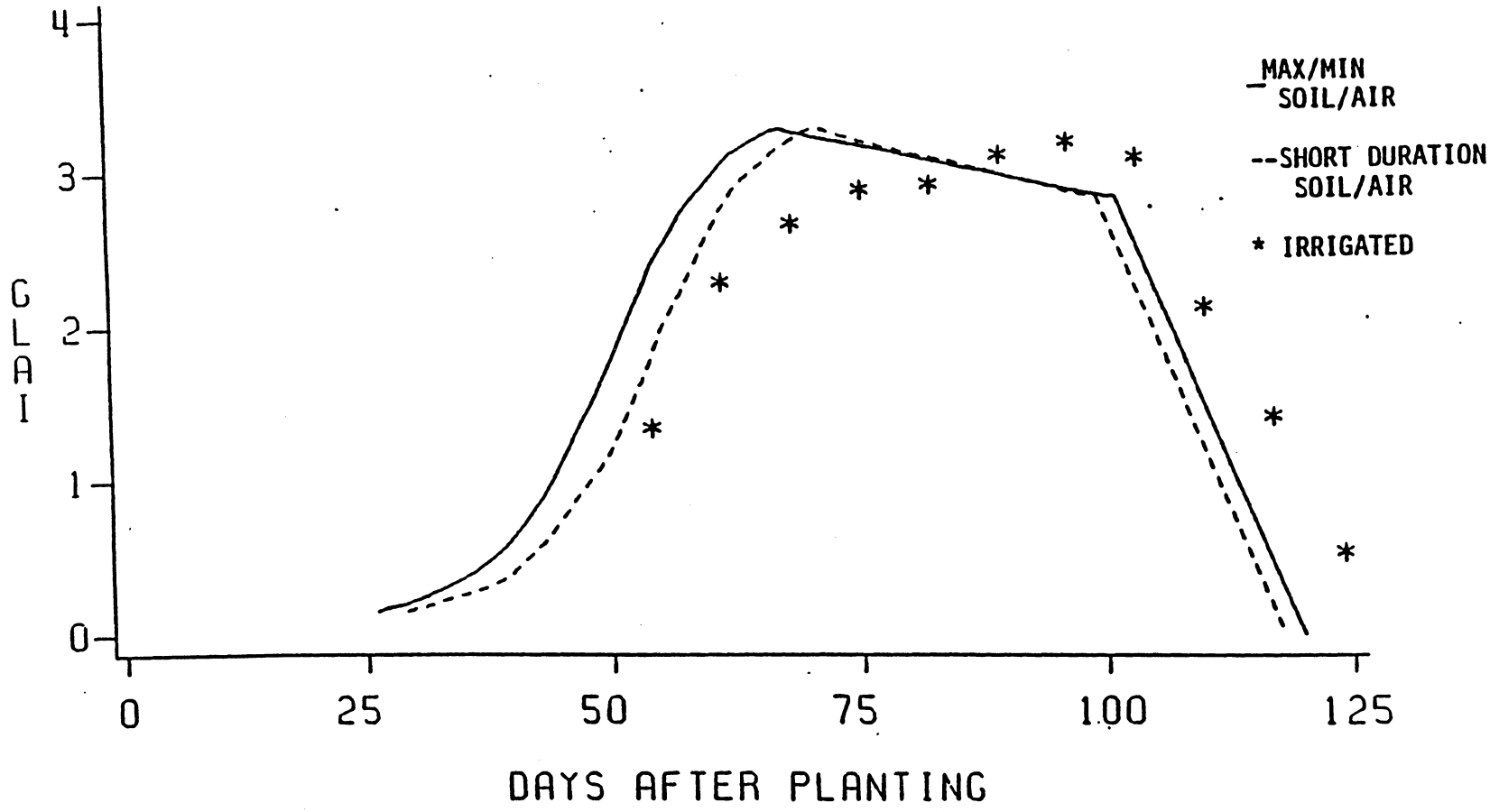

Fig. 18. Comparison of the daily maximum and minimum soil/air temperature and short duration soil/air temperature methods for predicting green leaf area index of corn hybrid Pioneer 3369A versus days after planting for Mayodan soil in 1983 at 44,000 plants/hectare.

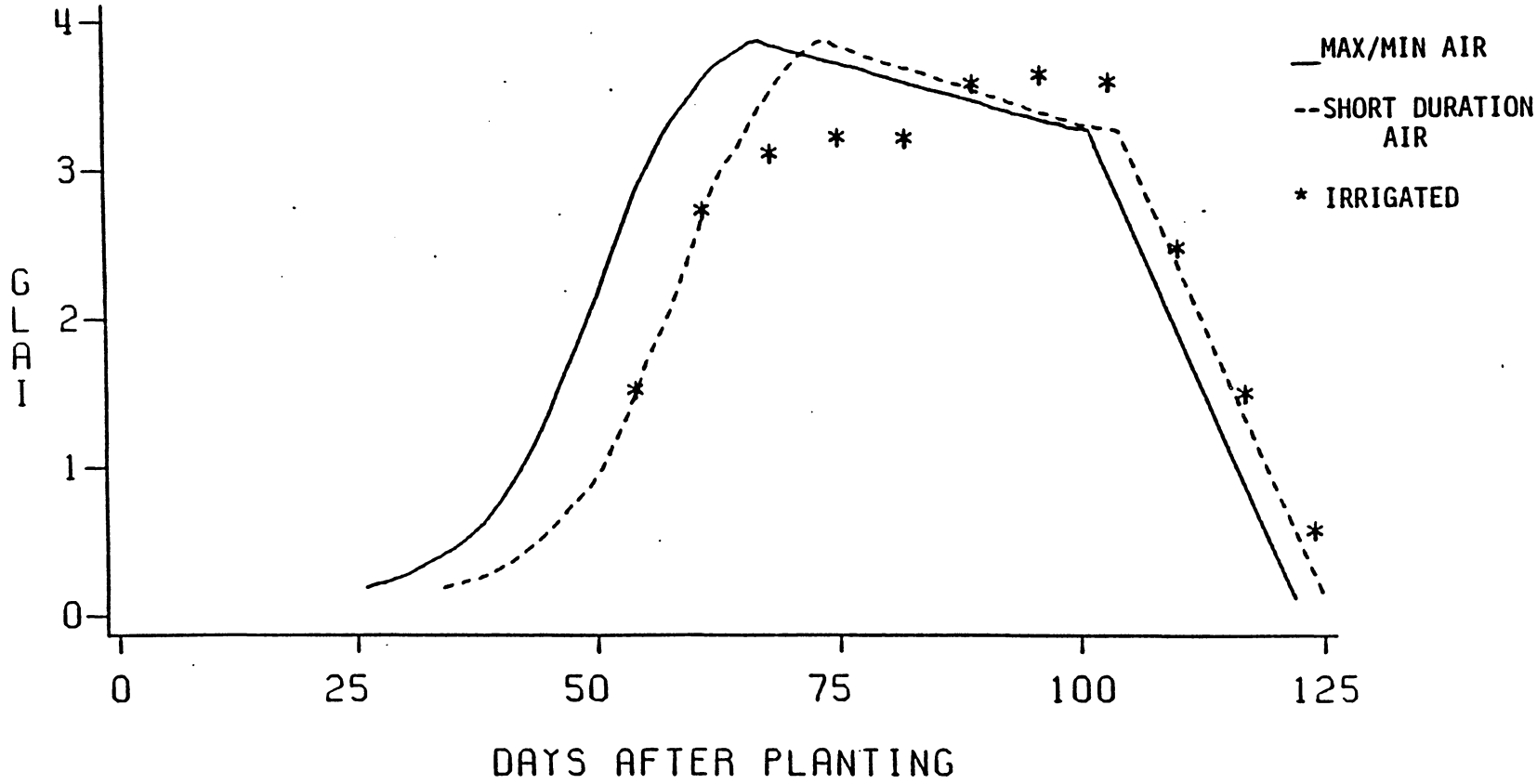

Fig. 19. Comparison of the daily maximum and minimum air temperature and short duration air temperature methods for predicting green leaf area index of corn hybrid Pioneer 3369A versus days after planting for Mayodan soil in 1983 at 54,000 plants/hectare.

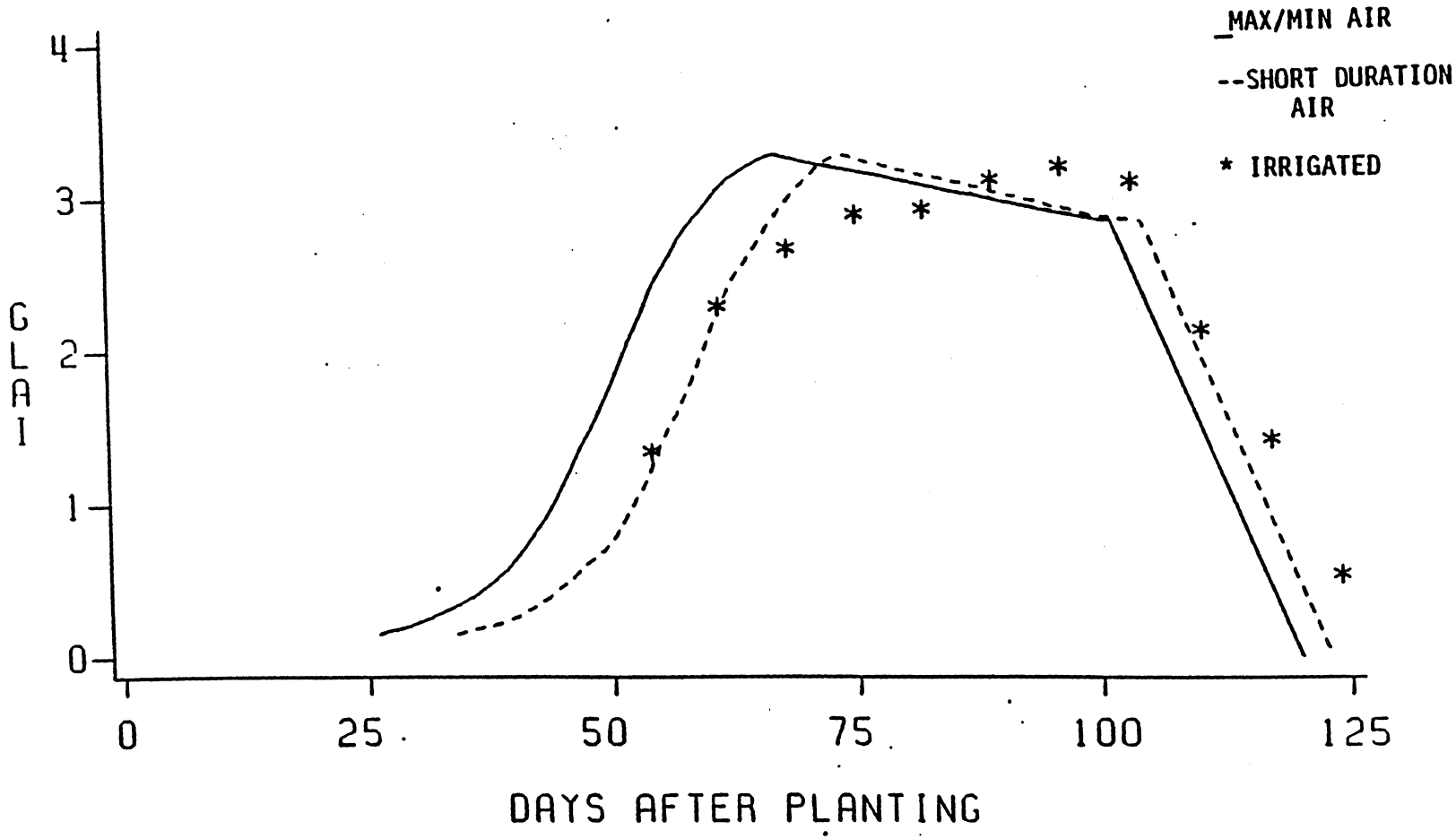

Fig. 20. Comparison of the daily maximum and minimum air temperature and short duration air temperature methods for predicting green leaf area index of corn hybrid Pioneer 3369A versus days after planting for Mayodan soil in 1983 at 44,000 plants/hectare.

ature data and predicted GLAI values of corn hybrid Pioneer 3369A for Davidson and Mayodan soils at high and low plant populations are as shown in the Appendix (Tables 13 through 24).

STATISTICAL ANALYSIS

The study conducted at the Davidson site was statistically analyzed, but the study at the Mayodan site did not have enough information on data points to allow a thorough statistical investigation.

A simple linear regression on slope estimate at the Davidson site in 1983 and 1984 is as shown in Table 8 for period 2 (reproductive and grain filling stage). The data points from the 1983 growing season have a better fit to slope estimate than those from 1984. The difference in slope estimate for the measured values during the two growing seasons is mainly attributed to fertilizer application. In 1983 only nitrogen fertilizer was applied to the irrigation system, while in 1984 nitrogen and sulfur were added.

For the two growing seasons at the Davidson site, the mean absolute errors and standard deviation of the absolute errors are as shown on Table 9 for the predicted and measured GLAI values. The greatest error (1.63) and the largest deviation (0.52) around this error for the vegetative stage occurred in 1984 with the non-irrigated corn at low plant population. This could be expected as indicated in Fig. 4. Moisture stress occurred much earlier in 1984 than in 1983. Deviation was much larger for irrigated and non-irrigated corn plants in 1984 than in 1983.

Available moisture content, the growing season, and growth conditions the previous year, all have to be accounted for to make the GLAI model designed by Coelho and Dale (1980) very effective. In all the investigations, the high and low plant densities fit equally well. A cer-

tain variable needs to be added or subtracted from the GLAI model to fit any necessary measuring errors. Factors of irrigation and no irrigation were important in the results when predicted and measured GLAI values were compared.

Table 8. Simple linear regression on slope estimate at the Davidson site in 1983 and 1984 for the reproductive and grain filling stage of corn hybrid Pioneer 3369A.

Treatment	Slope Estimate	Standard Error	P Value
1983 IH	-0.0239	0.0083	0.0628
1983 NH	-0.0555	0.0164	0.1830
1983 IL	-0.0165	0.0035	0.0182
1983 NL	-0.0700	0.0141	0.1267
1984 IH	-0.0076	0.0088	0.4534
1984 NH	-0.0069	0.0037	0.2008
1984 IL	-0.0076	0.0021	0.0674
1984 NL	-0.0013	0.0060	0.8451

I = Irrigated
N = Non-irrigated
H = High plant population
L = Low plant population

Table 9. Comparison of mean absolute errors (|e|) and standard deviation of the absolute errors (S|e|) between the predicted and measured green leaf area index values of corn hybrid Pioneer 3369A on Davidson soil in 1983 and 1984 for the vegetative stage of growth.

	TREATMENTS							
PARAMETERS:	1983IH	1983NH	1983IL	1983NL	1984IH	1984NH	1984IL	1984NL
n	4	4	4	4	4	4	4	4
|e|	0.85	0.97	0.68	0.54	0.63	1.62	0.67	1.63
S|e|	0.24	0.33	0.16	0.13	0.39	0.42	0.29	0.52

n = measured GLAI values during the vegetative stage of growth
I = Irrigated
N = Non-irrigated
H = High plant population
L = Low plant population

SUMMARY AND CONCLUSIONS

Results from this study show that the GLAI model developed in Indiana will work well in Virginia under certain conditions.

The GLAI model works well under optimum growth conditions and also under conditions of non-moisture stress. The study conducted in Virginia shows that the vegetative and leaf senescing periods fit the model but the reproductive and grain filling period does not. This can be attributed to the use of nitrogen and sulfur as fertilizers through the irrigation system. With the application of nitrogen and sulfur, the GLAI was maintained for a longer period of time before it began to decline. The measured values compared well with predicted, and GLAI was not maintained for any great length of time when only nitrogen was used as fertilizer. This indicates that sulfur could be responsible for prolonging the GLAI for a longer period of time.

Studies conducted at the Davidson site in 1983 show that the predicted GLAI values compared favorably with the measured values when only nitrogen was used during fertilizer application; but in 1984 at the same site, the predicted GLAI values did not compare as well with the predicted when nitrogen and sulfur were used. Since no soil temperatures were available at the Davidson site, only air temperatures were used for the prediction.

At the Mayodan site in 1983, studies show that for daily maximum and minimum temperature method of prediction, the use of air temperatures alone gave a better estimate of GLAI than the combination of soil/air

temperatures. With the short duration method, the use of air temperatures alone gave better results than using the temperature combination of soil/air temperatures. Using short duration air temperatures gave better prediction of the vegetative and leaf senescing stages than using daily maximum and minimum air temperatures. Predicted GLAI values obtained using short duration and daily maximum and minimum temperatures compare favorably during the reproductive and grain filling stage.

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APPENDIX

Table 10. The soil profile description of the Davidson Silty Clay Loam.

Ap	0 to 20 cm; reddish brown (5YR 4/4) silty clay loam; common medium faint reddish brown (2.5YR 4/4) mottles; weak fine subangular blocky structure; friable, sticky, plastic; thin discontinuous clay films; common very fine and fine roots; abrupt smooth boundary.
B21t	20 to 48 cm; dark red (2.5YR 3/6) clay; few black (manganese) ped coatings; moderate fine subangular blocky structure; friable, sticky, plastic; thin continuous clay films; common very fine roots; clear wavy boundary.
B22t	48 to 127 cm; dark red (2.5YR 3/6) clay; common black (manganese) ped coatings; moderate fine subangular blocky structure; friable, sticky, plastic; thin continuous clay films; few very fine roots; clear smooth boundary.
B23t	127 to 153 cm; dark red (2.5YR 3/6) clay; very few black (manganese) ped coatings; moderate fine and medium subangular blocky structure; friable, sticky, plastic, thin discontinuous clay films.
Remarks	Few slightly weathered diabese fragments, mainly in B22t. Coarse fragment (diabase and quartz) contents of all horizons are less than 5 percent.
Location	Approximately 2 kilometers south southwest of the junction of Routes 20 and 15, 205 meters south of the main barn at the Piedmont Research Station and 2 kilometers south of the town of Orange in west central Orange County, Virginia.
Physiography	Convex sideslope of an interfluve in rolling terrain of the Piedmont.
Elevation	154 meters
Drainage	Well drained
Slope	7 percent
Aspect	Southeast
Parent material	Basic rock--diabase
Vegetation	Freshly plowed (alfalfa was plowed under)
Classification	Rhodic Paleudult, clayey, kaolinitic, thermic

Described by S. K. Thomas, E. D. Crawford, D. E. Starner

Date November 15, 1980

Sample No. 80-15-(1-4*)

Table 11. The soil profile description of the Davidson silty clay.

Ap	0 to 20 cm; dark reddish brown (2.5YR 3/4) silty clay; weak platy parting to moderate very fine granular structure; friable, sticky, plastic; many very fine roots; clear smooth boundary.
B21t	20 to 38 cm; dark red (2.5YR 3/6) clay; many fine distinct dusky red (2.5YR 3/2) mottles; moderate fine angular blocky structure; friable, sticky, very plastic; many thin discontinuous clay films; common very fine roots; gradual smooth boundary.
B22t	38 to 76 cm; dark red (2.5YR 3/6) clay; moderate very fine and fine angular blocky structure; friable, sticky, very plastic; thin continuous clay films; common very fine roots; diffuse smooth boundary.
B23t	76 to 127 cm; dark red (2.5YR 3/6) clay; moderate fine and medium angular blocky structure; friable, sticky, very plastic; thin continuous clay films; few very fine roots; gradual smooth boundary.
B24t	127 to 183 cm; dark red (10YR 3/6) clay; many medium faint dark red (2.5YR 3/6) mottles; moderate very fine and fine angular blocky structure; friable, slightly sticky, slightly plastic; thin continuous clay films.
Location	Approximately 2 kilometers south southwest of the junction of Routes 20 and 15, 107 meters south of the main barn at the Piedmont Research Station and 2 km south of the town of Orange in west central Orange County, Virginia.
Physiography	Convex sideslope of an interfluve in rolling terrain of the Piedmont.
Elevation	155 meters
Drainage	Well drained
Slope	7 percent
Aspect	South
Parent material	Basic rock
Vegetation	Rye
Classification	Rhodic Paleudult, clayey, kaolinitic, thermic

Described by D. E. Starner

Date April 11, 1980

Sample No. 80-13-(1-5*)

Table 12. The soil profile description of the Mayodan sandy loam.

Ap	0 to 20 cm; brown (10YR 4/3) sandy loam; weak medium subangular blocky structure; friable, slightly sticky; common very fine and fine roots; abrupt smooth boundary.
B21t	20 to 43 cm; yellowish brown (10YR 5/6) clay; few coarse distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; friable, sticky, plastic, few thin discontinuous clay films; few very fine and fine roots; gradual wavy boundary.
B23tpl	61 to 91 cm; yellowish brown (10YR 5/6) clay; many medium prominent red (2.5YR 4/8) and few fine distinct brown (10YR 5/3) mottles; weak medium platy parting to moderate medium angular blocky structure; hard, firm, slightly sticky, plastic; thin continuous clay films; few very fine roots; gradual smooth boundary.
B24tpl	91 to 124 cm; mottled yellowish brown (10YR 5/4), red 2.5YR 4/8), light gray (10YR 7/2), and dark red (10R 3/6) clay; strong medium and coarse platy parting to moderate fine and medium angular blocky structure; very hard, very firm, slightly sticky, plastic; thick continuous clay films on plate faces otherwise thin continuous, gradual irregular boundary.
B3t	124 to 152 cm; mottled yellowish brown (10YR 5/4), red (2.5YR 4/8), and light gray (10YR 7/2) clay; moderate medium and coarse platy parting to moderate coarse angular blocky structure; friable, slightly sticky, slightly plastic, few thin discontinuous clay films.
Remarks	Solum depth is deeper than the Mayodan series. This soil was mapped as Mayodan-like series, but this profile has the influence of plinthite and a fragic character in the lower B2 horizons. The lower B2 horizons colors are found in continuous horizontal bands approximately 3 centimeters in thickness. Few large pores (up to 3 centimeters in diameter) upper 1 meter of soil filled with decaying pine roots. Few flakes of mica in upper B, common flakes of mica in lower B.
Location	Approximately 2 kilometers north northeast of the junction of Routes 40 and Military Road, and .8 kilometers northwest of the main office at the Southern Piedmont Research and Continuing Education Center, 2 kilometers southeast of the town of Blackstone in southeast Nottoway County, Virginia.

Physiography	Narrow convex summit (near shoulder) in a rolling area of the Piedmont
Elevation	140 meters
Moisture	Dry below 61 centimeters, moist above at time of description
Drainage	Well drained
Slope	3 percent
Aspect	North
Parent material	Granite--upper solum is influenced by Coastal Plain overlay
Vegetation	Wheat
Classification	This soil does not fit the classification of any existing soil series. This profile is closely related to Dothan series which was part of a mapping unit nearby and has plinthite, but for use and management this soil may be best included with the Mayodan soil series due to other characteristics which are similar. The Mayodan series is a member of the clayey, kaolinitic, thermic family of Typic Hapludults.
Described by	D. E. Starner
Date	April 10, 1980
Sample No.	80-12-(1-6*)

Table 13. Daily maximum and minimum air temperature data and predicted green leaf area index values of corn hybrid Pioneer 3369A for Davidson soil in 1983 at 64,000 plants/hectare.

DATE	DAYS AFTER PLANT.	DAYS AFTER ΣFT=58	MAX TEMP. (F)	MIN TEMP. (F)	TEMP. FUNC.	SUM. TEMP. FUNC.	PRED. GREEN LAI	PERIOD NUMBER
42883	1	---	84.0	53.0	0.5765	0.5765	*******	0
42983	2	---	83.0	55.0	0.5915	1.1680	*******	0
43083	3	---	77.0	58.0	0.4840	1.6520	*******	0
50183	4	---	80.0	60.0	0.5707	2.2227	*******	0
50283	5	---	81.0	64.0	0.6246	2.8472	*******	0
50383	6	---	81.0	65.0	0.6321	3.4793	*******	0
50483	7	---	67.0	56.0	0.2805	3.7598	*******	0
50583	8	---	73.0	40.0	0.2744	4.0342	*******	0
50683	9	---	72.0	43.0	0.2521	4.2863	*******	0
50783	10	---	78.0	46.0	0.4179	4.7042	*******	0
50883	11	---	71.0	52.0	0.2957	4.9998	*******	0
50983	12	---	65.0	35.0	0.1665	5.1663	*******	0
51083	13	---	71.0	35.0	0.2267	5.3930	*******	0
51183	14	---	75.0	41.0	0.3222	5.7152	*******	0
51283	15	---	74.0	44.0	0.3073	6.0225	*******	0
51383	16	---	78.0	43.0	0.3954	6.4179	*******	0
51483	17	---	81.0	49.0	0.5121	6.9300	*******	0
51583	18	---	86.0	60.0	0.6290	7.5590	*******	0
51683	19	---	56.0	55.0	0.1905	7.7495	*******	0
51783	20	---	65.0	38.0	0.1665	7.9160	*******	0
51883	21	---	70.0	43.0	0.2043	8.1203	*******	0
51983	22	---	65.0	46.0	0.1905	8.3108	*******	0
52083	23	---	80.0	51.0	0.5032	8.8139	*******	0
52183	24	---	74.0	60.0	0.4273	9.2413	*******	0
52283	25	---	70.0	62.0	0.3468	9.5880	*******	0
52383	26	---	82.0	62.0	0.6334	10.2215	*******	0
52483	27	---	74.0	60.0	0.4273	10.6488	*******	0
52583	28	---	76.0	46.0	0.3701	11.0189	*******	0
52683	29	---	76.0	55.0	0.4376	11.4565	*******	0
52783	30	---	70.0	46.0	0.2268	11.6833	*******	0
52883	31	---	72.0	48.0	0.2896	11.9729	*******	0
52983	32	---	70.0	55.0	0.2943	12.0000	0.2232	1
53083	33	---	77.0	56.0	0.4690	12.7633	0.2504	1
53183	34	---	76.0	55.0	0.4376	13.2009	0.2679	1
60183	35	---	68.0	55.0	0.2805	13.4814	0.2799	1
60283	36	---	74.0	47.0	0.3298	13.8112	0.2950	1
60383	37	---	78.0	54.0	0.4779	14.2891	0.3185	1
60483	38	---	79.0	59.0	0.5393	14.8284	0.3479	1
60583	39	---	82.0	56.0	0.5884	15.4168	0.3837	1
60683	40	---	85.0	59.0	0.6215	16.0383	0.4262	1

60783	41	---	79.0	63.0	0.5693	16.6076	0.4700	1
60883	42	---	80.0	59.0	0.5632	17.1707	0.5184	1
60983	43	---	75.0	58.0	0.4362	17.6070	0.5596	1
61083	44	---	81.0	57.0	0.5721	18.1790	0.6192	1
61183	45	---	86.0	56.0	0.5990	18.7780	0.6888	1
61283	46	---	89.0	59.0	0.6215	19.3995	0.7697	1
61383	47	---	91.0	64.0	0.6337	20.0332	0.8620	1
61483	48	---	89.0	66.0	0.6740	20.7072	0.9718	1
61583	49	---	88.0	64.0	0.6590	21.3662	1.0917	1
61683	50	---	89.0	64.0	0.6590	22.0252	1.2244	1
61783	51	---	89.0	63.0	0.6515	22.6767	1.3684	1
61883	52	---	84.0	67.0	0.6815	23.3582	1.5325	1
61983	53	---	82.0	64.0	0.6484	24.0066	1.7009	1
62083	54	---	85.0	66.0	0.6740	24.6806	1.8871	1
62183	55	---	76.0	65.0	0.5126	25.1932	2.0353	1
62283	56	---	79.0	64.0	0.5768	25.7700	2.2073	1
62383	57	---	85.0	60.0	0.6290	26.3990	2.3990	1
62483	58	---	89.0	61.0	0.6365	27.0355	2.5948	1
62583	59	---	86.0	68.0	0.6890	27.7245	2.8052	1
62683	60	---	87.0	61.0	0.6365	28.3610	2.9948	1
62783	61	---	93.0	64.0	0.5876	28.9486	3.1633	1
62883	62	---	91.0	68.0	0.6637	29.6123	3.3434	1
62983	63	---	68.0	67.0	0.3705	29.9828	3.4384	1
63083	64	---	70.0	63.0	0.3543	30.3370	3.5251	1
70183	65	---	86.0	63.0	0.6515	30.9885	3.6735	1
70283	66	---	94.0	64.0	0.5646	31.5531	3.7900	1
70383	67	---	92.0	68.0	0.6407	32.1937	3.9083	1
70483	68	---	93.0	69.0	0.6251	32.8188	4.0098	1
70583	69	---	85.0	69.0	0.6965	33.5153	4.1075	1
70683	70	---	77.0	64.0	0.5290	34.0443	4.1715	1
70783	71	---	77.0	56.0	0.4690	34.5133	4.2215	1
70883	72	---	84.0	55.0	0.5915	35.1048	4.2764	1
70983	73	---	88.0	61.0	0.6365	35.7413	4.3261	1
71083	74	---	83.0	66.0	0.6740	36.4153	4.3697	1
71183	75	---	86.0	57.0	0.6065	37.0000	4.4010	2
71283	76	---	92.0	62.0	0.5957	38.2021	4.3573	2
71383	77	---	95.0	68.0	0.5715	38.7736	4.3365	2
71483	78	---	90.0	65.0	0.6643	39.4379	4.3123	2
71583	79	---	96.0	68.0	0.5484	39.9863	4.2924	2
71683	80	---	96.0	73.0	0.6339	40.6202	4.2693	2
71783	81	---	96.0	75.0	0.6817	41.3019	4.2445	2
71883	82	---	96.0	71.0	0.5861	41.8880	4.2232	2
71983	83	---	91.0	71.0	0.7014	42.5894	4.1977	2
72083	84	---	95.0	71.0	0.6092	43.1985	4.1755	2
72183	85	---	99.0	71.0	0.5169	43.7155	4.1567	2
72283	86	---	88.0	69.0	0.6965	44.4120	4.1314	2
72383	87	---	83.0	61.0	0.6365	45.0484	4.1082	2
72483	88	---	91.0	68.0	0.6637	45.7122	4.0841	2
72583	89	---	83.0	66.0	0.6740	46.3862	4.0596	2
72683	90	---	88.0	63.0	0.6515	47.0376	4.0359	2
72783	91	---	92.0	61.0	0.5882	47.6258	4.0145	2

72883	92	---	93.0	64.0	0.5876	48.2134	3.9931	2
72983	93	---	92.0	62.0	0.5957	48.8091	3.9714	2
73083	94	---	95.0	62.0	0.5265	49.3356	3.9523	2
73183	95	---	97.0	63.0	0.4879	49.8234	3.9345	2
80183	96	---	91.0	66.0	0.6487	50.4722	3.9109	2
80283	97	---	94.0	68.0	0.5946	51.0667	3.8893	2
80383	98	---	94.0	67.0	0.5871	51.6537	3.8680	2
80483	99	---	91.0	68.0	0.6637	52.3175	3.8438	2
80583	100	---	92.0	69.0	0.6482	52.9656	3.8202	2
80683	101	---	90.0	68.0	0.6868	53.6524	3.7953	2
80783	102	---	91.0	67.0	0.6562	54.3086	3.7714	2
80883	103	---	93.0	69.0	0.6251	54.9337	3.7487	2
80983	104	---	95.0	71.0	0.6092	55.5429	3.7265	2
81083	105	---	86.0	66.0	0.6740	56.2169	3.7020	2
81183	106	---	92.0	67.0	0.6332	56.8500	3.6789	2
81283	107	---	82.0	65.0	0.6559	57.5060	3.6551	2
81383	108	---	72.0	61.0	0.3871	57.8930	3.6410	2
81483	109	---	78.0	55.0	0.4854	58.0000	3.6371	3
81583	110	1					3.4871	3
81683	111	2					3.3371	3
81783	112	3					3.1871	3
81883	113	4					3.0371	3
81983	114	5					2.8871	3
82083	115	6					2.7371	3
82183	116	7					2.5871	3
82283	117	8					2.4371	3
82383	118	9					2.2871	3
82483	119	10					2.1371	3
82583	120	11					1.9871	3
82683	121	12					1.8371	3
82783	122	13					1.6871	3
82883	123	14					1.5371	3
82983	124	15					1.3871	3
83083	125	16					1.2371	3
83183	126	17					1.0871	3
90183	127	18					0.9371	3
90283	128	19					0.7871	3
90383	129	20					0.6371	3
90483	130	21					0.4871	3
90583	131	22					0.3371	3
90683	132	23					0.1871	3
90783	133	24					0.0371	3

Table 14. Daily maximum and minimum air temperature data and predicted green leaf area index valuea of corn hybrid Pioneer 3369A for Davidson soil in 1983 at 54,000 plants/ha.

DATE	DAYS AFTER PLANT.	DAYS AFTER ΣFT=58	MAX TEMP. (F)	MIN TEMP. (F)	TEMP. FUNC.	SUM. TEMP. FUNC.	PRED. GREEN LAI	PERIOD NUMBER
42883	1	---	84.0	53.0	0.5765	0.5765	*******	0
42983	2	---	83.0	55.0	0.5915	1.1680	*******	0
43083	3	---	77.0	58.0	0.4840	1.6520	*******	0
50183	4	---	80.0	60.0	0.5707	2.2227	*******	0
50283	5	---	81.0	64.0	0.6246	2.8472	*******	0
50383	6	---	81.0	65.0	0.6321	3.4793	*******	0
50483	7	---	67.0	56.0	0.2805	3.7598	*******	0
50583	8	---	73.0	40.0	0.2744	4.0342	*******	0
50683	9	---	72.0	43.0	0.2521	4.2863	*******	0
50783	10	---	78.0	46.0	0.4179	4.7042	*******	0
50883	11	---	71.0	52.0	0.2957	4.9998	*******	0
50983	12	---	65.0	35.0	0.1665	5.1663	*******	0
51083	13	---	71.0	35.0	0.2267	5.3930	*******	0
51183	14	---	75.0	41.0	0.3222	5.7152	*******	0
51283	15	---	74.0	44.0	0.3073	6.0225	*******	0
51383	16	---	78.0	43.0	0.3954	6.4179	*******	0
51483	17	---	81.0	49.0	0.5121	6.9300	*******	0
51583	18	---	86.0	60.0	0.6290	7.5590	*******	0
51683	19	---	56.0	55.0	0.1905	7.7495	*******	0
51783	20	---	65.0	38.0	0.1665	7.9160	*******	0
51883	21	---	70.0	43.0	0.2043	8.1203	*******	0
51983	22	---	65.0	46.0	0.1905	8.3108	*******	0
52083	23	---	80.0	51.0	0.5032	8.8139	*******	0
52183	24	---	74.0	60.0	0.4273	9.2413	*******	0
52283	25	---	70.0	62.0	0.3468	9.5880	*******	0
52383	26	---	82.0	62.0	0.6334	10.2215	*******	0
52483	27	---	74.0	60.0	0.4273	10.6488	*******	0
52583	28	---	76.0	46.0	0.3701	11.0189	*******	0
52683	29	---	76.0	55.0	0.4376	11.4565	*******	0
52783	30	---	70.0	46.0	0.2268	11.6833	*******	0
52883	31	---	72.0	48.0	0.2896	11.9729	*******	0
52983	32	---	70.0	55.0	0.2943	12.0000	0.1892	1
53083	33	---	77.0	56.0	0.4690	12.7633	0.2123	1
53183	34	---	76.0	55.0	0.4376	13.2009	0.2272	1
60183	35	---	68.0	55.0	0.2805	13.4814	0.2375	1
60283	36	---	74.0	47.0	0.3298	13.8112	0.2502	1
60383	37	---	78.0	54.0	0.4779	14.2891	0.2703	1
60483	38	---	79.0	59.0	0.5393	14.8284	0.2953	1
60583	39	---	82.0	56.0	0.5884	15.4168	0.3258	1
60683	40	---	85.0	59.0	0.6215	16.0383	0.3620	1

60783	41	---	79.0	63.0	0.5693	16.6076	0.3994	1
60883	42	---	80.0	59.0	0.5632	17.1707	0.4407	1
60983	43	---	75.0	58.0	0.4362	17.6070	0.4759	1
61083	44	---	81.0	57.0	0.5721	18.1790	0.5268	1
61183	45	---	86.0	56.0	0.5990	18.7780	0.5864	1
61283	46	---	89.0	59.0	0.6215	19.3995	0.6557	1
61383	47	---	91.0	64.0	0.6337	20.0332	0.7350	1
61483	48	---	89.0	66.0	0.6740	20.7072	0.8295	1
61583	49	---	88.0	64.0	0.6590	21.3662	0.9328	1
61683	50	---	89.0	64.0	0.6590	22.0252	1.0474	1
61783	51	---	89.0	63.0	0.6515	22.6767	1.1721	1
61883	52	---	84.0	67.0	0.6815	23.3582	1.3146	1
61983	53	---	82.0	64.0	0.6484	24.0066	1.4612	1
62083	54	---	85.0	66.0	0.6740	24.6806	1.6239	1
62183	55	---	76.0	65.0	0.5126	25.1932	1.7538	1
62283	56	---	79.0	64.0	0.5768	25.7700	1.9049	1
62383	57	---	85.0	60.0	0.6290	26.3990	2.0740	1
62483	58	---	89.0	61.0	0.6365	27.0355	2.2473	1
62583	59	---	86.0	68.0	0.6890	27.7245	2.4341	1
62683	60	---	87.0	61.0	0.6365	28.3610	2.6031	1
62783	61	---	93.0	64.0	0.5876	28.9486	2.7537	1
62883	62	---	91.0	68.0	0.6637	29.6123	2.9153	1
62983	63	---	68.0	67.0	0.3705	29.9828	3.0007	1
63083	64	---	70.0	63.0	0.3543	30.3370	3.0789	1
70183	65	---	86.0	63.0	0.6515	30.9885	3.2129	1
70283	66	---	94.0	64.0	0.5646	31.5531	3.3183	1
70383	67	---	92.0	68.0	0.6407	32.1937	3.4256	1
70483	68	---	93.0	69.0	0.6251	32.8188	3.5178	1
70583	69	---	85.0	69.0	0.6965	33.5153	3.6067	1
70683	70	---	77.0	64.0	0.5290	34.0443	3.6651	1
70783	71	---	77.0	56.0	0.4690	34.5133	3.7108	1
70883	72	---	84.0	55.0	0.5915	35.1048	3.7609	1
70983	73	---	88.0	61.0	0.6365	35.7413	3.8064	1
71083	74	---	83.0	66.0	0.6740	36.4153	3.8463	1
71183	75	---	86.0	57.0	0.6065	37.0000	3.8749	2
71283	76	---	92.0	62.0	0.5957	38.2021	3.8407	2
71383	77	---	95.0	68.0	0.5715	38.7736	3.8244	2
71483	78	---	90.0	65.0	0.6643	39.4379	3.8055	2
71583	79	---	96.0	68.0	0.5484	39.9863	3.7899	2
71683	80	---	96.0	73.0	0.6339	40.6202	3.7718	2
71783	81	---	96.0	75.0	0.6817	41.3019	3.7524	2
71883	82	---	96.0	71.0	0.5861	41.8880	3.7357	2
71983	83	---	91.0	71.0	0.7014	42.5894	3.7158	2
72083	84	---	95.0	71.0	0.6092	43.1985	3.6984	2
72183	85	---	99.0	71.0	0.5169	43.7155	3.6837	2
72283	86	---	88.0	69.0	0.6965	44.4120	3.6639	2
72383	87	---	83.0	61.0	0.6365	45.0484	3.6458	2
72483	88	---	91.0	68.0	0.6637	45.7122	3.6269	2
72583	89	---	83.0	66.0	0.6740	46.3862	3.6077	2
72683	90	---	88.0	63.0	0.6515	47.0376	3.5891	2
72783	91	---	92.0	61.0	0.5882	47.6258	3.5724	2

72883	92	---	93.0	64.0	0.5876	48.2134	3.5556	2
72983	93	---	92.0	62.0	0.5957	48.8091	3.5387	2
73083	94	---	95.0	62.0	0.5265	49.3356	3.5237	2
73183	95	---	97.0	63.0	0.4879	49.8234	3.5098	2
80183	96	---	91.0	66.0	0.6487	50.4722	3.4913	2
80283	97	---	94.0	68.0	0.5946	51.0667	3.4744	2
80383	98	---	94.0	67.0	0.5871	51.6537	3.4577	2
80483	99	---	91.0	68.0	0.6637	52.3175	3.4388	2
80583	100	---	92.0	69.0	0.6482	52.9656	3.4203	2
80683	101	---	90.0	68.0	0.6868	53.6524	3.4008	2
80783	102	---	91.0	67.0	0.6562	54.3086	3.3821	2
80883	103	---	93.0	69.0	0.6251	54.9337	3.3643	2
80983	104	---	95.0	71.0	0.6092	55.5429	3.3470	2
81083	105	---	86.0	66.0	0.6740	56.2169	3.3278	2
81183	106	---	92.0	67.0	0.6332	56.8500	3.3097	2
81283	107	---	82.0	65.0	0.6559	57.5060	3.2911	2
81383	108	---	72.0	61.0	0.3871	57.8930	3.2801	2
81483	109	---	78.0	55.0	0.4854	58.0000	3.2770	3
81583	110	1					3.1270	3
81683	111	2					2.9770	3
81783	112	3					2.8270	3
81883	113	4					2.6770	3
81983	114	5					2.5270	3
82083	115	6					2.3770	3
82183	116	7					2.2270	3
82283	117	8					2.0770	3
82383	118	9					1.9270	3
82483	119	10					1.7770	3
82583	120	11					1.6270	3
82683	121	12					1.4770	3
82783	122	13					1.3270	3
82883	123	14					1.1770	3
82983	124	15					1.0270	3
83083	125	16					0.8770	3
83183	126	17					0.7270	3
90183	127	18					0.5770	3
90283	128	19					0.4270	3
90383	129	20					0.2770	3
90483	130	21					0.1270	3

Table 15. Daily maximum and minimum air temperature data and predicted green leaf area index values of corn hybrid Pioneer 3369A for Davidson soil in 1984 at 64,000 plants/hectare.

DATE	DAYS AFTER PLANT.	DAYS AFTER ΣFT=58	MAX TEMP (F)	MIN TEMP. (F)	TEMP. FUNC.	SUM. TEMP. FUNC.	PRED. GREEN LAI	PERIOD NUMBER
42784	1	---	81.0	52.0	0.5346	0.5346	*******	0
42884	2	---	71.0	55.0	0.3182	0.8527	*******	0
42984	3	---	78.0	50.0	0.4479	1.3006	*******	0
43084	4	---	79.0	54.0	0.5018	1.8024	*******	0
50184	5	---	73.0	55.0	0.3659	2.1683	*******	0
50284	6	---	72.0	41.0	0.2506	2.4189	*******	0
50384	7	---	61.0	47.0	0.1680	2.5869	*******	0
50484	8	---	69.0	53.0	0.2730	2.8599	*******	0
50584	9	---	74.0	49.0	0.3448	3.2047	*******	0
50684	10	---	58.0	54.0	0.1980	3.4027	*******	0
50784	11	---	61.0	52.0	0.2055	3.6082	*******	0
50884	12	---	81.0	53.0	0.5421	4.1503	*******	0
50984	13	---	65.0	39.0	0.1665	4.3168	*******	0
51084	14	---	69.0	46.0	0.2205	4.5373	*******	0
51184	15	---	78.0	47.0	0.4254	4.9627	*******	0
51284	16	---	81.0	51.0	0.5271	5.4897	*******	0
51384	17	---	75.0	49.0	0.3687	5.8584	*******	0
51484	18	---	71.0	53.0	0.3032	6.1616	*******	0
51584	19	---	68.0	39.0	0.1890	6.3506	*******	0
51684	20	---	63.0	38.0	0.1515	6.5021	*******	0
51784	21	---	68.0	41.0	0.1890	6.6911	*******	0
51884	22	---	69.0	44.0	0.2055	6.8966	*******	0
51984	23	---	88.0	50.0	0.5540	7.4506	*******	0
52084	24	---	87.0	56.0	0.5990	8.0496	*******	0
52184	25	---	88.0	64.0	0.6590	8.7086	*******	0
52284	26	---	89.0	63.0	0.6515	9.3601	*******	0
52384	27	---	80.0	65.0	0.6082	9.9683	*******	0
52484	28	---	78.0	54.0	0.4779	10.4461	*******	0
52584	29	---	82.0	51.0	0.5509	10.9971	*******	0
52684	30	---	87.0	57.0	0.6065	11.6036	*******	0
52784	31	---	68.0	62.0	0.3330	11.9366	*******	0
52884	32	---	76.0	59.0	0.4676	12.0000	0.2232	1
52984	33	---	73.0	59.0	0.3959	12.8636	0.2543	1
53084	34	---	65.0	51.0	0.2280	13.0916	0.2634	1
53184	35	---	67.0	41.0	0.1815	13.2731	0.2709	1
60184	36	---	73.0	48.0	0.3134	13.5865	0.2846	1
60284	37	---	82.0	53.0	0.5659	14.1524	0.3116	1
60384	38	---	88.0	58.0	0.6140	14.7664	0.3444	1
60484	39	---	82.0	54.0	0.5734	15.3399	0.3788	1
60584	40	---	82.0	55.0	0.5809	15.9208	0.4178	1

60684	41	---	93.0	55.0	0.5201	16.4409	0.4567	1
60784	42	---	92.0	66.0	0.6257	17.0666	0.5090	1
60884	43	---	94.0	67.0	0.5871	17.6536	0.5643	1
60984	44	---	94.0	67.0	0.5871	18.2407	0.6260	1
61084	45	---	94.0	67.0	0.5871	18.8277	0.6950	1
61184	46	---	94.0	67.0	0.5871	19.4148	0.7718	1
61284	47	---	92.0	70.0	0.6544	20.0692	0.8675	1
61384	48	---	95.0	70.0	0.5853	20.6545	0.9628	1
61484	49	---	93.0	69.0	0.6251	21.2796	1.0752	1
61584	50	---	83.0	66.0	0.6740	21.9536	1.2093	1
61684	51	---	66.0	63.0	0.3255	22.2791	1.2790	1
61784	52	---	84.0	60.0	0.6290	22.9081	1.4226	1
61884	53	---	93.0	64.0	0.5876	23.4957	1.5673	1
61984	54	---	92.0	69.0	0.6482	24.1438	1.7379	1
62084	55	---	85.0	68.0	0.6890	24.8328	1.9306	1
62184	56	---	86.0	62.0	0.6440	25.4768	2.1193	1
62284	57	---	80.0	61.0	0.5782	26.0550	2.2938	1
62384	58	---	83.0	62.0	0.6440	26.6990	2.4913	1
62484	59	---	77.0	64.0	0.5290	27.2280	2.6539	1
62584	60	---	84.0	64.0	0.6590	27.8870	2.8542	1
62684	61	---	82.0	53.0	0.5659	28.4529	3.0217	1
62784	62	---	91.0	55.0	0.5662	29.0191	3.1830	1
62884	63	---	89.0	62.0	0.6440	29.6631	3.3567	1
62984	64	---	81.0	60.0	0.5946	30.2577	3.5060	1
63084	65	---	83.0	61.0	0.6365	30.8941	3.6529	1
70184	66	---	83.0	67.0	0.6815	31.5756	3.7944	1
70284	67	---	84.0	64.0	0.6590	32.2346	3.9154	1
70384	68	---	86.0	60.0	0.6290	32.8636	4.0166	1
70484	69	---	88.0	62.0	0.6440	33.5076	4.1065	1
70584	70	---	90.0	67.0	0.6793	34.1869	4.1874	1
70684	71	---	83.0	67.0	0.6815	34.8684	4.2555	1
70784	72	---	82.0	66.0	0.6634	35.5318	4.3107	1
70884	73	---	78.0	56.0	0.4929	36.0247	4.3455	1
70984	74	---	80.0	58.0	0.5557	36.5804	4.3791	1
71084	75	---	82.0	61.0	0.6259	37.0000	4.4010	2
71184	76	---	95.0	65.0	0.5490	38.1749	4.3583	2
71284	77	---	89.0	74.0	0.7983	38.9733	4.3292	2
71384	78	---	87.0	67.0	0.6815	39.6547	4.3044	2
71484	79	---	89.0	66.0	0.6740	40.3287	4.2799	2
71584	80	---	89.0	65.0	0.6665	40.9952	4.2557	2
71684	81	---	87.0	70.0	0.7028	41.6980	4.2301	2
71784	82	---	85.0	66.0	0.6740	42.3720	4.2056	2
71884	83	---	83.0	67.0	0.6815	43.0535	4.1808	2
71984	84	---	80.0	60.0	0.5707	43.6241	4.1600	2
72084	85	---	83.0	58.0	0.6140	44.2381	4.1377	2
72184	86	---	72.0	63.0	0.4021	44.6402	4.1231	2
72284	87	---	80.0	64.0	0.6007	45.2409	4.1012	2
72384	88	---	83.0	66.0	0.6740	45.9149	4.0767	2
72484	89	---	91.0	68.0	0.6637	46.5786	4.0526	2
72584	90	---	83.0	68.0	0.6890	47.2676	4.0275	2
72684	91	---	72.0	68.0	0.4396	47.7071	4.0115	2

72784	92	---	81.0	67.0	0.6471	48.3542	3.9880	2
72884	93	---	76.0	62.0	0.4901	48.8443	3.9702	2
72984	94	---	74.0	60.0	0.4273	49.2716	3.9546	2
73084	95	---	78.0	63.0	0.5454	49.8170	3.9348	2
73184	96	---	83.0	63.0	0.6515	50.4684	3.9111	2
80184	97	---	86.0	64.0	0.6590	51.1274	3.8871	2
80284	98	---	89.0	70.0	0.7028	51.8302	3.8615	2
80384	99	---	90.0	69.0	0.6943	52.5245	3.8363	2
80484	100	---	89.0	70.0	0.7028	53.2273	3.8107	2
80584	101	---	85.0	68.0	0.6890	53.9163	3.7857	2
80684	102	---	89.0	67.0	0.6815	54.5977	3.7609	2
80784	103	---	90.0	70.0	0.7006	55.2983	3.7354	2
80884	104	---	90.0	70.0	0.7006	55.9988	3.7099	2
80984	105	---	91.0	68.0	0.6637	56.6626	3.6858	2
81084	106	---	85.0	69.0	0.6965	57.3590	3.6604	2
81184	107	---	77.0	69.0	0.5665	57.9255	3.6398	2
81284	108	---	83.0	70.0	0.7028	58.0000	3.6371	3
81384	109	1					3.4871	3
81484	110	2					3.3371	3
81584	111	3					3.1871	3
81684	112	4					3.0371	3
81784	113	5					2.8871	3
81884	114	6					2.7371	3
81984	115	7					2.5871	3
82084	116	8					2.4371	3
82184	117	9					2.2871	3
82284	118	10					2.1371	3
82384	119	11					1.9871	3
82484	120	12					1.8371	3
82584	121	13					1.6871	3
82684	122	14					1.5371	3
82784	123	15					1.3871	3
82884	124	16					1.2371	3
82984	125	17					1.0871	3
83084	126	18					0.9371	3
83184	127	19					0.7871	3
90184	128	20					0.6371	3
90284	129	21					0.4871	3
90384	130	22					0.3371	3
90484	131	23					0.1871	3
90584	132	24					0.0371	3

Table 16. Daily maximum and minimum air temperature data and predicted green leaf area index values of corn hybrid Pioneer 3369A for Davidson soil in 1984 at 54,000 plants/ha.

DATE	DAYS AFTER PLANT.	DAYS AFTER ΣFT=58	MAX TEMP. (F)	MIN TEMP. (F)	TEMP. FUNC.	SUM TEMP. FUNC.	PRED. GREEN LAI	PERIOD NUMBER
42784	1	---	81.0	52.0	0.4479	0.5346	*******	0
42884	2	---	71.0	55.0	0.4479	0.8527	*******	0
42984	3	---	78.0	50.0	0.4479	1.3006	*******	0
43084	4	---	79.0	54.0	0.5018	1.8024	*******	0
50184	5	---	73.0	55.0	0.3659	2.1683	*******	0
50284	6	---	72.0	41.0	0.2506	2.4189	*******	0
50384	7	---	61.0	47.0	0.1680	2.5869	*******	0
50484	8	---	69.0	53.0	0.2730	2.8599	*******	0
50584	9	---	74.0	49.0	0.3448	3.2047	*******	0
50684	10	---	58.0	54.0	0.1980	3.4027	*******	0
50784	11	---	61.0	52.0	0.2055	3.6082	*******	0
50884	12	---	81.0	53.0	0.5421	4.1503	*******	0
50984	13	---	65.0	39.0	0.1665	4.3168	*******	0
51084	14	---	69.0	46.0	0.2205	4.5373	*******	0
51184	15	---	78.0	47.0	0.4254	4.9627	*******	0
51284	16	---	81.0	51.0	0.5271	5.4897	*******	0
51384	17	---	75.0	49.0	0.3687	5.8584	*******	0
51484	18	---	71.0	53.0	0.3032	6.1616	*******	0
51584	19	---	68.0	39.0	0.1890	6.3506	*******	0
51684	20	---	63.0	38.0	0.1515	6.5021	*******	0
51784	21	---	68.0	41.0	0.1890	6.6911	*******	0
51884	22	---	69.0	44.0	0.2055	6.8966	*******	0
51984	23	---	88.0	50.0	0.5540	7.4506	*******	0
52084	24	---	87.0	56.0	0.5990	8.0496	*******	0
52184	25	---	88.0	64.0	0.6590	8.7086	*******	0
52284	26	---	89.0	63.0	0.6515	9.3601	*******	0
52384	27	---	80.0	65.0	0.6082	9.9683	*******	0
52484	28	---	78.0	54.0	0.4779	10.4461	*******	0
52584	29	---	82.0	51.0	0.5509	10.9971	*******	0
52684	30	---	87.0	57.0	0.6065	11.6036	*******	0
52784	31	---	68.0	62.0	0.3330	11.9366	*******	0
52884	32	---	76.0	59.0	0.4676	12.0000	0.1892	1
52984	33	---	73.0	59.0	0.3959	12.8636	0.2156	1
53084	34	---	65.0	51.0	0.2280	13.0916	0.2234	1
53184	35	---	67.0	41.0	0.1815	13.2731	0.2298	1
60184	36	---	73.0	48.0	0.3134	13.5865	0.2414	1
60284	37	---	82.0	53.0	0.5659	14.1524	0.2644	1
60384	38	---	88.0	58.0	0.6140	14.7664	0.2923	1
60484	39	---	82.0	54.0	0.5734	15.3399	0.3216	1
60584	40	---	82.0	55.0	0.5809	15.9208	0.3548	1

60684	41	---	93.0	55.0	0.5201	16.4409	0.3880	1
60784	42	---	92.0	66.0	0.6257	17.0666	0.4327	1
60884	43	---	94.0	67.0	0.5871	17.6536	0.4798	1
60984	44	---	94.0	67.0	0.5871	18.2407	0.5327	1
61084	45	---	94.0	67.0	0.5871	18.8277	0.5917	1
61184	46	---	94.0	67.0	0.5871	19.4148	0.6576	1
61284	47	---	92.0	70.0	0.6544	20.0692	0.7397	1
61384	48	---	95.0	70.0	0.5853	20.6545	0.8217	1
61484	49	---	93.0	69.0	0.6251	21.2796	0.9185	1
61584	50	---	83.0	66.0	0.6740	21.9536	1.0344	1
61684	51	---	66.0	63.0	0.3255	22.2791	1.0946	1
61784	52	---	84.0	60.0	0.6290	22.9081	1.2191	1
61884	53	---	93.0	64.0	0.5876	23.4957	1.3448	1
61984	54	---	92.0	69.0	0.6482	24.1438	1.4935	1
62084	55	---	85.0	68.0	0.6890	24.8328	1.6620	1
62184	56	---	86.0	62.0	0.6440	25.4768	1.8275	1
62284	57	---	80.0	61.0	0.5782	26.0550	1.9811	1
62384	58	---	83.0	62.0	0.6440	26.6990	2.1556	1
62484	59	---	77.0	64.0	0.5290	27.2280	2.2997	1
62584	60	---	84.0	64.0	0.6590	27.8870	2.4777	1
62684	61	---	82.0	53.0	0.5659	28.4529	2.6271	1
62784	62	---	91.0	55.0	0.5662	29.0191	2.7714	1
62884	63	---	89.0	62.0	0.6440	29.6631	2.9272	1
62984	64	---	81.0	60.0	0.5946	30.2577	3.0617	1
63084	65	---	83.0	61.0	0.6365	30.8941	3.1943	1
70184	66	---	83.0	67.0	0.6815	31.5756	3.3223	1
70284	67	---	84.0	64.0	0.6590	32.2346	3.4320	1
70384	68	---	86.0	60.0	0.6290	32.8636	3.5240	1
70484	69	---	88.0	62.0	0.6440	33.5076	3.6058	1
70584	70	---	90.0	67.0	0.6793	34.1869	3.6796	1
70684	71	---	83.0	67.0	0.6815	34.8684	3.7418	1
70784	72	---	82.0	66.0	0.6634	35.5318	3.7923	1
70884	73	---	78.0	56.0	0.4929	36.0247	3.8241	1
70984	74	---	80.0	58.0	0.5557	36.5804	3.8549	1
71084	75	---	82.0	61.0	0.6259	37.0000	3.8749	2
71184	76	---	95.0	65.0	0.5490	38.1749	3.8415	2
71284	77	---	89.0	74.0	0.7983	38.9733	3.8187	2
71384	78	---	87.0	67.0	0.6815	39.6547	3.7993	2
71484	79	---	89.0	66.0	0.6740	40.3287	3.7801	2
71584	80	---	89.0	65.0	0.6665	40.9952	3.7612	2
71684	81	---	87.0	70.0	0.7028	41.6980	3.7412	2
71784	82	---	85.0	66.0	0.6740	42.3720	3.7220	2
71884	83	---	83.0	67.0	0.6815	43.0535	3.7026	2
71984	84	---	80.0	60.0	0.5707	43.6241	3.6863	2
72084	85	---	83.0	58.0	0.6140	44.2381	3.6688	2
72184	86	---	72.0	63.0	0.4021	44.6402	3.6574	2
72284	87	---	80.0	64.0	0.6007	45.2409	3.6403	2
72384	88	---	83.0	66.0	0.6740	45.9149	3.6211	2
72484	89	---	91.0	68.0	0.6637	46.5786	3.6022	2
72584	90	---	83.0	68.0	0.6890	47.2676	3.5826	2
72684	91	---	72.0	68.0	0.4396	47.7071	3.5701	2

72784	92	---	81.0	67.0	0.6471	48.3542	3.5516	2
72884	93	---	76.0	62.0	0.4901	48.8443	3.5377	2
72984	94	---	74.0	60.0	0.4273	49.2716	3.5255	2
73084	95	---	78.0	63.0	0.5454	49.8170	3.5100	2
73184	96	---	83.0	63.0	0.6515	50.4684	3.4914	2
80184	97	---	86.0	64.0	0.6590	51.1274	3.4727	2
80284	98	---	89.0	70.0	0.7028	51.8302	3.4527	2
80384	99	---	90.0	69.0	0.6943	52.5245	3.4329	2
80484	100	---	89.0	70.0	0.7028	53.2273	3.4129	2
80584	101	---	85.0	68.0	0.6890	53.9163	3.3933	2
80684	102	---	89.0	67.0	0.6815	54.5977	3.3739	2
80784	103	---	90.0	70.0	0.7006	55.2983	3.3539	2
80884	104	---	90.0	70.0	0.7006	55.9988	3.3340	2
80984	105	---	91.0	68.0	0.6637	56.6626	3.3151	2
81084	106	---	85.0	69.0	0.6965	57.3590	3.2953	2
81184	107	---	77.0	69.0	0.5665	57.9255	3.2791	2
81284	108	---	83.0	70.0	0.7028	58.0000	3.2770	3
81384	109	1					3.1270	3
81484	110	2					2.9770	3
81584	111	3					2.8270	3
81684	112	4					2.6770	3
81784	113	5					2.5270	3
81884	114	6					2.3770	3
81984	115	7					2.2270	3
82084	116	8					2.0770	3
82184	117	9					1.9270	3
82284	118	10					1.7770	3
82384	119	11					1.6270	3
82484	120	12					1.4770	3
82584	121	13					1.3270	3
82684	122	14					1.1770	3
82784	123	15					1.0270	3
82884	124	16					0.8770	3
82984	125	17					0.7270	3
83084	126	18					0.5770	3
83184	127	19					0.4270	3
90184	128	20					0.2770	3
90284	129	21					0.1270	3

Table 17. Daily maximum and minimum soil/air temperature data and predicted green leaf area index values of corn hybrid Pioneer 3369A for Mayodan soil in 1983 at 54,000 plants/hectare.

DATE	DAYS AFTER PLANT.	DAYS AFTER ΣFT=58	MAX TEMP. (F)	MIN TEMP. (F)	TEMP. FUNC.	SUM. TEMP. FUNC.	PRED. GREEN LAI	PERIOD NUMBER
50683	1	---	73.1	57.0	0.3833	0.3833	*******	0
50783	2	---	74.4	58.2	0.4234	0.8067	*******	0
50883	3	---	68.6	61.5	0.3337	1.1405	*******	0
50983	4	---	73.5	57.1	0.3936	1.5341	*******	0
51083	5	---	74.6	56.8	0.4177	1.9518	*******	0
51183	6	---	76.2	58.4	0.4679	2.4197	*******	0
51283	7	---	77.7	60.2	0.5172	2.9369	*******	0
51383	8	---	78.3	61.9	0.5443	3.4812	*******	0
51483	9	---	78.2	65.6	0.5697	4.0509	*******	0
51583	10	---	78.6	66.8	0.5882	4.6391	*******	0
51683	11	---	71.2	60.0	0.3604	4.9995	*******	0
51783	12	---	72.3	56.1	0.3575	5.3570	*******	0
51883	13	---	73.7	58.8	0.4112	5.7682	*******	0
51983	14	---	68.1	60.6	0.3232	6.0914	*******	0
52083	15	---	76.2	63.3	0.5046	6.5960	*******	0
52183	16	---	72.5	67.7	0.4493	7.0453	*******	0
52283	17	---	71.6	67.0	0.4225	7.4678	*******	0
52383	18	---	79.6	67.4	0.6166	8.0844	*******	0
52483	19	---	76.2	67.5	0.5361	8.6205	*******	0
52583	20	---	78.8	63.1	0.5652	9.1858	*******	0
52683	21	---	79.8	66.1	0.6116	9.7974	*******	0
52783	22	---	76.4	63.9	0.5139	10.3113	*******	0
52883	23	---	78.2	62.8	0.5487	10.8600	*******	0
52983	24	---	72.6	66.5	0.4426	11.3026	*******	0
53083	25	---	75.8	66.1	0.5161	11.8187	*******	0
53183	26	---	81.0	67.8	0.6531	12.0000	0.1892	1
60183	27	---	68.0	53.7	0.2707	12.9162	0.2174	1
60283	28	---	74.4	48.7	0.3521	13.2684	0.2296	1
60383	29	---	81.2	59.3	0.5941	13.8625	0.2523	1
60483	30	---	80.3	62.6	0.5973	14.4598	0.2779	1
60583	31	---	84.1	60.1	0.6298	15.0896	0.3084	1
60683	32	---	85.7	63.3	0.6537	15.7433	0.3443	1
60783	33	---	80.7	61.9	0.6016	16.3449	0.3816	1
60883	34	---	77.7	58.9	0.5075	16.8524	0.4168	1
60983	35	---	78.3	56.0	0.5001	17.3524	0.4550	1
61083	36	---	78.6	55.9	0.5065	17.8589	0.4976	1
61183	37	---	83.8	54.2	0.5855	18.4444	0.5524	1
61283	38	---	86.4	55.7	0.5967	19.0411	0.6148	1
61383	39	---	89.1	61.9	0.6432	19.6844	0.6902	1
61483	40	---	89.9	64.6	0.6636	20.3480	0.7777	1

61583	41	---	88.5	61.6	0.6410	20.9890	0.8723	1
61683	42	---	88.9	63.4	0.6545	21.6434	0.9796	1
61783	43	---	91.0	62.3	0.6210	22.2644	1.0918	1
61883	44	---	89.4	63.9	0.6582	22.9227	1.2221	1
61983	45	---	84.6	67.3	0.6837	23.6064	1.3695	1
62083	46	---	87.0	66.7	0.6792	24.2857	1.5274	1
62183	47	---	80.1	66.8	0.6241	24.9097	1.6814	1
62283	48	---	79.1	60.5	0.5529	25.4626	1.8238	1
62383	49	---	83.8	58.5	0.6177	26.0804	1.9879	1
62483	50	---	88.6	58.7	0.6192	26.6996	2.1557	1
62583	51	---	85.5	65.6	0.6710	27.3706	2.3384	1
62683	52	---	88.8	61.0	0.6365	28.0071	2.5097	1
62783	53	---	89.9	65.8	0.6726	28.6797	2.6856	1
62883	54	---	90.9	72.9	0.7491	29.4287	2.8717	1
62983	55	---	76.8	65.6	0.5362	29.9649	2.9967	1
63083	56	---	77.0	64.3	0.5313	30.4962	3.1128	1
70183	57	---	87.5	64.3	0.6612	31.1574	3.2454	1
70283	58	---	94.5	68.1	0.5838	31.7412	3.3511	1
70383	59	---	97.6	67.6	0.5086	32.2497	3.4343	1
70483	60	---	95.3	70.7	0.5951	32.8448	3.5214	1
70583	61	---	84.5	68.2	0.6905	33.5353	3.6091	1
70683	62	---	83.8	64.2	0.6605	34.1958	3.6805	1
70783	63	---	78.6	56.2	0.5087	34.7045	3.7278	1
70883	64	---	86.1	52.5	0.5727	35.2773	3.7740	1
70983	65	---	87.4	59.6	0.6260	35.9032	3.8167	1
71083	66	---	83.1	65.6	0.6710	36.5742	3.8546	1
71183	67	---	86.4	63.0	0.6515	37.0000	3.8749	2
71283	68	---	93.1	65.5	0.5966	38.2480	3.8394	2
71383	69	---	96.6	70.4	0.5579	38.8060	3.8235	2
71483	70	---	91.3	68.3	0.6591	39.4650	3.8047	2
71583	71	---	95.9	64.9	0.5275	39.9925	3.7897	2
71683	72	---	95.9	72.3	0.6195	40.6120	3.7721	2
71783	73	---	97.4	74.7	0.6422	41.2542	3.7538	2
71883	74	---	95.9	71.1	0.5908	41.8450	3.7370	2
71983	75	---	97.2	72.0	0.5823	42.4273	3.7204	2
72083	76	---	99.0	72.5	0.5528	42.9801	3.7047	2
72183	77	---	100.8	71.4	0.4850	43.4651	3.6908	2
72283	78	---	88.3	69.4	0.6995	44.1646	3.6709	2
72383	79	---	88.0	64.8	0.6650	44.8296	3.6520	2
72483	80	---	90.0	70.0	0.7006	45.5301	3.6320	2
72583	81	---	81.3	66.1	0.6475	46.1776	3.6136	2
72683	82	---	87.2	64.3	0.6612	46.8388	3.5948	2
72783	83	---	92.1	66.1	0.6241	47.4629	3.5770	2
72883	84	---	91.5	66.1	0.6379	48.1008	3.5589	2
72983	85	---	90.8	63.5	0.6346	48.7354	3.5408	2
73083	86	---	94.4	65.6	0.5673	49.3027	3.5246	2
73183	87	---	97.5	67.2	0.5079	49.8106	3.5102	2
80183	88	---	93.1	69.7	0.6281	50.4387	3.4923	2
80283	89	---	88.6	72.1	0.7529	51.1916	3.4709	2
80383	90	---	90.3	68.9	0.6866	51.8782	3.4513	2
80483	91	---	89.4	68.9	0.6957	52.5739	3.4315	2

80583	92	---	93.0	70.3	0.6386	53.2125	3.4133	2
80683	93	---	92.3	67.7	0.6315	53.8440	3.3953	2
80783	94	---	92.7	67.9	0.6238	54.4677	3.3776	2
80883	95	---	94.3	68.9	0.5944	55.0621	3.3607	2
80983	96	---	96.3	71.2	0.5840	55.6461	3.3440	2
81083	97	---	91.8	68.1	0.6460	56.2921	3.3256	2
81183	98	---	99.0	69.6	0.4913	56.7834	3.3116	2
81283	99	---	86.1	65.1	0.6672	57.4506	3.2926	2
81383	100	---	71.9	58.1	0.3629	57.8135	3.2823	2
81483	101	---	79.5	54.4	0.5167	58.0000	3.2770	3
81583	102	1					3.1270	3
81683	103	2					2.9770	3
81783	104	3					2.8270	3
81883	105	4					2.6770	3
81983	106	5					2.5270	3
82083	107	6					2.3770	3
82183	108	7					2.2270	3
82283	109	8					2.0770	3
82383	110	9					1.9270	3
82483	111	10					1.7770	3
82583	112	11					1.6270	3
82683	113	12					1.4770	3
82783	114	13					1.3270	3
82883	115	14					1.1770	3
82983	116	15					1.0270	3
83083	117	16					0.8770	3
83183	118	17					0.7270	3
90183	119	18					0.5770	3
90284	120	19					0.4270	3
90384	121	20					0.2770	3
90485	122	21					0.1270	3

Table 18. Daily maximum and minimum soil/air temperature data and predicted green leaf area index values of corn hybrid Pioneer 3369A of Mayodan soil in 1983 at 44,000 plants/hectare.

DATE	DAYS AFTER PLANT.	DAYS AFTER ΣFT=58	MAX TEMP. (F)	MIN TEMP.	TEMP. FUNC.	SUM. TEMP. FUNC.	PRED. GREEN LAI	PERIOD NUMBER
50683	1	---	73.1	57.0	0.3833	0.3833	*******	0
50783	2	---	74.4	58.2	0.4234	0.8067	*******	0
50883	3	---	68.6	61.5	0.3337	1.1405	*******	0
50983	4	---	73.5	57.1	0.3936	1.5341	*******	0
51083	5	---	74.6	56.8	0.4177	1.9518	*******	0
51183	6	---	76.2	58.4	0.4679	2.4197	*******	0
51283	7	---	77.7	60.2	0.5172	2.9369	*******	0
51383	8	---	78.3	61.9	0.5443	3.4812	*******	0
51483	9	---	78.2	65.6	0.5697	4.0509	*******	0
51583	10	---	78.6	66.8	0.5882	4.6391	*******	0
51683	11	---	71.2	60.0	0.3604	4.9995	*******	0
51783	12	---	72.3	56.1	0.3575	5.3570	*******	0
51883	13	---	73.7	58.8	0.4112	5.7682	*******	0
51983	14	---	68.1	60.6	0.3232	6.0914	*******	0
52083	15	---	76.2	63.3	0.5046	6.5960	*******	0
52183	16	---	72.5	67.7	0.4493	7.0453	*******	0
52283	17	---	71.6	67.0	0.4225	7.4678	*******	0
52383	18	---	79.6	67.4	0.6166	8.0844	*******	0
52483	19	---	76.2	67.5	0.5361	8.6205	*******	0
52583	20	---	78.8	63.1	0.5652	9.1858	*******	0
52683	21	---	79.8	66.1	0.6116	9.7974	*******	0
52783	22	---	76.4	63.9	0.5139	10.3113	*******	0
52883	23	---	78.2	62.8	0.5487	10.8600	*******	0
52983	24	---	72.6	66.5	0.4426	11.3026	*******	0
53083	25	---	75.8	66.1	0.5161	11.8187	*******	0
53183	26	---	81.0	67.8	0.6531	12.0000	0.1551	1
60183	27	---	68.0	53.7	0.2707	12.9162	0.1782	1
60283	28	---	74.4	48.7	0.3521	13.2684	0.1883	1
60383	29	---	81.2	59.3	0.5941	13.8625	0.2069	1
60483	30	---	80.3	62.6	0.5973	14.4598	0.2280	1
60583	31	---	84.1	60.1	0.6298	15.0896	0.2531	1
60683	32	---	85.7	63.3	0.6537	15.7433	0.2826	1
60783	33	---	80.7	61.9	0.6016	16.3449	0.3134	1
60883	34	---	77.7	58.9	0.5075	16.8524	0.3424	1
60983	35	---	78.3	56.0	0.5001	17.3524	0.3739	1
61083	36	---	78.6	55.9	0.5065	17.8589	0.4091	1
61183	37	---	83.8	54.2	0.5855	18.4444	0.4544	1
61283	38	---	86.4	55.7	0.5967	19.0411	0.5060	1
61383	39	---	89.1	61.9	0.6432	19.6844	0.5685	1
61483	40	---	89.9	64.6	0.6636	20.3480	0.6411	1

61583	41	---	88.5	61.6	0.6410	20.9890	0.7197	1
61683	42	---	88.9	63.4	0.6545	21.6434	0.8091	1
61783	43	---	91.0	62.3	0.6210	22.2644	0.9028	1
61883	44	---	89.4	63.9	0.6582	22.9227	1.0118	1
61983	45	---	84.6	67.3	0.6837	23.6064	1.1355	1
62083	46	---	87.0	66.7	0.6792	24.2857	1.2684	1
62183	47	---	80.1	66.8	0.6241	24.9097	1.3984	1
62283	48	---	79.1	60.5	0.5529	25.4626	1.5189	1
62383	49	---	83.8	58.5	0.6177	26.0804	1.6583	1
62483	50	---	88.6	58.7	0.6192	26.6996	1.8013	1
62583	51	---	85.5	65.6	0.6710	27.3706	1.9574	1
62683	52	---	88.8	61.0	0.6365	28.0071	2.1044	1
62783	53	---	89.9	65.8	0.6726	28.6797	2.2558	1
62883	54	---	90.9	72.9	0.7491	29.4287	2.4165	1
62983	55	---	76.8	65.6	0.5362	29.9649	2.5249	1
63083	56	---	77.0	64.3	0.5313	30.4962	2.6257	1
70183	57	---	87.5	64.3	0.6612	31.1574	2.7413	1
70283	58	---	94.5	68.1	0.5838	31.7412	2.8335	1
70383	59	---	97.6	67.6	0.5086	32.2497	2.9063	1
70483	60	---	95.3	70.7	0.5951	32.8448	2.9825	1
70583	61	---	84.5	68.2	0.6905	33.5353	3.0595	1
70683	62	---	83.8	64.2	0.6605	34.1958	3.1222	1
70783	63	---	78.6	56.2	0.5087	34.7045	3.1639	1
70883	64	---	86.1	52.5	0.5727	35.2773	3.2046	1
70983	65	---	87.4	59.6	0.6260	35.9032	3.2422	1
71083	66	---	83.1	65.6	0.6710	36.5742	3.2756	1
71183	67	---	86.4	63.0	0.6515	37.0000	3.2936	2
71283	68	---	93.1	65.5	0.5966	38.2480	3.2679	2
71383	69	---	96.6	70.4	0.5579	38.8060	3.2565	2
71483	70	---	91.3	68.3	0.6591	39.4650	3.2429	2
71583	71	---	95.9	64.9	0.5275	39.9925	3.2320	2
71683	72	---	95.9	72.3	0.6195	40.6120	3.2193	2
71783	73	---	97.4	74.7	0.6422	41.2542	3.2061	2
71883	74	---	95.9	71.1	0.5908	41.8450	3.1939	2
71983	75	---	97.2	72.0	0.5823	42.4273	3.1820	2
72083	76	---	99.0	72.5	0.5528	42.9801	3.1706	2
72183	77	---	100.8	71.4	0.4850	43.4651	3.1606	2
72283	78	---	88.3	69.4	0.6995	44.1646	3.1462	2
72383	79	---	88.0	64.8	0.6650	44.8296	3.1326	2
72483	80	---	90.0	70.0	0.7006	45.5301	3.1182	2
72583	81	---	81.3	66.1	0.6475	46.1776	3.1048	2
72683	82	---	87.2	64.3	0.6612	46.8388	3.0912	2
72783	83	---	92.1	66.1	0.6241	47.4629	3.0784	2
72883	84	---	91.5	66.1	0.6379	48.1008	3.0653	2
72983	85	---	90.8	63.5	0.6346	48.7354	3.0522	2
73083	86	---	94.4	65.6	0.5673	49.3027	3.0406	2
73183	87	---	97.5	67.2	0.5079	49.8106	3.0301	2
80183	88	---	93.1	69.7	0.6281	50.4387	3.0172	2
80283	89	---	88.6	72.1	0.7529	51.1916	3.0017	2
80383	90	---	90.3	68.9	0.6866	51.8782	2.9876	2
80483	91	---	89.4	68.9	0.6957	52.5739	2.9733	2

80583	92	---	93.0	70.3	0.6386	53.2125	2.9601	2
80683	93	---	92.3	67.7	0.6315	53.8440	2.9472	2
80783	94	---	92.7	67.9	0.6238	54.4677	2.9343	2
80883	95	---	94.3	68.9	0.5944	55.0621	2.9221	2
80983	96	---	96.3	71.2	0.5840	55.6461	2.9101	2
81083	97	---	91.8	68.1	0.6460	56.2921	2.8968	2
81183	98	---	99.0	69.6	0.4913	56.7834	2.8867	2
81283	99	---	86.1	65.1	0.6672	57.4506	2.8730	2
81383	100	---	71.9	58.1	0.3629	57.8135	2.8655	2
81483	101	---	79.5	54.4	0.5167	58.0000	2.8617	3
81583	102	1					2.7117	3
81683	103	2					2.5617	3
81783	104	3					2.4117	3
81883	105	4					2.2617	3
81983	106	5					2.1117	3
82083	107	6					1.9617	3
82183	108	7					1.8117	3
82283	109	8					1.6617	3
82383	110	9					1.5117	3
82483	111	10					1.3617	3
82583	112	11					1.2117	3
82683	113	12					1.0617	3
82783	114	13					0.9117	3
82883	115	14					0.7617	3
82983	116	15					0.6117	3
83083	117	16					0.4617	3
83183	118	17					0.3117	3
90183	119	18					0.1617	3
90284	120	19					0.0117	3

Table 19. Daily maximum and minimum air temperature data and predicted green leaf area index of corn hybrid Pioneer 3369A for Mayodan soil in 1983 at 54,000 plants/hectare.

DATE	DAYS AFTER PLANT.	DAYS AFTER ΣFT=58	MAX TEMP. (F)	MIN TEMP. (F)	TEMP FUNC.	SUM. TEMP. FUNC.	PRED. GREEN LAI	PERIOD NUMBER
50683	1	---	72.5	44.6	0.2760	0.2760	*******	0
50783	2	---	78.8	45.0	0.4295	0.7055	*******	0
50883	3	---	73.4	53.6	0.3650	1.0705	*******	0
50983	4	---	65.5	40.5	0.1702	1.2407	*******	0
51083	5	---	70.1	39.3	0.2052	1.4459	*******	0
51183	6	---	75.5	41.8	0.3342	1.7801	*******	0
51283	7	---	75.1	44.0	0.3336	2.1137	*******	0
51383	8	---	77.0	44.4	0.3820	2.4957	*******	0
51483	9	---	80.9	56.0	0.5622	3.0579	*******	0
51583	10	---	83.9	63.8	0.6575	3.7154	*******	0
51683	11	---	71.5	44.5	0.2514	3.9667	*******	0
51783	12	---	64.9	40.0	0.1657	4.1325	*******	0
51883	13	---	71.3	43.2	0.2368	4.3693	*******	0
51983	14	---	69.2	46.8	0.2280	4.5973	*******	0
52083	15	---	80.5	61.4	0.5931	5.1904	*******	0
52183	16	---	76.2	65.7	0.5226	5.7130	*******	0
52283	17	---	76.1	64.8	0.5135	6.2265	*******	0
52383	18	---	82.6	66.2	0.6755	6.9020	*******	0
52483	19	---	75.2	53.2	0.4050	7.3070	*******	0
52583	20	---	76.2	47.8	0.3884	7.6954	*******	0
52683	21	---	80.4	57.1	0.5585	8.2539	*******	0
52783	22	---	69.2	49.9	0.2512	8.5051	*******	0
52883	23	---	76.5	46.5	0.3858	8.8910	*******	0
52983	24	---	74.5	58.4	0.4273	9.3182	*******	0
53083	25	---	77.9	60.6	0.5250	9.8432	*******	0
53183	26	---	82.5	62.2	0.6455	10.4887	*******	0
60183	27	---	68.0	53.7	0.2707	10.7595	*******	0
60283	28	---	74.4	48.7	0.3521	11.1116	*******	0
60383	29	---	81.2	59.3	0.5941	11.7057	*******	0
60483	30	---	80.3	62.6	0.5973	12.0000	0.1892	1
60583	31	---	84.1	60.1	0.6298	12.6297	0.2080	1
60683	32	---	85.7	63.3	0.6537	13.2835	0.2302	1
60783	33	---	80.7	61.9	0.6016	13.8851	0.2532	1
60883	34	---	77.7	58.9	0.5075	14.3926	0.2749	1
60983	35	---	78.3	56.0	0.5001	14.8927	0.2984	1
61083	36	---	78.6	55.9	0.5065	15.3991	0.3248	1
61183	37	---	83.8	54.2	0.5855	15.9846	0.3587	1
61283	38	---	86.4	55.7	0.5967	16.5814	0.3976	1
61383	39	---	89.1	61.9	0.6432	17.2246	0.4449	1
61483	40	---	89.9	64.6	0.6636	17.8882	0.5002	1
61583	41	---	88.5	61.6	0.6410	18.5292	0.5609	1

61683	42	---	88.9	63.4	0.6545	19.1837	0.6308	1
61783	43	---	91.0	62.3	0.6210	19.8047	0.7054	1
61883	44	---	89.4	63.9	0.6582	20.4629	0.7939	1
61983	45	---	84.6	67.3	0.6837	21.1467	0.8971	1
62083	46	---	87.0	66.7	0.6792	21.8259	1.0115	1
62183	47	---	80.1	66.8	0.6241	22.4500	1.1274	1
62283	48	---	79.1	60.5	0.5529	23.0029	1.2388	1
62383	49	---	83.8	58.5	0.6177	23.6206	1.3727	1
62483	50	---	88.6	58.7	0.6192	24.2398	1.5164	1
62583	51	---	85.5	65.6	0.6710	24.9108	1.6816	1
62683	52	---	88.8	61.0	0.6365	25.5473	1.8460	1
62783	53	---	89.9	65.8	0.6726	26.2199	2.0255	1
62883	54	---	90.9	72.9	0.7491	26.9690	2.2291	1
62983	55	---	76.8	65.6	0.5362	27.5052	2.3749	1
63083	56	---	77.0	64.3	0.5313	28.0364	2.5175	1
70183	57	---	87.5	64.3	0.6612	28.6977	2.6902	1
70283	58	---	94.5	68.1	0.5838	29.2814	2.8360	1
70383	59	---	97.6	67.6	0.5086	29.7900	2.9567	1
70483	60	---	95.3	70.7	0.5951	30.3851	3.0892	1
70583	61	---	84.5	68.2	0.6905	31.0755	3.2298	1
70683	62	---	83.8	64.2	0.6605	31.7360	3.3502	1
70783	63	---	78.6	56.2	0.5087	32.2448	3.4335	1
70883	64	---	86.1	52.5	0.5727	32.8175	3.5176	1
70983	65	---	87.4	59.6	0.6260	33.4435	3.5982	1
71083	66	---	83.1	65.6	0.6710	34.1145	3.6723	1
71183	67	---	86.4	63.0	0.6515	34.7660	3.7331	1
71283	68	---	93.1	65.5	0.5966	35.3625	3.7803	1
71383	69	---	96.6	70.4	0.5579	35.9204	3.8178	1
71483	70	---	91.3	68.3	0.6591	36.5795	3.8548	1
71583	71	---	95.9	64.9	0.5275	37.0000	3.8749	2
71683	72	---	95.9	72.3	0.6195	38.1470	3.8423	2
71783	73	---	97.4	74.7	0.6422	38.7892	3.8240	2
71883	74	---	95.9	71.1	0.5908	39.3800	3.8072	2
71983	75	---	97.2	72.0	0.5823	39.9623	3.7906	2
72083	76	---	99.0	72.5	0.5528	40.5151	3.7748	2
72183	77	---	100.8	71.4	0.4850	41.0001	3.7610	2
72283	78	---	88.3	69.4	0.6995	41.6996	3.7411	2
72383	79	---	88.0	64.8	0.6650	42.3645	3.7222	2
72483	80	---	90.0	70.0	0.7006	43.0651	3.7022	2
72583	81	---	81.3	66.1	0.6475	43.7126	3.6838	2
72683	82	---	87.2	64.3	0.6612	44.3738	3.6650	2
72783	83	---	92.1	66.1	0.6241	44.9979	3.6472	2
72883	84	---	91.5	66.1	0.6379	45.6358	3.6290	2
72983	85	---	90.8	63.5	0.6346	46.2704	3.6110	2
73083	86	---	94.4	65.6	0.5673	46.8377	3.5948	2
73183	87	---	97.5	67.2	0.5079	47.3456	3.5804	2
80183	88	---	93.1	69.7	0.6281	47.9736	3.5625	2
80283	89	---	88.6	72.1	0.7529	48.7266	3.5410	2
80383	90	---	90.3	68.9	0.6866	49.4132	3.5215	2
80483	91	---	89.4	68.9	0.6957	50.1089	3.5017	2
80583	92	---	93.0	70.3	0.6386	50.7475	3.4835	2

80683	93	---	92.3	67.7	0.6315	51.3790	3.4655	2
80783	94	---	92.7	67.9	0.6238	52.0027	3.4478	2
80883	95	---	94.3	68.9	0.5944	52.5971	3.4308	2
80983	96	---	96.3	71.2	0.5840	53.1811	3.4142	2
81083	97	---	91.8	68.1	0.6460	53.8271	3.3958	2
81183	98	---	99.0	69.6	0.4913	54.3184	3.3818	2
81283	99	---	86.1	65.1	0.6672	54.9856	3.3628	2
81383	100	---	71.9	58.1	0.3629	55.3485	3.3525	2
81483	101	---	79.5	54.4	0.5167	55.8652	3.3378	2
81583	102	---	83.1	53.0	0.5765	56.4417	3.3214	2
81683	103	---	87.4	59.3	0.6237	57.0655	3.3036	2
81783	104	---	93.0	62.6	0.5771	57.6426	3.2872	2
81883	105	---	91.5	72.3	0.7209	58.0000	3.2770	3
81983	106	1					3.1270	3
82083	107	2					2.9770	3
82183	108	3					2.8270	3
82283	109	4					2.6770	3
82383	110	5					2.5270	3
82483	111	6					2.3770	3
82583	112	7					2.2270	3
82683	113	8					2.0770	3
82783	114	9					1.9270	3
82883	115	10					1.7770	3
82983	116	11					1.6270	3
83083	117	12					1.4770	3
83183	118	13					1.3270	3
90183	119	14					1.1770	3
90284	120	15					1.0270	3
90384	121	16					0.8770	3
90485	122	17					0.7270	3
90583	123	18					0.5770	3
90683	124	19					0.4270	3
90783	125	20					0.2770	3
90883	126	21					0.1270	3

Table 20. Daily maximum and minimum air temperature data and predicted green leaf area index of corn hybrid Pioneer 3369A for Mayodan soil in 1983 at 44,000 plants/hectare.

DATE	DAYS AFTER PLANT.	DAYS AFTER ΣFT=58	MAX TEMP. (F)	MIN TEMP. (F)	TEMP. FUNC.	SUM. TEMP. FUNC.	PRED. GREEN LAI	PERIOD NUMBER
50683	1	---	72.5	44.6	0.2760	0.2760	*******	0
50783	2	---	78.8	45.0	0.4295	0.7055	*******	0
50883	3	---	73.4	53.6	0.3650	1.0705	*******	0
50983	4	---	65.5	40.5	0.1702	1.2407	*******	0
51083	5	---	70.1	39.3	0.2052	1.4459	*******	0
51183	6	---	75.5	41.8	0.3342	1.7801	*******	0
51283	7	---	75.1	44.0	0.3336	2.1137	*******	0
51383	8	---	77.0	44.4	0.3820	2.4957	*******	0
51483	9	---	80.9	56.0	0.5622	3.0579	*******	0
51583	10	---	83.9	63.8	0.6575	3.7154	*******	0
51683	11	---	71.5	44.5	0.2514	3.9667	*******	0
51783	12	---	64.9	40.0	0.1657	4.1325	*******	0
51883	13	---	71.3	43.2	0.2368	4.3693	*******	0
51983	14	---	69.2	46.8	0.2280	4.5973	*******	0
52083	15	---	80.5	61.4	0.5931	5.1904	*******	0
52183	16	---	76.2	65.7	0.5226	5.7130	*******	0
52283	17	---	76.1	64.8	0.5135	6.2265	*******	0
52383	18	---	82.6	66.2	0.6755	6.9020	*******	0
52483	19	---	75.2	53.2	0.4050	7.3070	*******	0
52583	20	---	76.2	47.8	0.3884	7.6954	*******	0
52683	21	---	80.4	57.1	0.5585	8.2539	*******	0
52783	22	---	69.2	49.9	0.2512	8.5051	*******	0
52883	23	---	76.5	46.5	0.3858	8.8910	*******	0
52983	24	---	74.5	58.4	0.4273	9.3182	*******	0
53083	25	---	77.9	60.6	0.5250	9.8432	*******	0
53183	26	---	82.5	62.2	0.6455	10.4887	*******	0
60183	27	---	68.0	53.7	0.2707	10.7595	*******	0
60283	28	---	74.4	48.7	0.3521	11.1116	*******	0
60383	29	---	81.2	59.3	0.5941	11.7057	*******	0
60483	30	---	80.3	62.6	0.5973	12.0000	0.1551	1
60583	31	---	84.1	60.1	0.6298	12.6297	0.1706	1
60683	32	---	85.7	63.3	0.6537	13.2835	0.1888	1
60783	33	---	80.7	61.9	0.6016	13.8851	0.2077	1
60883	34	---	77.7	58.9	0.5075	14.3926	0.2255	1
60983	35	---	78.3	56.0	0.5001	14.8927	0.2449	1
61083	36	---	78.6	55.9	0.5065	15.3991	0.2666	1
61183	37	---	83.8	54.2	0.5855	15.9846	0.2945	1
61283	38	---	86.4	55.7	0.5967	16.5814	0.3265	1
61383	39	---	89.1	61.9	0.6432	17.2246	0.3655	1
61483	40	---	89.9	64.6	0.6636	17.8882	0.4113	1
61583	41	---	88.5	61.6	0.6410	18.5292	0.4614	1

61683	42	---	88.9	63.4	0.6545	19.1837	0.5192	1
61783	43	---	91.0	62.3	0.6210	19.8047	0.5811	1
61883	44	---	89.4	63.9	0.6582	20.4629	0.6546	1
61983	45	---	84.6	67.3	0.6837	21.1467	0.7404	1
62083	46	---	87.0	66.7	0.6792	21.8259	0.8357	1
62183	47	---	80.1	66.8	0.6241	22.4500	0.9326	1
62283	48	---	79.1	60.5	0.5529	23.0029	1.0258	1
62383	49	---	83.8	58.5	0.6177	23.6206	1.1382	1
62483	50	---	88.6	58.7	0.6192	24.2398	1.2591	1
62583	51	---	85.5	65.6	0.6710	24.9108	1.3986	1
62683	52	---	88.8	61.0	0.6365	25.5473	1.5378	1
62783	53	---	89.9	65.8	0.6726	26.2199	1.6903	1
62883	54	---	90.9	72.9	0.7491	26.9690	1.8639	1
62983	55	---	76.8	65.6	0.5362	27.5052	1.9887	1
63083	56	---	77.0	64.3	0.5313	28.0364	2.1111	1
70183	57	---	87.5	64.3	0.6612	28.6977	2.2597	1
70283	58	---	94.5	68.1	0.5838	29.2814	2.3857	1
70383	59	---	97.6	67.6	0.5086	29.7900	2.4902	1
70483	60	---	95.3	70.7	0.5951	30.3851	2.6052	1
70583	61	---	84.5	68.2	0.6905	31.0755	2.7276	1
70683	62	---	83.8	64.2	0.6605	31.7360	2.8327	1
70783	63	---	78.6	56.2	0.5087	32.2448	2.9056	1
70883	64	---	86.1	52.5	0.5727	32.8175	2.9792	1
70983	65	---	87.4	59.6	0.6260	33.4435	3.0499	1
71083	66	---	83.1	65.6	0.6710	34.1145	3.1150	1
71183	67	---	86.4	63.0	0.6515	34.7660	3.1686	1
71283	68	---	93.1	65.5	0.5966	35.3625	3.2101	1
71383	69	---	96.6	70.4	0.5579	35.9204	3.2432	1
71483	70	---	91.3	68.3	0.6591	36.5795	3.2759	1
71583	71	---	95.9	64.9	0.5275	37.0000	3.2936	2
71683	72	---	95.9	72.3	0.6195	38.1470	3.2700	2
71783	73	---	97.4	74.7	0.6422	38.7892	3.2568	2
71883	74	---	95.9	71.1	0.5908	39.3800	3.2446	2
71983	75	---	97.2	72.0	0.5823	39.9623	3.2327	2
72083	76	---	99.0	72.5	0.5528	40.5151	3.2213	2
72183	77	---	100.8	71.4	0.4850	41.0001	3.2113	2
72283	78	---	88.3	69.4	0.6995	41.6996	3.1969	2
72383	79	---	88.0	64.8	0.6650	42.3645	3.1833	2
72483	80	---	90.0	70.0	0.7006	43.0651	3.1689	2
72583	81	---	81.3	66.1	0.6475	43.7126	3.1555	2
72683	82	---	87.2	64.3	0.6612	44.3738	3.1419	2
72783	83	---	92.1	66.1	0.6241	44.9979	3.1291	2
72883	84	---	91.5	66.1	0.6379	45.6358	3.1160	2
72983	85	---	90.8	63.5	0.6346	46.2704	3.1029	2
73083	86	---	94.4	65.6	0.5673	46.8377	3.0913	2
73183	87	---	97.5	67.2	0.5079	47.3456	3.0808	2
80183	88	---	93.1	69.7	0.6281	47.9736	3.0679	2
80283	89	---	88.6	72.1	0.7529	48.7266	3.0524	2
80383	90	---	90.3	68.9	0.6866	49.4132	3.0383	2
80483	91	---	89.4	68.9	0.6957	50.1089	3.0240	2
80583	92	---	93.0	70.3	0.6386	50.7475	3.0108	2

80683	93	---	92.3	67.7	0.6315	51.3790	2.9979	2
80783	94	---	92.7	67.9	0.6238	52.0027	2.9850	2
80883	95	---	94.3	68.9	0.5944	52.5971	2.9728	2
80983	96	---	96.3	71.2	0.5840	53.1811	2.9608	2
81083	97	---	91.8	68.1	0.6460	53.8271	2.9475	2
81183	98	---	99.0	69.6	0.4913	54.3184	2.9374	2
81283	99	---	86.1	65.1	0.6672	54.9856	2.9237	2
81383	100	---	71.9	58.1	0.3629	55.3485	2.9162	2
81483	101	---	79.5	54.4	0.5167	55.8652	2.9056	2
81583	102	---	83.1	53.0	0.5765	56.4417	2.8937	2
81683	103	---	87.4	59.3	0.6237	57.0655	2.8809	2
81783	104	---	93.0	62.6	0.5771	57.6426	2.8690	2
81883	105	---	91.5	72.3	0.7209	58.0000	2.8617	3
81983	106	1					2.7117	3
82083	107	2					2.5617	3
82183	108	3					2.4117	3
82283	109	4					2.2617	3
82383	110	5					2.1117	3
82483	111	6					1.9617	3
82583	112	7					1.8117	3
82683	113	8					1.6617	3
82783	114	9					1.5117	3
82883	115	10					1.3617	3
82983	116	11					1.2117	3
83083	117	12					1.0617	3
83183	118	13					0.9117	3
90183	119	14					0.7617	3
90284	120	15					0.6117	3
90384	121	16					0.4617	3
90485	122	17					0.3117	3
90583	123	18					0.1617	3
90683	124	19					0.0117	3

Table 21. Short duration soil/air temperature data and predicted green leaf area index values of corn hybrid Pioneer 3369A for Mayodan soil in 1983 at 54,000 plants/hectare.

DATE	DAYS AFTER PLANT.	DAYS AFTER ΣFT=58	AVG. TEMP. (C)	TEMP. FUNC.	SUM. TEMP. FUNC.	PRED. GREEN LAI	PERIOD NUMBER
50683	1	---	18.00	0.3400	0.3400	*******	0
50783	2	---	18.81	0.3700	0.7100	*******	0
50883	3	---	18.48	0.3400	1.0500	*******	0
50983	4	---	18.29	0.3500	1.4000	*******	0
51083	5	---	18.38	0.3600	1.7600	*******	0
51183	6	---	19.29	0.4000	2.1600	*******	0
51283	7	---	20.59	0.4600	2.6200	*******	0
51383	8	---	21.03	0.4800	3.1100	*******	0
51483	9	---	21.66	0.5100	3.6100	*******	0
51583	10	---	22.27	0.5500	4.1600	*******	0
51683	11	---	19.87	0.3800	4.5400	*******	0
51783	12	---	17.42	0.3200	4.8600	*******	0
51883	13	---	18.77	0.3700	5.2300	*******	0
51983	14	---	18.15	0.3300	5.5600	*******	0
52083	15	---	20.61	0.4500	6.0100	*******	0
52183	16	---	21.10	0.4300	6.4400	*******	0
52283	17	---	20.38	0.4000	6.8300	*******	0
52383	18	---	23.88	0.6500	7.4900	*******	0
52483	19	---	21.80	0.4900	7.9700	*******	0
52583	20	---	21.38	0.5000	8.4700	*******	0
52683	21	---	22.39	0.5500	9.0300	*******	0
52783	22	---	21.02	0.4600	9.4800	*******	0
52883	23	---	21.16	0.4800	9.9700	*******	0
52983	24	---	20.70	0.4100	10.3800	*******	0
53083	25	---	21.44	0.4800	10.8600	*******	0
53183	26	---	23.13	0.5900	11.4500	*******	0
60183	27	---	20.66	0.4000	11.8500	*******	0
60283	29	---	20.45	0.4500	12.0000	0.1892	1
60383	30	---	20.33	0.4800	12.7700	0.2126	1
60483	31	---	20.98	0.4800	13.2500	0.2290	1
60583	32	---	22.13	0.5800	13.8300	0.2510	1
60683	33	---	23.03	0.6100	14.4500	0.2775	1
60783	34	---	21.58	0.5000	14.9500	0.3013	1
60883	35	---	19.35	0.4200	15.3600	0.3227	1
60983	36	---	19.38	0.4300	15.7900	0.3470	1
61083	37	---	18.73	0.4100	16.2000	0.3722	1
61183	38	---	20.36	0.5100	16.7200	0.4073	1
61283	39	---	22.10	0.5800	17.3000	0.4508	1
61383	40	---	24.52	0.6800	17.9800	0.5085	1
61483	41	---	24.56	0.6700	18.6500	0.5731	1

61583	42	---	24.08	0.6600	19.3100	0.6453	1
61683	43	---	24.31	0.6600	19.9700	0.7267	1
61783	44	---	24.85	0.6800	20.6500	0.8210	1
61883	45	---	24.12	0.6600	21.3100	0.9235	1
61983	46	---	22.93	0.5800	21.8900	1.0229	1
62083	47	---	23.48	0.6100	22.5000	1.1371	1
62183	48	---	21.33	0.4700	22.9800	1.2340	1
62283	49	---	21.07	0.4800	23.4500	1.3347	1
62383	50	---	21.40	0.5500	24.0100	1.4620	1
62483	51	---	23.97	0.6700	24.6800	1.6238	1
62583	52	---	24.43	0.6900	25.3600	1.7970	1
62683	53	---	23.97	0.6600	26.0200	1.9717	1
62783	54	---	25.97	0.7600	26.7800	2.1776	1
62883	55	---	26.45	0.7900	27.5700	2.3924	1
62983	56	---	22.12	0.5200	28.0900	2.5318	1
63083	57	---	21.19	0.4800	28.5700	2.6574	1
70183	58	---	24.03	0.6500	29.2200	2.8210	1
70283	59	---	26.76	0.7200	29.9300	2.9888	1
70383	60	---	26.91	0.6700	30.6100	3.1366	1
70483	61	---	27.23	0.7700	31.3800	3.2870	1
70583	62	---	23.79	0.6400	32.0200	3.3978	1
70683	63	---	22.57	0.5800	32.6000	3.4869	1
70783	64	---	19.45	0.4300	33.0300	3.5463	1
70883	65	---	20.57	0.5300	33.5700	3.6131	1
70983	66	---	23.47	0.6400	34.2100	3.6819	1
71083	67	---	23.26	0.6200	34.8300	3.7386	1
71183	68	---	23.56	0.6400	35.4700	3.7880	1
71283	69	---	26.14	0.7200	36.1900	3.8338	1
71383	70	---	28.33	0.7700	36.9500	3.8727	1
71483	71	---	26.13	0.7400	37.0000	3.8740	2
71583	72	---	27.80	0.7600	38.4500	3.8327	2
71683	73	---	29.61	0.8400	39.2900	3.8088	2
71783	74	---	29.62	0.8500	40.1400	3.7846	2
71883	75	---	28.17	0.8000	40.9300	3.7621	2
71983	76	---	27.80	0.8000	41.7300	3.7393	2
72083	77	---	29.24	0.8000	42.5300	3.7165	2
72183	78	---	30.89	0.7700	43.3000	3.6946	2
72283	79	---	25.35	0.7300	44.0300	3.6738	2
72383	80	---	25.20	0.7300	44.7700	3.6528	2
72483	81	---	25.53	0.7200	45.4900	3.6323	2
72583	82	---	22.99	0.5800	46.0700	3.6157	2
72683	83	---	23.46	0.6300	46.7000	3.5978	2
72783	84	---	25.57	0.7200	47.4100	3.5776	2
72883	85	---	25.46	0.7100	48.1200	3.5574	2
72983	86	---	24.66	0.6900	48.8100	3.5377	2
73083	87	---	26.38	0.7100	49.5200	3.5175	2
73183	88	---	28.39	0.7400	50.2600	3.4964	2
80183	89	---	27.68	0.8900	51.1500	3.4711	2
80283	90	---	27.23	0.8600	52.0100	3.4466	2
80383	91	---	25.60	0.7100	52.7300	3.4261	2
80483	92	---	24.80	0.6800	53.4100	3.4068	2

80583	93	---	26.33	0.7400	54.1500	3.3857	2
80683	94	---	25.86	0.7300	54.8800	3.3649	2
80783	95	---	26.18	0.7400	55.6200	3.3438	2
80883	96	---	27.29	0.7600	56.3800	3.3222	2
80983	97	---	27.48	0.7400	57.1200	3.3011	2
81083	98	---	25.93	0.7400	57.8600	3.2801	2
81183	99	---	28.25	0.7200	58.0000	3.2761	3
81283	100	1				3.1261	3
81383	101	2				2.9761	3
81483	102	3				2.8261	3
81583	103	4				2.6761	3
81683	104	5				2.5261	3
81783	105	6				2.3761	3
81883	106	7				2.2261	3
81983	107	8				2.0761	3
82083	108	9				1.9261	3
82183	109	10				1.7761	3
82283	110	11				1.6261	3
82383	111	12				1.4761	3
82483	112	13				1.3261	3
82583	113	14				1.1761	3
82683	114	15				1.0261	3
82783	115	16				0.8761	3
82883	116	17				0.7261	3
82983	117	18				0.5761	3
83083	118	19				0.4261	3
83183	119	20				0.2761	3
90183	120	21				0.1261	3

Table 22. Short duration soil/air temperature data and predicted green leaf area index values of corn hybrid Pioneer 3369A for Mayodan soil in 1983 at 44,000 plants/hectare.

DATE	DAYS AFTER PLANT.	DAYS AFTER ΣFT=58	AVG. TEMP. (C)	TEMP. FUNC.	SUM. TEMP. FUNC.	PRED. GREEN LAI	PERIOD NUMBER
50683	1	---	18.00	0.3400	0.3400	*******	0
50783	2	---	18.81	0.3700	0.7100	*******	0
50883	3	---	18.48	0.3400	1.0500	*******	0
50983	4	---	18.29	0.3500	1.4000	*******	0
51083	5	---	18.38	0.3600	1.7600	*******	0
51183	6	---	19.29	0.4000	2.1600	*******	0
51283	7	---	20.59	0.4600	2.6200	*******	0
51383	8	---	21.03	0.4800	3.1100	*******	0
51483	9	---	21.66	0.5100	3.6100	*******	0
51583	10	---	22.27	0.5500	4.1600	*******	0
51683	11	---	19.87	0.3800	4.5400	*******	0
51783	12	---	17.42	0.3200	4.8600	*******	0
51883	13	---	18.77	0.3700	5.2300	*******	0
51983	14	---	18.15	0.3300	5.5600	*******	0
52083	15	---	20.61	0.4500	6.0100	*******	0
52183	16	---	21.10	0.4300	6.4400	*******	0
52283	17	---	20.38	0.4000	6.8300	*******	0
52383	18	---	23.88	0.6500	7.4900	*******	0
52483	19	---	21.80	0.4900	7.9700	*******	0
52583	20	---	21.38	0.5000	8.4700	*******	0
52683	21	---	22.39	0.5500	9.0300	*******	0
52783	22	---	21.02	0.4600	9.4800	*******	0
52883	23	---	21.16	0.4800	9.9700	*******	0
52983	24	---	20.70	0.4100	10.3800	*******	0
53083	25	---	21.44	0.4800	10.8600	*******	0
53183	26	---	23.13	0.5900	11.4500	*******	0
60183	27	---	20.66	0.4000	11.8500	*******	0
60283	29	---	20.45	0.4500	12.0000	0.1551	1
60383	30	---	20.33	0.4800	12.7700	0.1743	1
60483	31	---	20.98	0.4800	13.2500	0.1878	1
60583	32	---	22.13	0.5800	13.8300	0.2059	1
60683	33	---	23.03	0.6100	14.4500	0.2276	1
60783	34	---	21.58	0.5000	14.9500	0.2472	1
60883	35	---	19.35	0.4200	15.3600	0.2648	1
60983	36	---	19.38	0.4300	15.7900	0.2849	1
61083	37	---	18.73	0.4100	16.2000	0.3056	1
61183	38	---	20.36	0.5100	16.7200	0.3345	1
61283	39	---	22.10	0.5800	17.3000	0.3704	1
61383	40	---	24.52	0.6800	17.9800	0.4181	1
61483	41	---	24.56	0.6700	18.6500	0.4715	1

61583	42	---	24.08	0.6600	19.3100	0.5313	1
61683	43	---	24.31	0.6600	19.9700	0.5987	1
61783	44	---	24.85	0.6800	20.6500	0.6771	1
61883	45	---	24.12	0.6600	21.3100	0.7624	1
61983	46	---	22.93	0.5800	21.8900	0.8453	1
62083	47	---	23.48	0.6100	22.5000	0.9407	1
62183	48	---	21.33	0.4700	22.9800	1.0218	1
62283	49	---	21.07	0.4800	23.4500	1.1063	1
62383	50	---	21.40	0.5500	24.0100	1.2133	1
62483	51	---	23.97	0.6700	24.6800	1.3497	1
62583	52	---	24.43	0.6900	25.3600	1.4962	1
62683	53	---	23.97	0.6600	26.0200	1.6445	1
62783	54	---	25.97	0.7600	26.7800	1.8200	1
62883	55	---	26.45	0.7900	27.5700	2.0037	1
62983	56	---	22.12	0.5200	28.0900	2.1233	1
63083	57	---	21.19	0.4800	28.5700	2.2315	1
70183	58	---	24.03	0.6500	29.2200	2.3727	1
70283	59	---	26.76	0.7200	29.9300	2.5180	1
70383	60	---	26.91	0.6700	30.6100	2.6464	1
70483	61	---	27.23	0.7700	31.3800	2.7775	1
70583	62	---	23.79	0.6400	32.0200	2.8743	1
70683	63	---	22.57	0.5800	32.6000	2.9523	1
70783	64	---	19.45	0.4300	33.0300	3.0044	1
70883	65	---	20.57	0.5300	33.5700	3.0630	1
70983	66	---	23.47	0.6400	34.2100	3.1235	1
71083	67	---	23.26	0.6200	34.8300	3.1734	1
71183	68	---	23.56	0.6400	35.4700	3.2169	1
71283	69	---	26.14	0.7200	36.1900	3.2573	1
71383	70	---	28.33	0.7700	36.9500	3.2916	1
71483	71	---	26.13	0.7400	37.0000	3.2928	2
71583	72	---	27.80	0.7600	38.4500	3.2629	2
71683	73	---	29.61	0.8400	39.2900	3.2457	2
71783	74	---	29.62	0.8500	40.1400	3.2282	2
71883	75	---	28.17	0.8000	40.9300	3.2119	2
71983	76	---	27.80	0.8000	41.7300	3.1955	2
72083	77	---	29.24	0.8000	42.5300	3.1790	2
72183	78	---	30.89	0.7700	43.3000	3.1632	2
72283	79	---	25.35	0.7300	44.0300	3.1482	2
72383	80	---	25.20	0.7300	44.7700	3.1330	2
72483	81	---	25.53	0.7200	45.4900	3.1182	2
72583	82	---	22.99	0.5800	46.0700	3.1062	2
72683	83	---	23.46	0.6300	46.7000	3.0933	2
72783	84	---	25.57	0.7200	47.4100	3.0787	2
72883	85	---	25.46	0.7100	48.1200	3.0641	2
72983	86	---	24.66	0.6900	48.8100	3.0499	2
73083	87	---	26.38	0.7100	49.5200	3.0353	2
73183	88	---	28.39	0.7400	50.2600	3.0200	2
80183	89	---	27.68	0.8900	51.1500	3.0017	2
80283	90	---	27.23	0.8600	52.0100	2.9840	2
80383	91	---	25.60	0.7100	52.7300	2.9692	2
80483	92	---	24.80	0.6800	53.4100	2.9553	2

80583	93	---	26.33	0.7400	54.1500	2.9400	2
80683	94	---	25.86	0.7300	54.8800	2.9250	2
80783	95	---	26.18	0.7400	55.6200	2.9098	2
80880	96	---	27.29	0.7600	56.3800	2.8942	2
80983	97	---	27.48	0.7400	57.1200	2.8789	2
81083	98	---	25.93	0.7400	57.8600	2.8637	2
81183	99	---	28.25	0.7200	58.0000	2.8608	3
81283	100	1				2.7108	3
81383	101	2				2.5608	3
81483	102	3				2.4108	3
81583	103	4				2.2608	3
81683	104	5				2.1108	3
81783	105	6				1.9608	3
81883	106	7				1.8108	3
81983	107	8				1.6608	3
82083	108	9				1.5108	3
82183	109	10				1.3608	3
82283	110	11				1.2108	3
82383	111	12				1.0608	3
82483	112	13				0.9108	3
82583	113	14				0.7608	3
82683	114	15				0.6108	3
82783	115	16				0.4608	3
82883	116	17				0.3108	3
82983	117	18				0.1608	3
83083	118	19				0.0108	3

Table 23. Short duration air temperature data and predicted green leaf area index values of corn hybrid Pioneer 3369A for Mayodan soil in 1983 at 54,000 plants/hectare.

DATE	DAYS AFTER PLANT.	DAYS AFTER ΣFT=58	AVG. TEMP. (C)	TEMP. FUNC.	SUM. TEMP. FUNC.	PRED. GREEN LAI	PERIOD NUMBER
50683	1	---	14.53	0.2400	0.2400	*******	0
50783	2	---	17.35	0.3700	0.6100	*******	0
50883	3	---	17.22	0.3100	0.9200	*******	0
50983	4	---	11.64	0.1500	1.0700	*******	0
51083	5	---	12.42	0.1800	1.2500	*******	0
51183	6	---	15.23	0.2700	1.5200	*******	0
51283	7	---	16.29	0.3100	1.8300	*******	0
51383	8	---	16.79	0.3300	2.1700	*******	0
51483	9	---	19.52	0.4300	2.6000	*******	0
51583	10	---	23.17	0.6200	3.2200	*******	0
51683	11	---	16.00	0.2700	3.4900	*******	0
51783	12	---	11.30	0.1500	3.6400	*******	0
51883	13	---	14.42	0.2300	3.8700	*******	0
51983	14	---	15.59	0.2600	4.1300	*******	0
52083	15	---	21.00	0.4900	4.6100	*******	0
52183	16	---	21.04	0.4500	5.0600	*******	0
52283	17	---	20.65	0.4200	5.4800	*******	0
52383	18	---	24.00	0.6700	6.1500	*******	0
52483	19	---	18.82	0.3700	6.5200	*******	0
52583	20	---	17.06	0.3400	6.8600	*******	0
52683	21	---	19.49	0.4400	7.3000	*******	0
52783	22	---	14.82	0.2400	7.5400	*******	0
52883	23	---	17.13	0.3300	7.8700	*******	0
52983	24	---	18.13	0.3400	8.2100	*******	0
53083	25	---	20.18	0.4400	8.6400	*******	0
53183	26	---	21.09	0.5000	9.1400	*******	0
60183	27	---	16.21	0.2800	9.4200	*******	0
60283	28	---	16.35	0.2900	9.7100	*******	0
60383	29	---	20.33	0.4800	10.1900	*******	0
60483	30	---	20.98	0.4800	10.6600	*******	0
60583	31	---	22.13	0.5800	11.2400	*******	0
60683	32	---	23.03	0.6100	11.8600	*******	0
60783	34	---	21.58	0.5000	12.0000	0.1892	1
60883	35	---	19.35	0.4200	12.7800	0.2129	1
60983	36	---	19.38	0.4300	13.2100	0.2276	1
61083	37	---	18.73	0.4100	13.6200	0.2427	1
61183	38	---	20.36	0.5100	14.1300	0.2634	1
61283	39	---	22.10	0.5800	14.7100	0.2896	1
61383	40	---	24.52	0.6800	15.3900	0.3243	1
61483	41	---	24.56	0.6700	16.0700	0.3640	1
61583	42	---	24.08	0.6600	16.7200	0.4073	1

61683	43	---	24.31	0.6600	17.3900	0.4580	1
61783	44	---	24.85	0.6800	18.0700	0.5167	1
61883	45	---	24.12	0.6600	18.7300	0.5814	1
61983	46	---	22.93	0.5800	19.3100	0.6453	1
62083	47	---	23.48	0.6100	19.9200	0.7201	1
62183	48	---	21.33	0.4700	20.3900	0.7836	1
62283	49	---	21.07	0.4800	20.8600	0.8524	1
62383	50	---	21.40	0.5500	21.4200	0.9417	1
62483	51	---	23.97	0.6700	22.0900	1.0593	1
62583	52	---	24.43	0.6900	22.7800	1.1929	1
62683	53	---	23.97	0.6600	23.4400	1.3325	1
62783	54	---	25.97	0.7600	24.1900	1.5045	1
62883	55	---	26.45	0.7900	24.9900	1.7017	1
62983	56	---	22.12	0.5200	25.5000	1.8336	1
63083	57	---	21.19	0.4800	25.9800	1.9610	1
70183	58	---	24.03	0.6500	26.6300	2.1368	1
70283	59	---	26.76	0.7200	27.3400	2.3301	1
70383	60	---	26.91	0.6700	28.0200	2.5132	1
70483	61	---	27.23	0.7700	28.7900	2.7137	1
70583	62	---	23.79	0.6400	29.4300	2.8720	1
70683	63	---	22.57	0.5800	30.0100	3.0069	1
70783	64	---	19.45	0.4300	30.4400	3.1009	1
70883	65	---	20.57	0.5300	30.9800	3.2112	1
70983	66	---	23.47	0.6400	31.6200	3.3301	1
71083	67	---	23.26	0.6200	32.2400	3.4328	1
71183	68	---	23.56	0.6400	32.8800	3.5262	1
71283	69	---	26.14	0.7200	33.6000	3.6166	1
71383	70	---	28.33	0.7700	34.3600	3.6965	1
71483	71	---	26.13	0.7400	35.1100	3.7613	1
71583	72	---	27.80	0.7600	35.8600	3.8140	1
71683	73	---	29.61	0.8400	36.7000	3.8609	1
71783	74	---	29.62	0.8500	37.0000	3.8692	2
71883	75	---	28.17	0.8000	38.3400	3.8311	2
71983	76	---	27.80	0.8000	39.1400	3.8083	2
72083	77	---	29.24	0.8000	39.9400	3.7855	2
72183	78	---	30.89	0.7700	40.7100	3.7636	2
72283	79	---	25.35	0.7300	41.4400	3.7428	2
72383	80	---	25.20	0.7300	42.1800	3.7217	2
72483	81	---	25.53	0.7200	42.9000	3.7012	2
72583	82	---	22.99	0.5800	43.4800	3.6847	2
72683	83	---	23.46	0.6300	44.1100	3.6668	2
72783	84	---	25.57	0.7200	44.8200	3.6466	2
72883	85	---	25.46	0.7100	45.5300	3.6264	2
72983	86	---	24.66	0.6900	46.2200	3.6067	2
73083	87	---	26.38	0.7100	46.9300	3.5865	2
73183	88	---	28.39	0.7400	47.6700	3.5654	2
80183	89	---	27.68	0.8900	48.5600	3.5401	2
80283	90	---	27.23	0.8600	49.4200	3.5156	2
80383	91	---	25.60	0.7100	50.1400	3.4951	2
80483	92	---	24.80	0.6800	50.8200	3.4757	2
80583	93	---	26.33	0.7400	51.5600	3.4547	2

80683	94	---	25.86	0.7300	52.2900	3.4339	2
80783	95	---	26.18	0.7400	53.0300	3.4128	2
80883	96	---	27.29	0.7600	53.7900	3.3912	2
80983	97	---	27.48	0.7400	54.5300	3.3701	2
81083	98	---	25.93	0.7400	55.2700	3.3490	2
81183	99	---	28.25	0.7200	55.9900	3.3285	2
81283	100	---	23.65	0.6300	56.6300	3.3103	2
81383	101	---	18.28	0.3300	56.9600	3.3009	2
81483	102	---	18.69	0.4100	57.3700	3.2892	2
81583	103	---	20.01	0.5000	57.8700	3.2750	2
81683	104	---	22.74	0.6100	58.0000	3.2713	3
81783	105	1				3.1213	3
81883	106	2				2.9713	3
81983	107	3				2.8213	3
82083	108	4				2.6713	3
82183	109	5				2.5213	3
82283	110	6				2.3713	3
82383	111	7				2.2213	3
82483	112	8				2.0713	3
82583	113	9				1.9213	3
82683	114	10				1.7713	3
82783	115	11				1.6213	3
82883	116	12				1.4713	3
82983	117	13				1.3213	3
83083	118	14				1.1713	3
83183	119	15				1.0213	3
90183	120	16				0.8713	3
90283	121	17				0.7213	3
90383	122	18				0.5713	3
90483	123	19				0.4213	3
90583	124	20				0.2713	3
90683	125	21				0.1213	3

Table 24. Short duration air temperature data and predicted green leaf area index values of corn hybrid Pioneer 3369A for Mayodan soil in 1983 at 44,000 plants/hectare.

DATE	DAYS AFTER PLANT.	DAYS AFTER ΣFT=58	AVG. TEMP. (C)	TEMP. FUNC.	SUM. TEMP. FUNC.	PRED. GREEN LAI	PERIOD NUMBER
50683	1	---	14.53	0.2400	0.2400	*******	0
50783	2	---	17.35	0.3700	0.6100	*******	0
50883	3	---	17.22	0.3100	0.9200	*******	0
50983	4	---	11.64	0.1500	1.0700	*******	0
51083	5	---	12.42	0.1800	1.2500	*******	0
51183	6	---	15.23	0.2700	1.5200	*******	0
51283	7	---	16.29	0.3100	1.8300	*******	0
51383	8	---	16.79	0.3300	2.1700	*******	0
51483	9	---	19.52	0.4300	2.6000	*******	0
51583	10	---	23.17	0.6200	3.2200	*******	0
51683	11	---	16.00	0.2700	3.4900	*******	0
51783	12	---	11.30	0.1500	3.6400	*******	0
51883	13	---	14.42	0.2300	3.8700	*******	0
51983	14	---	15.59	0.2600	4.1300	*******	0
52083	15	---	21.00	0.4900	4.6100	*******	0
52183	16	---	21.04	0.4500	5.0600	*******	0
52283	17	---	20.65	0.4200	5.4800	*******	0
52383	18	---	24.00	0.6700	6.1500	*******	0
52483	19	---	18.82	0.3700	6.5200	*******	0
52583	20	---	17.06	0.3400	6.8600	*******	0
52683	21	---	19.49	0.4400	7.3000	*******	0
52783	22	---	14.82	0.2400	7.5400	*******	0
52883	23	---	17.13	0.3300	7.8700	*******	0
52983	24	---	18.13	0.3400	8.2100	*******	0
53083	25	---	20.18	0.4400	8.6400	*******	0
53183	26	---	21.09	0.5000	9.1400	*******	0
60183	27	---	16.21	0.2800	9.4200	*******	0
60283	28	---	16.35	0.2900	9.7100	*******	0
60383	29	---	20.33	0.4800	10.1900	*******	0
60483	30	---	20.98	0.4800	10.6600	*******	0
60583	31	---	22.13	0.5800	11.2400	*******	0
60683	32	---	23.03	0.6100	11.8600	*******	0
60783	34	---	21.58	0.5000	12.0000	0.1551	1
60883	35	---	19.35	0.4200	12.7800	0.1745	1
60983	36	---	19.38	0.4300	13.2100	0.1866	1
61083	37	---	18.73	0.4100	13.6200	0.1991	1
61183	38	---	20.36	0.5100	14.1300	0.2161	1
61283	39	---	22.10	0.5800	14.7100	0.2376	1
61383	40	---	24.52	0.6800	15.3900	0.2662	1
61483	41	---	24.56	0.6700	16.0700	0.2989	1

61583	42	---	24.08	0.6600	16.7200	0.3345	1
61683	43	---	24.31	0.6600	17.3900	0.3764	1
61783	44	---	24.85	0.6800	18.0700	0.4249	1
61883	45	---	24.12	0.6600	18.7300	0.4784	1
61983	46	---	22.93	0.5800	19.3100	0.5313	1
62083	47	---	23.48	0.6100	19.9200	0.5933	1
62183	48	---	21.33	0.4700	20.3900	0.6460	1
62283	49	---	21.07	0.4800	20.8600	0.7032	1
62383	50	---	21.40	0.5500	21.4200	0.7775	1
62483	51	---	23.97	0.6700	22.0900	0.8756	1
62583	52	---	24.43	0.6900	22.7800	0.9874	1
62683	53	---	23.97	0.6600	23.4400	1.1045	1
62783	54	---	25.97	0.7600	24.1900	1.2491	1
62883	55	---	26.45	0.7900	24.9900	1.4156	1
62983	56	---	22.12	0.5200	25.5000	1.5273	1
63083	57	---	21.19	0.4800	25.9800	1.6354	1
70183	58	---	24.03	0.6500	26.6300	1.7851	1
70283	59	---	26.76	0.7200	27.3400	1.9503	1
70383	60	---	26.91	0.6700	28.0200	2.1074	1
70483	61	---	27.23	0.7700	28.7900	2.2800	1
70583	62	---	23.79	0.6400	29.4300	2.4168	1
70683	63	---	22.57	0.5800	30.0100	2.5337	1
70783	64	---	19.45	0.4300	30.4400	2.6154	1
70883	65	---	20.57	0.5300	30.9800	2.7114	1
70983	66	---	23.47	0.6400	31.6200	2.8151	1
71083	67	---	23.26	0.6200	32.2400	2.9049	1
71183	68	---	23.56	0.6400	32.8800	2.9867	1
71283	69	---	26.14	0.7200	33.6000	3.0661	1
71383	70	---	28.33	0.7700	34.3600	3.1363	1
71483	71	---	26.13	0.7400	35.1100	3.1934	1
71583	72	---	27.80	0.7600	35.8600	3.2398	1
71683	73	---	29.61	0.8400	36.7000	3.2812	1
71783	74	---	29.62	0.8500	37.0000	3.2886	2
71883	75	---	28.17	0.8000	38.3400	3.2610	2
71983	76	---	27.80	0.8000	39.1400	3.2446	2
72083	77	---	29.24	0.8000	39.9400	3.2281	2
72183	78	---	30.89	0.7700	40.7100	3.2123	2
72283	79	---	25.35	0.7300	41.4400	3.1972	2
72383	80	---	25.20	0.7300	42.1800	3.1820	2
72483	81	---	25.53	0.7200	42.9000	3.1672	2
72583	82	---	22.99	0.5800	43.4800	3.1553	2
72683	83	---	23.46	0.6300	44.1100	3.1423	2
72783	84	---	25.57	0.7200	44.8200	3.1277	2
72883	85	---	25.46	0.7100	45.5300	3.1131	2
72983	86	---	24.66	0.6900	46.2200	3.0989	2
73083	87	---	26.38	0.7100	46.9300	3.0843	2
73183	88	---	28.39	0.7400	47.6700	3.0691	2
80183	89	---	27.68	0.8900	48.5600	3.0508	2
80283	90	---	27.23	0.8600	49.4200	3.0331	2
80383	91	---	25.60	0.7100	50.1400	3.0183	2
80483	92	---	24.80	0.6800	50.8200	3.0043	2

80583	93	---	26.33	0.7400	51.5600	2.9891	2
80683	94	---	25.86	0.7300	52.2900	2.9741	2
80783	95	---	26.18	0.7400	53.0300	2.9589	2
80883	96	---	27.29	0.7600	53.7900	2.9432	2
80983	97	---	27.48	0.7400	54.5300	2.9280	2
81083	98	---	25.93	0.7400	55.2700	2.9128	2
81183	99	---	28.25	0.7200	55.9900	2.8980	2
81283	100	---	23.65	0.6300	56.6300	2.8848	2
81383	101	---	18.28	0.3300	56.9600	2.8780	2
81483	102	---	18.69	0.4100	57.3700	2.8696	2
81583	103	---	20.01	0.5000	57.8700	2.8593	2
81683	104	---	22.74	0.6100	58.0000	2.8566	3
81783	105	1				2.7066	3
81883	106	2				2.5566	3
81983	107	3				2.4066	3
82083	108	4				2.2566	3
82183	109	5				2.1066	3
82283	110	6				1.9566	3
82383	111	7				1.8066	3
82483	112	8				1.6566	3
82583	113	9				1.5066	3
82683	114	10				1.3566	3
82783	115	11				1.2066	3
82883	116	12				1.0566	3
82983	117	13				0.9066	3
83083	118	14				0.7566	3
83183	119	15				0.6066	3
90183	120	16				0.4566	3
90283	121	17				0.3066	3
90383	122	18				0.1566	3
90483	123	19				0.0066	3

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