5. EXAMPLES

To illustrate the flexibility and utility of RWEQ, examples of the response of RWEQ to input limits of each parameter are presented. They are not intended to cover the entire range of potential use of RWEQ. They do provide an illustration of RWEQ and methods of developing or modifying input files. In each subsection the development of the input file is illustrated.

5.1 CREATING AND EDITING MANAGEMENT FILES

A management file may be created within the RWEQ program or through the DOS editor. Instructions are given for both methods.

5.1.1 A simple management file using RWEQ

To create a management file it is not necessary to assign a client name, but it is necessary to enter a weather filename. When prompted for a management filename, pressing <enter> without entering a filename or entering a *new* filename gives blank **`Soils Properties`** and **`Field Geometry`** windows and a blank **`DOABLE SCREEN`**.

The example below is based on information given in the RWEQ INPUT FORM in Table 5.1.1. This form insures that you have the essential input data for the development of a management system.

NOTE: APPENDIX A-2 is a blank RWEQ INPUT FORM. The entries that are color coded blue are the minimum required input.

In this example the client filename TEST, the weather filename W\TX23005.DAT, and the management filename TEST.MAN are entered. The soil properties and field geometry are entered before advancing to the DOABLE SCREEN. In this simple file there is no vegetation, no tillage, and no barriers. Dates are entered for the beginning and end of the year.

A.	At the C:\RWEQ97> prompt	type **RWEQ** and press <enter>.
B.	At the **`Client`** prompt	type **TEST** and press <enter>.
C.	At the **`Weather File`** prompt	type **W\TX23005.DAT** for the Big Spring, Texas weather file. Press <enter>.
D.	At the **`Man. File`** prompt	type **TEST.MAN** (Figure 5.1.1.1) and press <enter>. (Because this is a new management file, a warning screen appears to indicate that the file cannot be found. See Figure 5.1.1.2.) Press <enter> to continue.

Fryrear, D.W., Ali Saleh, J.D. Bilbro, H.M. Schomberg, J.E. Stout, and T.M. Zobeck. 1998. Revised Wind Erosion Equation (RWEQ). Wind Erosion and Water Conservation Research Unit, USDA-ARS, Southern Plains Area Cropping Systems Research Laboratory. Technical Bulletin No. 1. Internet address: http://www.csrl.ars.usda.gov/wewc/rweq.htm

Table 5.1.1

RWEQ INPUT FORM

CLIENT: TEST WEATHER FILE: W\TX23005.DAT MANAGEMENT FILE: TEST.MAN

Soil Properties:
soil texture SANDY LOAM OR sand 64 %, silt 24 %, organic matter 0.5 %, calcium carbonate 3 %, rock cover 0 %

Field Geometry: shape (circular) or rectangular; area 10 acres; orientation – ° from north; length_N – feet; slope gradient –; slope length – feet

Longitude_____ Latitude_____ Elevation_____ Annual Rainfall_____

DATE	VEGETATION					OPERATION / EVENT								IRRIGATION			BARRIERS			
	Residue	Yield	% Cov.	# Stems	Growing Crop	Implement	Mod. Rough.	RR	Ridge Spac.	Ridge Ht.	Ridge Orient.	Kill Crop	% Flat	% Stand.	Amt.	Rate	# Days	Ht.	DI	Spac.	Orient.
1/1/90	NONE	0	0	0	NONE	NONE	N	0	0	0	0	N	0	0	–	–	–	–	–	–	–
12/31/90	NONE	0	0	0	NONE	NONE	N	0	0	0	0	N	0	0	–	–	–	–	–	–	–

Figure 5.1.1.1

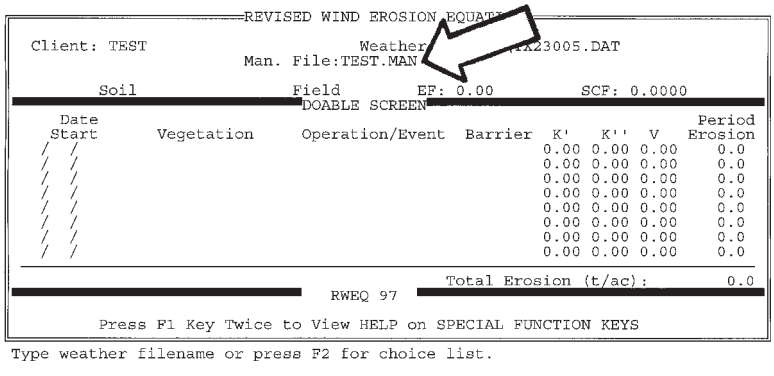
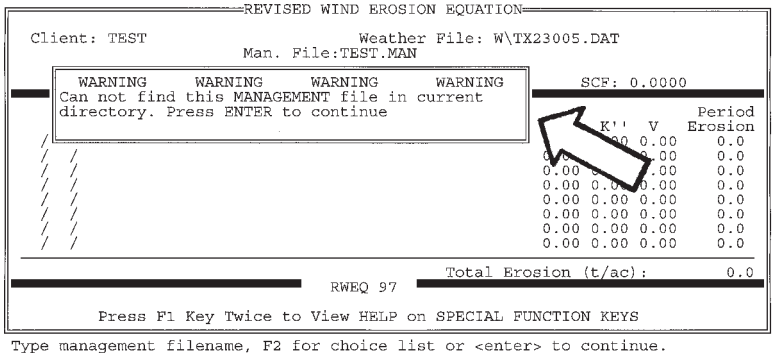


Figure 5.1.1.2



E.	At the **`Soil Texture`** prompt	press F2, use the arrow key to highlight *sandy_loam* (Figure 5.1.1.3), and press <enter> to select. Note that the values for sand, silt, OM, $CaCO_3$, and rock are brought into the screen. The clay remains 100 (the default) until <enter> is pressed and the value 10 is calculated for clay. See Figure 5.1.1.4. Press <enter> five times to advance through the **`Soil Properties`** window and accept the default values for a sandy loam soil.
	At the flashing **`Soil`** prompt	press <enter> to advance to **`Field Geometry`** window. See Figure 5.1.1.5.
F.	At the **`Shape`** prompt	press F2 and use the arrow key if necessary to highlight *circular*. Press <enter> to select.
	At the **`Area`** prompt	type **10** and press <enter>.
	At the **`Orientation`** prompt	press <enter> to accept the default value (0.00).
	At the **`Diameter`** prompt	745 is the computed diameter of the 10 acre circular field. Press <enter> to continue.
	At the **`Slope Length`** prompt	press <enter> to accept 0.0 which means no hill.
	At the **`Slope %`** prompt	(Figure 5.1.1.6) press <enter> to accept the 0.0 and exit the **`Field Geometry`** window.
	At the flashing **`Field`** prompt	press <enter> to advance to **`EF`**.

Figure 5.1.1.3

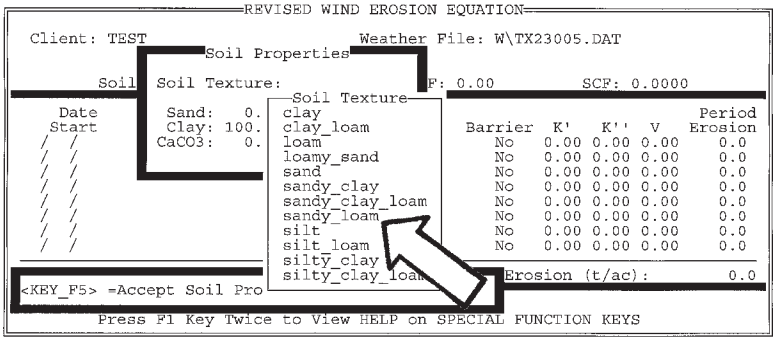


Figure 5.1.1.4

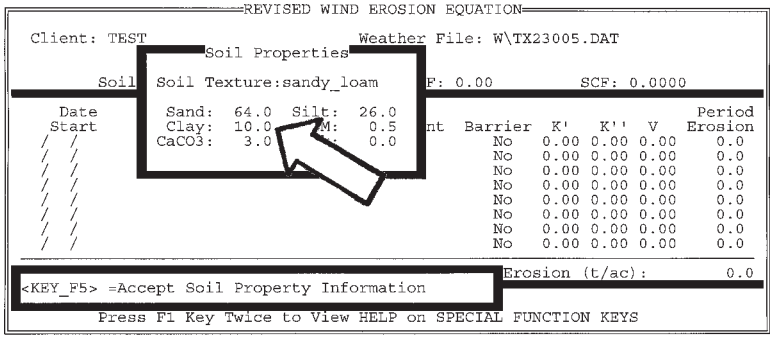


Figure 5.1.1.5

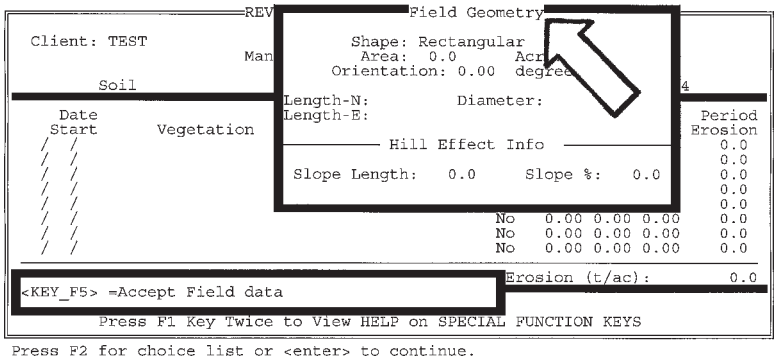
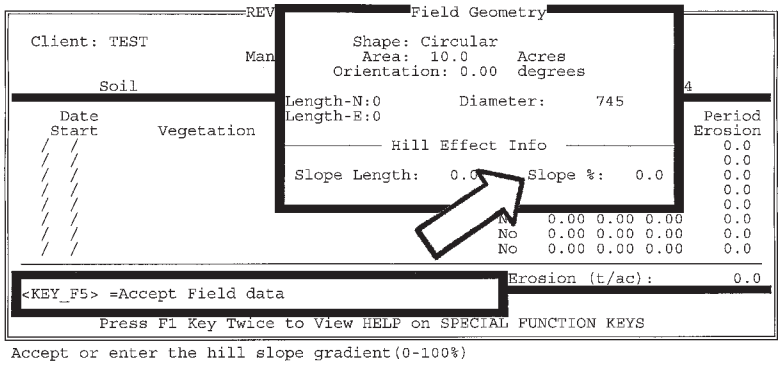


Figure 5.1.1.6



G. At the **EF** prompt — press <enter> to accept the computed value (0.51).

SCF is for information only. It may not be changed. The cursor skips **SCF** and goes directly from **EF** to the **DOABLE SCREEN**.

H. In the **DOABLE SCREEN** under **Date Start** — type **01 01 1990** . See Figure 5.1.1.7

I. Under **Vegetation** — press F9 to enter the **Residue and Growing Crop Information** window.

At the **Crop** prompt — press F2, use the arrow key if necessary to highlight *NONE*, and press <enter> to select.

At the **Yield** prompt — press <enter> to accept the default value (0.0).

At the **Flat Residue Cover** prompt — press <enter> to accept the default value (0.0).

At the **Stem Number** prompt — press <enter> to accept the default value (0).

At the **Crop Ht.** prompt — press <enter> to accept the default value (0.00).

At the **Harvest Ht.** prompt — press <enter> to accept the default value (0.00).

At the **Crop** prompt — press F2, use the arrow key to highlight *NONE*, and press <enter> to select.

At the **Growing Crop** prompt — (Figure 5.1.1.8) press <enter> to accept No and to exit the **Residue and Growing Crop Information** window.

At the flashing **NONE** — press <enter> to advance to **Operation/Event**.

Figure 5.1.1.7

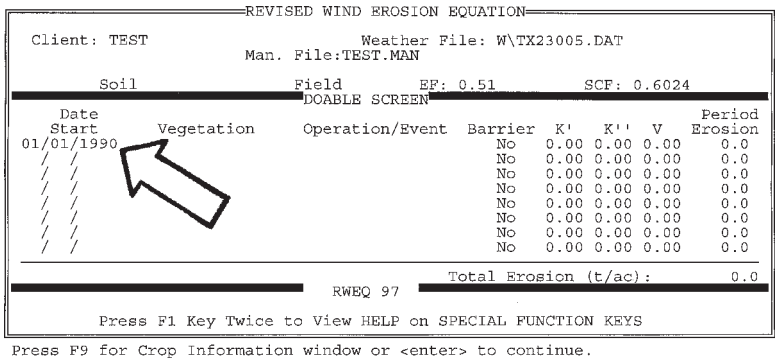
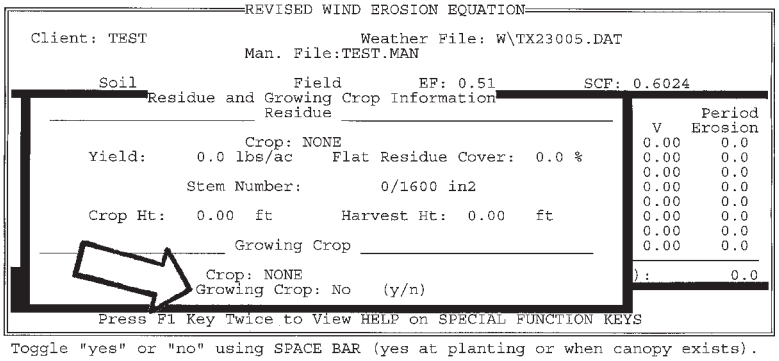


Figure 5.1.1.8



J. Under **Operation/Event** press F9 to enter the **Operation/Irrigation Data** window.

At the **Operation** prompt press F2, use the arrow key if necessary to highlight *NONE*, and press <enter> to select.

Under **Operation Modifies Roughness** toggle No with space bar and press <enter>.

At the **Random Roughness** prompt press <enter> to accept the default value (0.0).

At the **Ridge Spacing** prompt press <enter> to accept the default value (0.0).

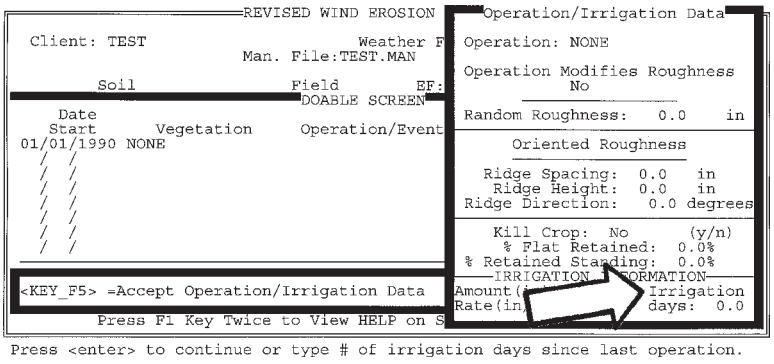
At the **Ridge Height** prompt press <enter> to accept the default value (0.0).

At the **Ridge Direction** prompt press <enter> to accept the default value (0.0).

At the **Kill Crop** prompt press <enter> to accept the default value (No).

At the **% Flat Retained** prompt	press <enter> to accept the default value (0.0).
At the **% Retained Standing** prompt	press <enter> to accept the default value (0.0).
For irrigation information	
At the **Amount (in)** prompt	press <enter> to accept the default value (0.0).
At the **Rate (in/hr)** prompt	press <enter> to accept the default value (0.0).
At the **Irrigation days** prompt	(Figure 5.1.1.9) press <enter> to accept the default value (0.0) and exit **Operation/Irrigation Data** window.
At the flashing **NONE**	press <enter> to advance to **Barrier**.

Figure 5.1.1.9



K.	At the flashing **No** under **Barrier**	press <enter> which finishes the first line in the **DOABLE SCREEN**.
L.	For the second line in the **DOABLE SCREEN**	
	Under **Date Start**	type **12 31 1990** .
	Repeat I, J, and K.	See Figure 5.1.1.10 for the 2 complete lines in the **DOABLE SCREEN**.
M.	To save this management file	press F6.
	At the **Save Client File** prompt	press <enter> to accept TEST. The client filename is automatically added to the client F2 choice list.
	At the **Save Man. File** prompt	(Figure 5.1.1.11) press <enter> to accept **TEST.MAN**. The management filename is automatically added to the management F2 choice list. Press <Esc> when prompted.

Figure 5.1.1.10

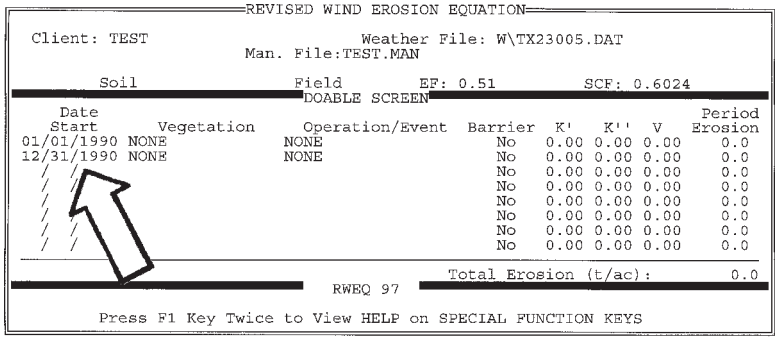
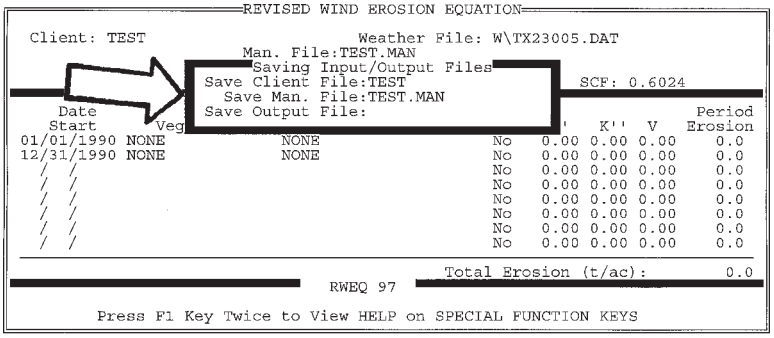


Figure 5.1.1.11



At the **Save Output File** prompt press <enter> to exit the **Saving Input/Output Files** window. (In this example erosion has not been computed and therefore no output has been generated that needs to be saved.)

5.1.2 **A complex management file using RWEQ**

To illustrate the basic input requirements, a complex management file is created for a three-year rotation of winter wheat, sunflower, and fallow in Akron, Colorado. The soil is a sandy loam; the field is square. This is a dryland system with no barriers or irrigation. Step-by-step instructions are given to create a management file based on the assembled information in Table 5.1.2.1. The same information is available in the RWEQ INPUT FORM shown in Table 5.1.2.2

Table 5.1.2.1

Farmer:	Mahon
Location:	Akron, Colorado
Field:	160 acres, square
Closest weather file:	W\CO24015.DAT (from APPENDIX D)
Soil:	sandy loam
System:	
9/10/1990	drill winter wheat
7/01/1991	harvest winter wheat
	2640 lb/acre (44 bu/acre)
	150 stalks in 40" by 40" square (1 meter^2)
4/15/1992	offset disk
5/01/1992	straight chisel
6/01/1992	row plant sunflowers
10/01/1992	harvest sunflowers
	800 lb/acre
	6 stalks in 40" by 40" square (1 meter^2)
5/15/1993	disk
6/15/1993	chisel
9/10/1993	drill winter wheat

Table 5.1.2.2

RWEQ INPUT FORM

CLIENT: WHSUNFAL WEATHER FILE: W\CO24015.DAT MANAGEMENT FILE: WHSUNFAL.MAN

Soil Properties:
soil texture SANDY LOAM OR sand 64 %
silt 26 %
organic matter 0.5 %
calcium carbonate 3 %
rock cover 0 %

Field Geometry: shape circular or (rectangular)
area 160, acres
orientation 0, ° from north
length_N 2640, feet
slope gradient 0
slope length 0, feet

Longitude_____ Latitude_____ Elevation_____ Annual Rainfall_____

DATE	VEGETATION					OPERATION / EVENT									IRRIGATION			BARRIERS			
	Residue	Yield	% Cov.	# Stems	Growing Crop	Implement	Mod. Rough.	RR	Ridge Spac.	Ridge Ht.	Ridge Orient.	Kill Crop	% Flat	% Stand.	Amt.	Rate	# Days	Ht.	DI	Spac.	Orient.
9/10/90	NONE	0		0	WWHEAT	DRILL-HO	Y	0.8	14	2	0	N	50	40							
7/1/91	WWHEAT	2640		150	NONE	HARVEST	N	0	0	0	0	Y	100	90							
4/15/92	WWHEAT	0		0	NONE	DISK-OS	Y	1.9	0	0	0	N	50	15							
5/1/92	WWHEAT	0		0	NONE	CHISEL-STR	Y	1.2	12	2	0	N	70	70							
6/1/92	WWHEAT	0		0	SUNFLOW	PLAN-ROW	Y	0.2	36	2	0	N	90	50							
10/1/92	SUNFLOWER	800		6	NONE	HARVEST	N	0	0	0	0	Y	100	100							
5/15/93	SUNFLOWER	0		0	NONE	DISK-OS	Y	1.9	0	0	0	N	50	15							
6/15/93	SUNFLOWER	0		0	NONE	CHISEL-STR	Y	1.2	12	2	0	N	70	70							
9/10/93	SUNFLOWER	0		0	WWHEAT	DRILL-HO	Y	0.8	14	2	0	N	50	40							

A.	At the **Client** prompt	type **WHSUNFAL** and press <enter>.
B.	At the **Weather File** prompt	type **W\CO24015.DAT** for the Akron, Colorado weather file.
C.	At the **Man. File** prompt	type **WHSUNFAL.MAN.** (Because this is a new management file, a warning screen appears to indicate that the file cannot be found.) See Figure 5.1.2.1. Press <enter> to advance to **Soil Properties** window.
D.	At the **Soil Texture** prompt	press F2, use the arrow key to highlight *sandy loam* and press <enter> to select. Note that the values for sand, silt, OM, $CaCO_3$, and rock are brought into the screen. The clay remains 100 (the default) until <enter> is pressed and the value 10 is calculated for clay. See Figure 5.1.2.2. Press <enter> five times to accept the default values for a sandy loam and advance through **Soil Properties** window.

Figure 5.1.2.1

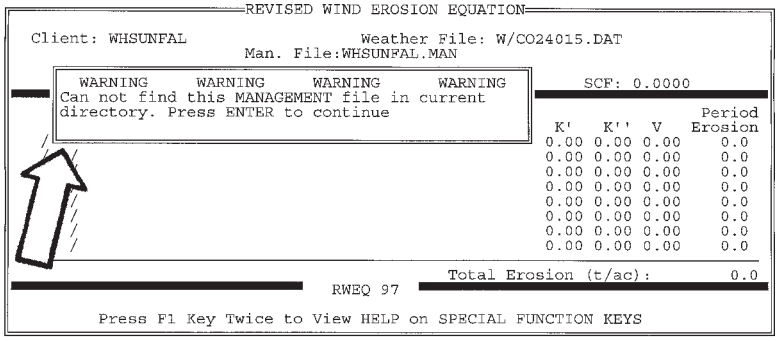
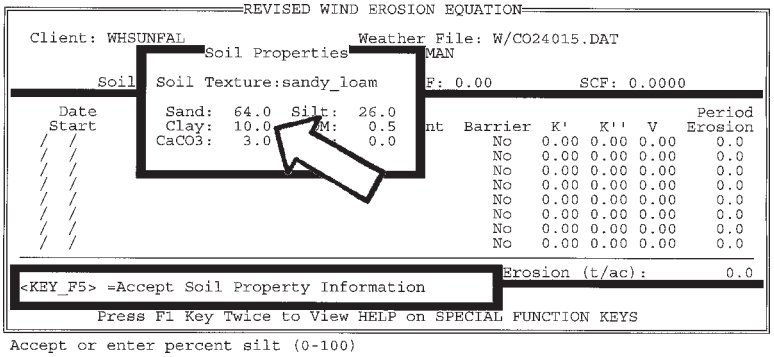


Figure 5.1.2.2

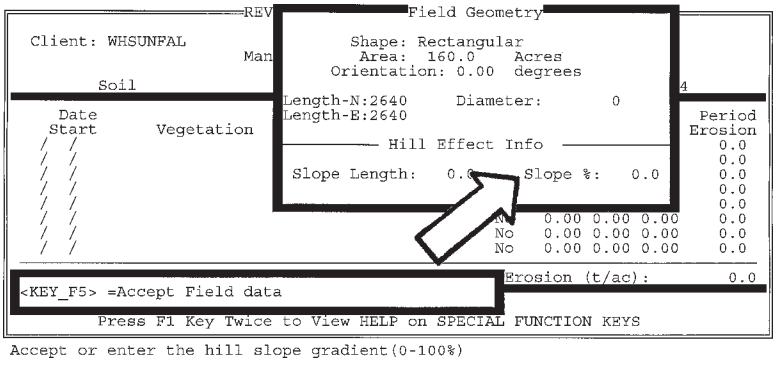


	At the flashing **Soil** prompt	press <enter> to advance to **Field Geometry** window.
E.	At the **Shape** prompt	press F2, use the arrow key if necessary to highlight *rectangular* for the square field, and press <enter> to select.
	At the **Area** prompt	type **160** and press <enter>.
	At the **Orientation** prompt	press <enter> to accept the default value (0.00).
	At the **Length-N** prompt	type **2640** and press <enter>.

Length-E is automatically calculated for a field of a given area when the **Length-N** is entered. The cursor skips directly to **Hill Effect Info**.

At the **Slope Length** prompt	press <enter> to accept the default value (0.0).
At the **Slope %** prompt	(Figure 5.1.2.3) press <enter> to accept the default value (0.0) and exit the **Field Geometry** window.
At the flashing **Field** prompt	press <enter> to advance to **EF**.

Figure 5.1.2.3



F.	At the **EF** prompt	press <enter> to accept the computed value (0.51).

SCF is for information only. It may not be changed. The cursor skips **SCF** and goes directly from **EF** to the **DOABLE SCREEN**.

G.	In the **DOABLE SCREEN** under **Date Start**	type **09 10 1990** .
I.	Under **Vegetation**	press F9 to enter the **Residue and Growing Crop Information** window.

	At the **Crop** prompt	press F2, use the arrow key if necessary to highlight *NONE*, and press <enter> to select.
	At the **Yield** prompt	press <enter> to accept the default value (0.0).
	At the **Flat Residue Cover** prompt	press <enter> to accept the default value (0.0).
	At the **Stem Number** prompt	press <enter> to accept the default value (0).
	At the **Crop Ht.** prompt	press <enter> to accept the default value (0.00).
	At the **Harvest Ht.** prompt	press <enter> to accept the default value (0.00).
	At the **Crop** prompt	press F2, use the arrow key if necessary to highlight *G_WWheat*, and press <enter>.
	At the **Growing Crop** prompt	(Figure 5.1.2.4) press <enter> to accept Yes and exit the **Residue and Growing Crop Information** window.
	At the flashing **G_WWheat**	press <enter> to advance to **Operation/Event**.
J.	Under **Operation/Event**	press F9 to enter the **Operation/Irrigation Data** window.
	At the **Operation** prompt	press F2 and use the arrow key if necessary to highlight *Drill_HO*. See Figure 5.1.2.5. Press <enter> to select.
	Under **Operation Modifies Roughness**	toggle Yes if necessary with space bar and press <enter>.

Figure 5.1.2.4

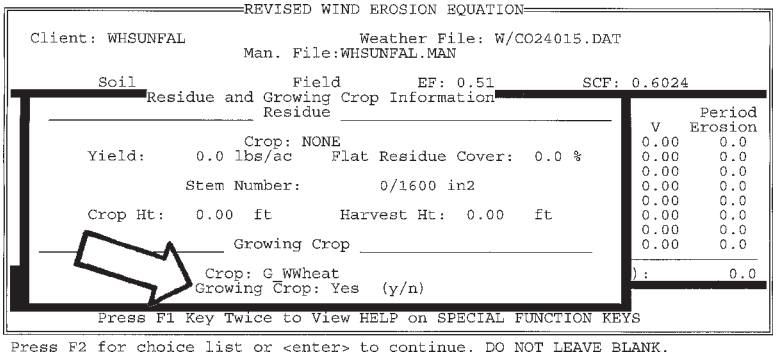
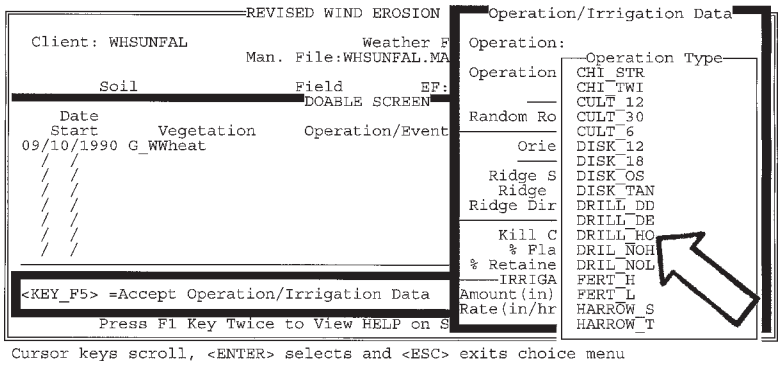
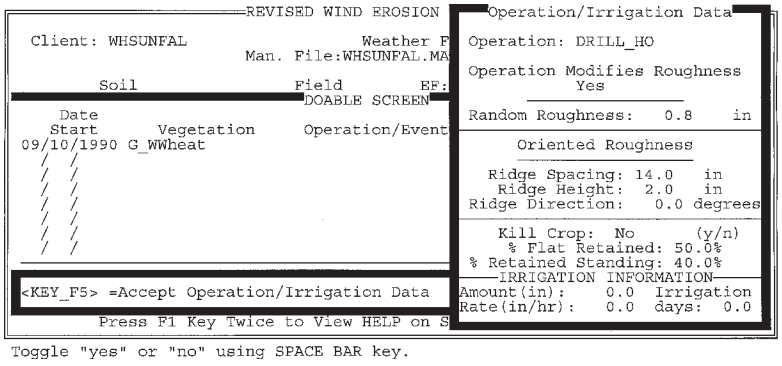


Figure 5.1.2.5



The drill hoe generic values for **Random Roughness**, **Ridge Height**, and **% Flat** are called into the program (Figure 5.1.2.6).

Figure 5.1.2.6



At the **Random Roughness** prompt	press <enter> to accept the default value (0.8).
At the **Ridge Spacing** prompt	press <enter> to accept the default value (14.0).
At the **Ridge Height** prompt	press <enter> to accept the default value (2.0).
At the **Ridge Direction** prompt	press <enter> to accept the default value (0.0).
At the **Kill Crop** prompt	press <enter> to accept the default value (No).
At the **% Flat Retained** prompt	press <enter> to accept the default value (50).

	At the **% Retained Standing** prompt	press <enter> to accept the default value (40).
	For irrigation information	
	At the **Amount (in)** prompt	press <enter> to accept the default value (0.0).
	At the **Rate (in/hr)** prompt	press <enter> to accept the default value (0.0).
	At the **Irrigation days** prompt	press <enter> to accept the default value (0.0) and exit **Operation/Irrigation Data** window.
	At the flashing **DRILL_HO**	press <enter> to advance to **Barrier**.
K.	At the flashing **No** under **Barrier**	press <enter> which finishes the first line in the **DOABLE SCREEN.**
L.	For the second line in the **DOABLE SCREEN**	
	Under **Date Start**	type **07 01 1991** .
M.	Under **Vegetation**	press F9 to enter the **Residue and Growing Crop Information** window.
	At the **Crop** prompt	press F2 and use the arrow key if necessary to highlight *R_WWheat*. See Figure 5.1.2.7. Press <enter>.
	At the **Yield** prompt	type **2640** and press <enter>.
	At the **Flat Residue Cover** prompt	press <enter> to accept the default value (0.0).
	At the **Stem Number** prompt	type **150** and press <enter>.
	At the **Crop Ht.** prompt	press <enter> to accept the default value (2.0).
	At the **Harvest Ht.** prompt	press <enter> to accept the default value (0.8).
	At the **Crop** prompt	press F2, use the arrow key if necessary to highlight *NONE*, and press <enter> to select.
	At the **Growing Crop** prompt	(Figure 5.1.2.8) press <enter> to accept No and exit **Residue and Growing Crop Information** window.
	At the flashing **R_WWheat**	press <enter> to advance to **Operation/Event**.

Figure 5.1.2.7

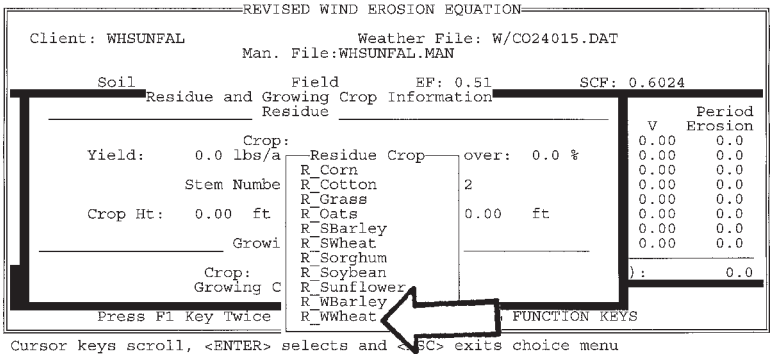
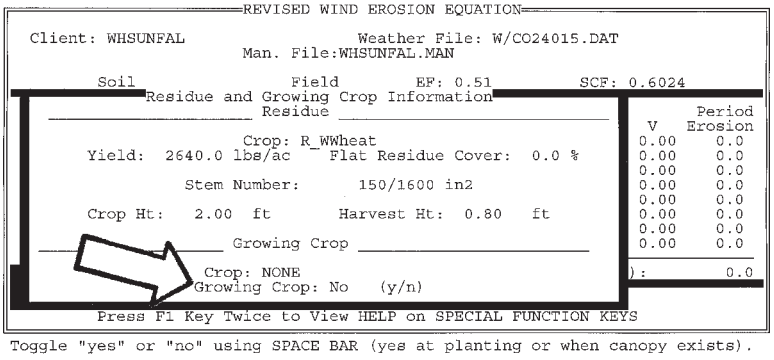
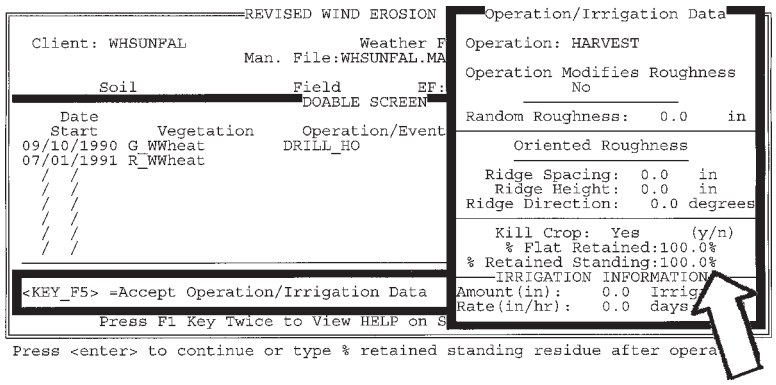


Figure 5.1.2.8



N.	Under **Operation/Event**	press F9 to enter the **Operation/Irrigation Data** window.
	At the **Operation** prompt	press F2, use the arrow key if necessary to highlight *Harvest*, and press <enter> to select.
	Under **Operation Modifies Roughness**	toggle No with space bar and press <enter>.
	At the **Random Roughness** prompt	press <enter> to accept the default value (0.0).
	At the **Ridge Spacing** prompt	press <enter> to accept the default value (0.0).
	At the **Ridge Height** prompt	press <enter> to accept the default value (0.0).
	At the **Ridge Direction** prompt	press <enter> to accept the default value (0.0).
	At the **Kill Crop** prompt	toggle Yes with space bar and press <enter>.
	At the **% Flat Retained** prompt	press <enter> to accept the default value (100).
	At the **% Retained Standing** prompt	press <enter> to accept the default value (100). (Figure 5.1.2.9)

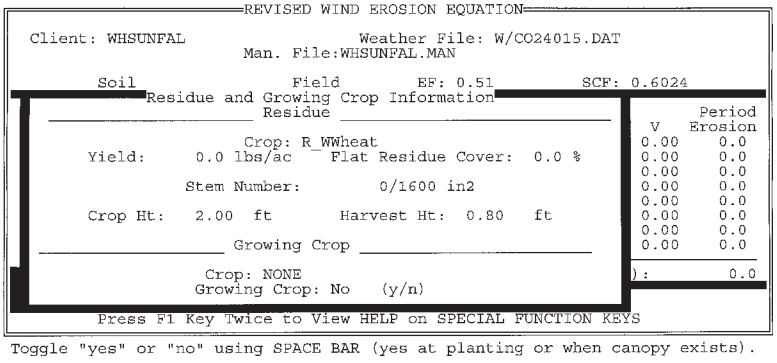
Figure 5.1.2.9



For irrigation information

	At the **Amount (in)** prompt	press <enter> to accept the default value (0.0).
	At the **Rate (in/hr)** prompt	press <enter> to accept the default value (0.0).
	At the **Irrigation days** prompt	press <enter> to accept the default value (0.0).
	From the flashing **HARVEST**	press <enter> to advance to **Barrier.**
O.	At the flashing **No** under **Barrier**	press <enter> which finishes the second line in the **DOABLE SCREEN**.
P.	For the third line in the **DOABLE SCREEN**	
	Under **Date Start**	type **04 15 1992** .
Q.	Under **Vegetation**	press F9 to enter the **Residue and Growing Crop Information** window**.**
	At the **Crop** prompt	press F2, use the arrow key if necessary to select *R_WWheat*, and press <enter> to select.
	At the **Yield** prompt	press <enter> to accept the default value (0.0). (Only show yield when crop is harvested.)
	At the **Flat Residue Cover** prompt	press <enter> to accept the default value (0.0).
	At the **Stem Number** prompt	press <enter> to accept the default value (0.0).
	At the **Crop Ht.** Prompt	press <enter> to accept the default value (2.0).
	At the **Harvest Ht.** prompt	press <enter> to accept the default value (0.80).
	At the **Crop** prompt	press F2 and use the arrow key to select *NONE*. Press <enter>.
	At the **Growing Crop** prompt	(Figure 5.1.2.10) press <enter> to accept No and exit **Residue and Growing Crop Information** window.
	At the flashing **R_WWheat**	press <enter> to advance to **Operation/Event**.

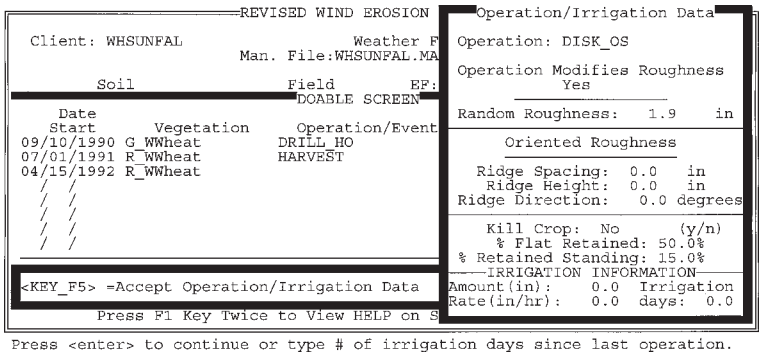
Figure 5.1.2.10



Toggle "yes" or "no" using SPACE BAR (yes at planting or when canopy exists).

R.	Under **Operation/Event**	press F9 to enter the **Operation/Irrigation Data** window.
	At the **Operation** prompt	press F2, use the arrow key if necessary to highlight *Disk_OS*, and press <enter> to select.
	Under **Operation Modifies Roughness**	toggle Yes with space bar and press <enter>.
	At the **Random Roughness** prompt	press <enter> to accept the default value (1.9).
	At the **Ridge Spacing** prompt	press <enter> to accept the default value (0.0).
	At the **Ridge Height** prompt	press <enter> to accept the default value (0.0).
	At the **Ridge Direction** prompt	press <enter> to accept the default value (0.0).
	At the **Kill Crop** prompt	toggle No with space bar and press <enter>.
	At the **% Flat Retained** prompt	press <enter> to accept the default value (50).
	At the **% Retained Standing** prompt	press <enter> to accept the default value (15).
	For irrigation information	
	At the **Amount (in)** prompt	press <enter> to accept the default value (0.0).
	At the **Rate (in/hr)** prompt	press <enter> to accept the default value (0.0).
	At the **Irrigation days** prompt	(Figure 5.1.2.11) press <enter> to accept the default value (0.0) and exit the **Operation/Irrigation Data** window.
	At the flashing **DISK_OS**	press <enter> to advance to **Barrier**.
S.	At the flashing **No** under **Barrier**	press <enter> which finishes the third line in the **DOABLE SCREEN**.

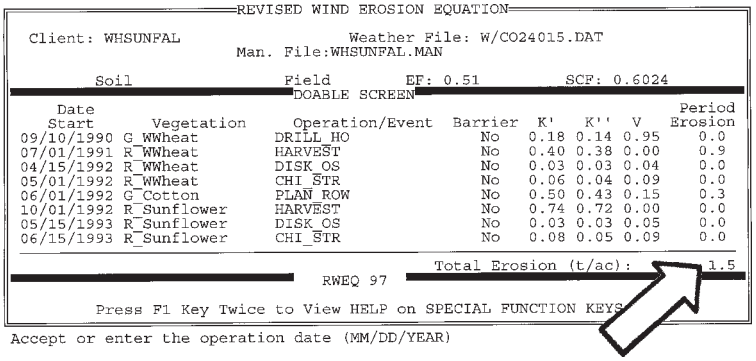
Figure 5.1.2.11



Enter the next 6 lines using information in Table 5.1.2.1. Accept the default values in the F9 screens. Since there are no coefficients for growing sunflowers, use growing cotton for 06/01/ 1992. Enter the sunflower yield and stem number for 10/01/1992. On this same date remember to toggle "No" that harvest does not modify roughness and toggle "Yes" that harvest does kill the crop.

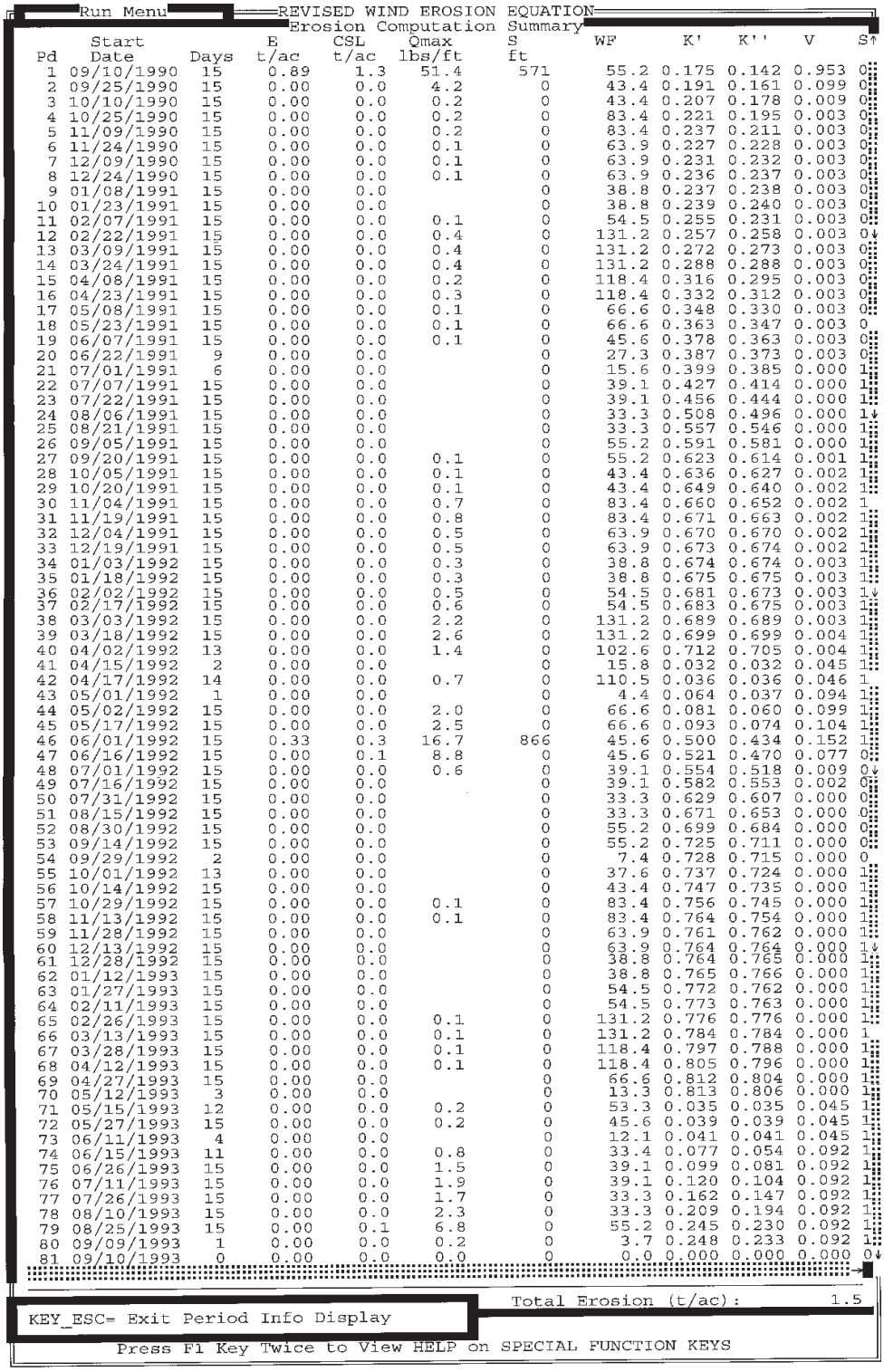
To calculate erosion press F10 and press <enter> to select highlighted *Compute Erosion*. Press the <Esc> key when prompted. Only 8 lines are shown in the **DOABLE SCREEN** at one time. Use the arrow keys to scroll up and down to view the K', K", V, and Period Erosion for each date. Figure 5.1.2.12 was compiled to show the 9 lines in the management file. Notice the total erosion is 1.5 t/ac or 0.5 t/ac/yr.

Figure 5.1.2.12



To view the Tabular Output press F10, use the arrow key to highlight Tabular Output, and press <enter>. Only 12 periods are shown at one time in the Erosion Computation Summary. Use the arrow keys to scroll up and down to view all 81 periods. The tabular output screens for the entire three-year rotation period were combined for Figure 5.1.2.13. The greatest estimated soil loss occurs immediately after wheat planting. In this system there is no surface residue. The soil roughness was not sufficient to provide complete protection. In this example the rows are oriented N-S (0°). The sunflower planting (Period 46 - June 1, 1992) is the second period with erosion. The seedbed is prepared to have good soil-seed contact which may leave the soil in its most erodible condition. Fortunately for Akron, Colorado, this does not coincide with the highest weather factor.

Figure 5.1.2.13



Run Menu — REVISED WIND EROSION EQUATION

Erosion Computation Summary

Pd	Start Date	Days	E t/ac	CSL t/ac	Qmax lbs/ft	S ft	WF	K'	K''	V	S
1	09/10/1990	15	0.89	1.3	51.4	571	55.2	0.175	0.142	0.953	0
2	09/25/1990	15	0.00	0.0	4.2	0	43.4	0.191	0.161	0.099	0
3	10/10/1990	15	0.00	0.0	0.2	0	43.4	0.207	0.178	0.009	0
4	10/25/1990	15	0.00	0.0	0.2	0	83.4	0.221	0.195	0.003	0
5	11/09/1990	15	0.00	0.0	0.2	0	83.4	0.237	0.211	0.003	0
6	11/24/1990	15	0.00	0.0	0.1	0	63.9	0.227	0.228	0.003	0
7	12/09/1990	15	0.00	0.0	0.1	0	63.9	0.231	0.232	0.003	0
8	12/24/1990	15	0.00	0.0	0.1	0	63.9	0.236	0.237	0.003	0
9	01/08/1991	15	0.00	0.0		0	38.8	0.237	0.238	0.003	0
10	01/23/1991	15	0.00	0.0		0	38.8	0.239	0.240	0.003	0
11	02/07/1991	15	0.00	0.0	0.1	0	54.5	0.255	0.231	0.003	0
12	02/22/1991	15	0.00	0.0	0.4	0	131.2	0.257	0.258	0.003	0
13	03/09/1991	15	0.00	0.0	0.4	0	131.2	0.272	0.273	0.003	0
14	03/24/1991	15	0.00	0.0	0.4	0	131.2	0.288	0.288	0.003	0
15	04/08/1991	15	0.00	0.0	0.2	0	118.4	0.316	0.295	0.003	0
16	04/23/1991	15	0.00	0.0	0.3	0	118.4	0.332	0.312	0.003	0
17	05/08/1991	15	0.00	0.0	0.1	0	66.6	0.348	0.330	0.003	0
18	05/23/1991	15	0.00	0.0	0.1	0	66.6	0.363	0.347	0.003	0
19	06/07/1991	15	0.00	0.0	0.1	0	45.6	0.378	0.363	0.003	0
20	06/22/1991	9	0.00	0.0		0	27.3	0.387	0.373	0.003	0
21	07/01/1991	6	0.00	0.0		0	15.6	0.399	0.385	0.000	1
22	07/07/1991	15	0.00	0.0		0	39.1	0.427	0.414	0.000	1
23	07/22/1991	15	0.00	0.0		0	39.1	0.456	0.444	0.000	1
24	08/06/1991	15	0.00	0.0		0	33.3	0.508	0.496	0.000	1
25	08/21/1991	15	0.00	0.0		0	33.3	0.557	0.546	0.000	1
26	09/05/1991	15	0.00	0.0		0	55.2	0.591	0.581	0.000	1
27	09/20/1991	15	0.00	0.0	0.1	0	55.2	0.623	0.614	0.001	1
28	10/05/1991	15	0.00	0.0	0.1	0	43.4	0.636	0.627	0.002	1
29	10/20/1991	15	0.00	0.0	0.1	0	43.4	0.649	0.640	0.002	1
30	11/04/1991	15	0.00	0.0	0.7	0	83.4	0.660	0.652	0.002	1
31	11/19/1991	15	0.00	0.0	0.8	0	83.4	0.671	0.663	0.002	1
32	12/04/1991	15	0.00	0.0	0.5	0	63.9	0.670	0.670	0.002	1
33	12/19/1991	15	0.00	0.0	0.5	0	63.9	0.673	0.674	0.002	1
34	01/03/1992	15	0.00	0.0	0.3	0	38.8	0.674	0.674	0.003	1
35	01/18/1992	15	0.00	0.0	0.3	0	38.8	0.675	0.675	0.003	1
36	02/02/1992	15	0.00	0.0	0.5	0	54.5	0.681	0.673	0.003	1
37	02/17/1992	15	0.00	0.0	0.6	0	54.5	0.683	0.675	0.003	1
38	03/03/1992	15	0.00	0.0	2.2	0	131.2	0.689	0.689	0.003	1
39	03/18/1992	15	0.00	0.0	2.6	0	131.2	0.699	0.699	0.004	1
40	04/02/1992	13	0.00	0.0	1.4	0	102.6	0.712	0.705	0.004	1
41	04/15/1992	2	0.00	0.0		0	15.8	0.032	0.032	0.045	1
42	04/17/1992	14	0.00	0.0	0.7	0	110.5	0.036	0.036	0.046	1
43	05/01/1992	1	0.00	0.0		0	4.4	0.064	0.037	0.094	1
44	05/02/1992	15	0.00	0.0	2.0	0	66.6	0.081	0.060	0.099	1
45	05/17/1992	15	0.00	0.0	2.5	0	66.6	0.093	0.074	0.104	1
46	06/01/1992	15	0.33	0.3	16.7	866	45.6	0.500	0.434	0.152	1
47	06/16/1992	15	0.00	0.1	8.8	0	45.6	0.521	0.470	0.077	0
48	07/01/1992	15	0.00	0.0	0.6	0	39.1	0.554	0.518	0.009	0
49	07/16/1992	15	0.00	0.0		0	39.1	0.582	0.553	0.002	0
50	07/31/1992	15	0.00	0.0		0	33.3	0.629	0.607	0.000	0
51	08/15/1992	15	0.00	0.0		0	33.3	0.671	0.653	0.000	0
52	08/30/1992	15	0.00	0.0		0	55.2	0.699	0.684	0.000	0
53	09/14/1992	15	0.00	0.0		0	55.2	0.725	0.711	0.000	0
54	09/29/1992	2	0.00	0.0		0	7.4	0.728	0.715	0.000	0
55	10/01/1992	13	0.00	0.0		0	37.6	0.737	0.724	0.000	1
56	10/14/1992	15	0.00	0.0		0	43.4	0.747	0.735	0.000	1
57	10/29/1992	15	0.00	0.0	0.1	0	83.4	0.756	0.745	0.000	1
58	11/13/1992	15	0.00	0.0	0.1	0	83.4	0.764	0.754	0.000	1
59	11/28/1992	15	0.00	0.0		0	63.9	0.761	0.762	0.000	1
60	12/13/1992	15	0.00	0.0		0	63.9	0.764	0.764	0.000	1
61	12/28/1992	15	0.00	0.0		0	38.8	0.764	0.765	0.000	1
62	01/12/1993	15	0.00	0.0		0	38.8	0.765	0.766	0.000	1
63	01/27/1993	15	0.00	0.0		0	54.5	0.772	0.762	0.000	1
64	02/11/1993	15	0.00	0.0		0	54.5	0.773	0.763	0.000	1
65	02/26/1993	15	0.00	0.0	0.1	0	131.2	0.776	0.776	0.000	1
66	03/13/1993	15	0.00	0.0	0.1	0	131.2	0.784	0.784	0.000	1
67	03/28/1993	15	0.00	0.0	0.1	0	118.4	0.797	0.788	0.000	1
68	04/12/1993	15	0.00	0.0	0.1	0	118.4	0.805	0.796	0.000	1
69	04/27/1993	15	0.00	0.0		0	66.6	0.812	0.804	0.000	1
70	05/12/1993	3	0.00	0.0		0	13.3	0.813	0.806	0.000	1
71	05/15/1993	12	0.00	0.0	0.2	0	53.3	0.035	0.035	0.045	1
72	05/27/1993	15	0.00	0.0	0.2	0	45.6	0.039	0.039	0.045	1
73	06/11/1993	4	0.00	0.0		0	12.1	0.041	0.041	0.045	1
74	06/15/1993	11	0.00	0.0	0.8	0	33.4	0.077	0.054	0.092	1
75	06/26/1993	15	0.00	0.0	1.5	0	39.1	0.099	0.081	0.092	1
76	07/11/1993	15	0.00	0.0	1.9	0	39.1	0.120	0.104	0.092	1
77	07/26/1993	15	0.00	0.0	1.7	0	33.3	0.162	0.147	0.092	1
78	08/10/1993	15	0.00	0.0	2.3	0	33.3	0.209	0.194	0.092	1
79	08/25/1993	15	0.00	0.1	6.8	0	55.2	0.245	0.230	0.092	1
80	09/09/1993	1	0.00	0.0	0.2	0	3.7	0.248	0.233	0.092	1
81	09/10/1993	0	0.00	0.0	0.0	0	0.0	0.000	0.000	0.000	0

Total Erosion (t/ac): 1.5

KEY_ESC= Exit Period Info Display

Press F1 Key Twice to View HELP on SPECIAL FUNCTION KEYS

5.1.3 **A management file using the DOS editor**

Figure 5.1.3.1 shows the first 2 operation dates in the management file (WHSUNFAL.MAN) which was created using RWEQ in Section 5.1.2. A # sign precedes a comment line. The program does not use a comment line; it is for information only. The first 3 lines in a management file give the creation date and time and the filename. The data for each operation are grouped under each operation date. Since the file in this figure was created by RWEQ, there are 6 decimal places for the variables. ("Flags" are either 0 or 1.) When creating a file in DOS, 6 decimal places are not necessary. It is important to begin each line with a + and to separate variables by at least one space.

Figure 5.1.3.1

```
#File Creation Date: 06/24/97
#File Creation Time: 22:30:40
#New Management File   : WHSUNFAL.MAN


09/10/1990
+       DRILL_HO
+       G_WWheat
+       NONE    0.000000        0.000000        0.000000        0.000000        0.000000
+       0.000000        0.000000        0.000000
+       40.000000       50.000000
+       0.000000        0.000000        0.000000
+       0.000000        0.000000        0.000000
+       1       0.800000        14.000000       2.000000        0.000000
+       0       1       0.463000        -1577.340000
+       0.000000        0.000000        0.000000        0.000000
+       0.000000        0.000000        0.000000
+       64.000000       26.000000       0.500000        3.000000        0.000000
+       1       160.000000      0.000000        2640.000000     0.000000        0.000000

07/01/1991
+       HARVEST
+       NONE
+       R_WWheat        2640.000000     0.000000        900.000000      2.190000        2.000000
+       150.000000      0.800000        0.200000
+       90.000000       100.000000
+       0.001300        0.013000        0.169000
+       -0.000660       1.000000        17.000000
+       0       0.000000        0.000000        0.000000        0.000000
+       1       0       0.000000        0.000000
+       0.000000        0.000000        0.000000        0.000000
+       0.000000        0.000000        0.000000
```

Instructions follow to create this shortened file by using the DOS editor. To avoid confusion this new file is called TEST_DOS.MAN. From the C:\RWEQ97> prompt type **EDIT TEST_DOS.MAN** to enter the DOS editor.

The bold face characters in the following explanation are the actual lines in the first operation in WHSUNFAL.MAN. Type these bolded values in the DOS editor. (Remember to separate variables by one or more spaces.) The data comes from the RWEQ INPUT FORM (Figure 5.1.2.1), APPENDICES B-1, B-2, and C-1.

#File Creation Date: 06/24/97 This is the date the file was created and is automatically a part of a management file created in the RWEQ program.

#File Creation Time: 22:30:40 This is the time file was created and is automatic when the file is created within RWEQ.

#New Management File: WHSUNFAL.MAN The filename should reflect the system being studied.

Enter the date of tillage, harvesting, or planting operation.
09/10/1990

Enter the tillage, harvesting, or planting operation indicated on the RWEQ INPUT FORM. (If none, type NONE.)
+ **DRILL_HO**

Enter the name of the crop planted or growing. (If none, type NONE.)
+ **G_WWheat**

Enter residue type, crop yield, percent flat residue cover if residues of a previous crop are on the soil at harvest, biomass intercept at zero yield (y_a), biomass slope (y_b) and crop height before harvest. Generic values are listed in APPENDIX B-1.

	Residue type	Yield (lbs/ac)	% Flat Residue Cover	y_a	y_b	Crop Height (ft)
+	**NONE**	**0**	**0**	**0**	**0**	**0**

Crop information is needed to estimate plant silhouette. Enter the number of stems per 40" by 40" area or an equivalent length of row or take the plant population per acre divided by 3920. Enter the after harvest height and average stem diameter in inches. Generic values are listed in APPENDIX B-1.

	Stem Number	Harvest Height	Stem Diameter
+	**0**	**0.0**	**0.0**

Enter the percent of the standing residue that remains standing after the operation (*e.g.* % Standing = 100 means that all residue remained standing). Enter the % of the flat residue that remains after the operation (*e.g.* % Flat retained = 100 means that *no* residue was buried). Generic values are listed in APPENDIX C-1.

	% Standing retained	% Flat retained
+	**40**	**50**

Enter on the next two lines the crop residue decomposition coefficients used to estimate residue decay. Generic values are listed in APPENDIX B-1.

	k_{ms}	k_{mf}	k_{sn}
+	**0**	**0**	**0**

	mcf	tof	dd_o
+	**0**	**0**	**0**

If an operation modifies soil roughness, the roughness flag entered should be one (1). The soil random roughness, ridge spacing, ridge height, and ridge direction are generic values that can be modified to fit specific conditions.

	Roughness Flag	Random Roughness (in)	Spacing (in)	Height (in)	Direction (deg)
+	**1**	**0.80**	**14**	**2**	**0**

For a harvest operation, plant growth is terminated and the residue decomposition routine is initialized. Harvesting sets the Kill Flag to 1 (all other operations set kill flag to 0). Planting sets the Gr_Plant Flag to 1 which initializes the crop canopy development program. The *pgca* and *pgcb* values are crop canopy growth parameters (APPENDIX B-2).

	Kill Flag	Gr_Plant Flag	pgca	pgcb
+	**0**	**1**	**0.4630**	**-1577.34**

When wind barriers are a part of the wind erosion control system, the height, spacing, density index, and orientation of the barrier are entered. If there are no barriers, set values to zero.

	Height (ft)	Spacing (ft)	Density Index	Orientation (deg)
+	**0**	**0.0**	**0.0**	**0.0**

When irrigation is a part of the management system, the amount, rate, and number of irrigations between operation dates must be input. If there is no irrigation, enter zeroes.

	Irrigation Rate (in/hr)	Irrigation Amount (in)	Number of Irrigation Days
+	**0.0**	**0.0**	**0**

The following two lines of soil and field information are input *for the first operation only*. There are 13 lines of data after the *first* operation date. *For subsequent operations* in the same management file there is no need to repeat the soil and field information; therefore, there are only 11 lines of data after later operation dates.

Sand, Silt, Organic Matter, and $CaCO_3$ must be entered. (RWEQ calculates percent clay.) These values are on the RWEQ INPUT FORM.

	% Sand	% Silt	% Organic Matter	% $CaCO_3$	Rock Cover
+	**64.0**	**26.0**	**0.5**	**3.0**	**0.0**

The characteristics of the field are identified as the shape, size, and orientation. Other shapes besides circular and rectangular may be added in future versions of RWEQ. In version 97, a "1" is used for a rectangular field, and a "0" for a circle. N-Length is the distance across the field from north to south borders. If a hill is present, the height and slope of the hill are included.

	Shape	Area (ac)	Orientation (deg)	N-Length (ft)	Hill Height (ft)	Hill Slope (%)
+	**1**	**160**	**0.0**	**2640**	**0.0**	**0.0**

This ends the input for the first operation date.

When all entries have been made, save the file by selecting SAVE from the FILE menu (press ALT, F, and S). Select EXIT from the FILE menu to exit the editor (press ALT, F and X). The file is saved as TEST_DOS.MAN.

5.1.4 **Deleting or inserting a line in a management file**

To insert a new data line within an existing saved management file while in the **DOABLE SCREEN**, move the cursor to the *"date start" column* of the line that should *follow* the new date. Press Shift-F5. RWEQ creates a blank line with a date which duplicates the date on the next line. Type over the date and complete the vegetation, operation, and barrier inputs.

To delete a line of data from an existing saved management file while in the **DOABLE SCREEN**, move the cursor to the *"date start" column* of the line to be deleted. Press Shift-F6. WARNING: When a line is deleted, the original management file is immediately overwritten. To protect this file -*before deleting a line*- use the F6 key to duplicate the management file under a new name. Go back to the **Man. File** prompt in the main screen and type this new name. Advance to the **DOABLE SCREEN**, make the desired deletion and calculate erosion.