



Current Report

Cooperative Extension Service • Division of Agriculture • Oklahoma State University

VISACALC® PROGRAM TO BALANCE SWINE RATIONS OSU SWINE

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The following describes the equations and methods of setting up spread sheet tables for balancing swine rations, or any other type of diet which can be done with ingredients expressed on a "as is" basis. This program can be run on the simpler versions of the commercial spread sheet programs. To use this template the prospective user must have or purchase the spread sheet software for his computer and become familiar with its use.

For years nutritionists have balanced rations using the trial and error technique. With the advent of the microcomputer and spread sheets this time consuming chore becomes very simple and fast. The method used in this program is the same as if a nutritionist were balancing the ration on paper. There are two parts of this sheet shown in Tables 1 and 2. Table 1 is an actual print out of the program and Table 2 shows the column headings and row numbers.

The data between and including rows 03 and 16 is just a data table. Column C is reserved for the amount of each feed in the formula (row C4-C16). Row 3 is reserved for column headings (nutrient names). You may change any of these at any time. The nutrient composition data in the table (D4-L4, down through D16-L16) are just data, and any of these may be changed at any time. The total amount or percent of ingredients in your mixture are added up (sum) in C17. This program will figure the percentage composition even though the total in C17 may be any non-zero number (i.e. 100, 788, 4000 etc).

Just as a nutritionist makes a table on a sheet of paper to sum up the total contribution of each nutrient on a percentage basis, this is done in rows 21 through 33. In column C in rows 21 through 33, the percentage composition of the above mixture is calculated by dividing the total at the top (C17) into the amount of each ingredient listed in column C in rows C4-C16. The percentage contribution of each nutrient is calculated and stored in D21-L21 through D33-L33. Care should be taken not to disturb any of the formulas in columns C21-M21 through C35-M35.

When the totals of columns C21-L21 through C33-L33 are added (sum) the composition percentage (C35) is followed by the nutrient composition in row 35 in columns D-L. Cost is computed in column M.

Window Mode: Row 34 and 35 are displayed in a window at the bottom of the screen just below row 17. As the user types in a change in the percentage composition of the ration, or a nutrient in the top table, the updated ration composition is displayed in about one second after the change is entered. Because of this rapid ability to recalculate, very good economical rations can be developed in a minute or so after the user gains a little experience.

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Changing Feeds in Your Matrix: It is easy to change any feed or substitute other feeds into the matrix at the top of the page (rows 3-16). Format limits feed names to 14 total spaces (column A & B). When first changing the top matrix do not be concerned with the bottom part of the sheet (rows 20-35). This program can take up to 13 feeds, and less than this number is no problem. As you gain more experience with the spread sheet you may wish to expand the sheet for more feeds or nutrients using the insert and replicate commands. For now this will not be covered. To change the top matrix (rows 3-16) you can either type over the present data or blank it out. To blank out a feed in the example (i.e. corn) move the cursor to A4, press /B and enter, press /R and enter, then replicate from B4...M4. This procedure may be used on any of the rows (3-16) but not below row 16. There is one exception and that is in the case of the heading in row 20. You can blank out both rows 3 and 20, re-enter the heading in one of the rows and replicate this complete row into the other position. For example, to replicate row 3 into row 20 follow these steps: /R A3...M3 enter A20...M20 enter.

It is critical that the labels in rows 2-16 columns A&B match with the appropriate labels in rows 21-33 columns A&B. This looks like a lot of work but the computer can do it for you. This is done by using the DIF file to copy the feeds names in rows 4-16 columns A&B to rows 21-33 columns A&B. To do this place the cursor on A4 then press /S#S. You will be asked for a file name (i.e. MYFEEDS). Answer the question by typing in MYFEEDS and enter. You will then be asked for the lower right coordinate, type in B16 and enter. This DIF file will be saved on disk. After it is saved move the cursor to A21 and press /S#L. You will be asked for a file name (i.e. MYFEEDS). Type in MYFEEDS and enter, answer the prompts with enter, and the labels from the top of the sheet will be copied to the bottom part of the sheet.

Titles: It is often necessary to have more nutrients than can be displayed on the screen at one time (sheet too wide. When you scroll to the right the feed names disappear so that you can't see which feed you are working with. To solve this problem move the cursor to column B and press /TV. This will lock the first two columns and they will remain on the screen as you scroll to the right. You will also notice that you cannot scroll to the left of column C. When you need to move to the left (i.e. for printing, etc) type >A1, for example, as this will jump you across the barrier.

How to Obtain This Program: You may type this program in from these instructions. If you do, type in the headings and data first and then the formulas which are listed in Appendix 1. You may wish to purchase a disk from: Extension Animal Science Department, 201 Animal Science Building, Oklahoma State University, Stillwater, Ok 74078. Programs on 8 inch data

disks for TRS-80® are available at a cost of \$25 each for the disk and return postage. Additional programs on the same disk cost \$20 each.

Nutrient composition tables are available in fact sheet form from Oklahoma State University Extension Centers. The data shown on this program came from Fact Sheet #3502, "Feedstuff Composition for Swine Rations". For additional information see your OSU Area Livestock Specialist or County Agent for more information.

TABLE 1. Actual Print out of OSU Swine Ration Formulation Program.

OSU SWINE RATION CALCULATOR: MARCH 1983 DATA IS ON AN "AS IS" BASIS.

FEED NAME (13)	AMOUNT	C.F.%	M.E.	CA.	PHOS	C.P.	LYS.	TRYPT	THREO	MET+CY	COST\$	
CORN, YELLOW	3238.6	2.50	1500	0.01	0.25	8.80	0.24	0.09	0.32	0.39	6.10	
SORGHUM, GRAIN	0	2.70	1425	0.02	0.27	9.00	0.22	0.09	0.29	0.31	5.90	
WHEAT, HARD WR	0	2.40	1500	0.05	0.35	12.20	0.38	0.15	0.37	0.36	6.35	
SOYBEAN MEAL	625	6.50	1475	0.25	0.60	44.00	2.88	0.55	1.87	1.22	11.00	
MEAT& SCRAP 50	0	2.80	1100	8.10	4.10	50.00	2.50	0.29	1.81	1.27	14.00	
ALFALFA HAY	0	29.00	595	1.20	0.16	14.20	0.55	0.35	0.60	0.35	3.78	
ALFALFA DEHY	0	25.00	720	1.30	0.23	17.00	0.80	0.36	0.75	0.58	5.50	
WHEAT, MIDDS	0	7.50	1300	0.05	0.80	16.00	0.64	0.18	0.54	0.34	5.25	
CALCIUM CARB.	42.4	0.00	0	38.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	
DICAL	64	0.00	0	22.00	18.50	0.00	0.00	0.00	0.00	0.00	14.00	
DI MONO PHOS.	0	0.00	0	17.50	21.00	0.00	0.00	0.00	0.00	0.00	15.00	
VITAMIN TM PMX	10	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.00	
SALT	20	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	
>>>>>>>TOTAL	4000											
PERCENT OR POUNDS "AS IS" MIXTURE.											COST PER BATCH \$ -->	284.17

RATION PARTS ARE SHOWN IN THE TABLE BELOW

FEED NAME	PERCENT	C.F.	M.E.	CA.	PHOS	C.P.	LYS.	TRYPT	THREO	MET+CY	COST\$
CORN, YELLOW	80.97	2.02	1214.5	0.01	0.20	7.12	0.19	0.07	0.26	0.32	4.94
SORGHUM, GRAIN	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHEAT, HARD WR	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOYBEAN MEAL	15.63	1.02	230.47	0.04	0.09	6.88	0.45	0.09	0.29	0.19	1.72
MEAT& SCRAP 50	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALFALFA HAY	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALFALFA DEHY	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHEAT, MIDDS	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALCIUM CARB.	1.06	0.00	0	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.02
DICAL	1.60	0.00	0	0.35	0.30	0.00	0.00	0.00	0.00	0.00	0.22
DI MONO PHOS.	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VITAMIN TM PMX	0.25	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
SALT	0.50	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
AS IS COMP.	% 100.00	3.04	1444.9	0.80	0.59	14.00	0.64	0.16	0.55	0.51	7.10

Developed at Oklahoma State University, Extension Animal Science Department by Donald R Gill Extension Animal Nutritionist. March 1983.

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Table 2. Print out of the working part of OSU SWINE program with column headings and rows in place.

>>>[A][B][C][D][E][F][G][H][I][J][K][L][M]
 01>OSU SWINE RATION CALCULATOR: MARCH 1983 DATA IS ON AN "AS IS" BASIS.

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02>-----
03>FEED NAME (13) AMOUNT  C.F.%  M.E.   CA.   PHOS   C.P.   LYS.   TRYPT  THREO  MET+CY  COST$
04>CORN, YELLOW  3238.6  2.50  1500  0.01  0.25  8.80  0.24  0.09  0.32  0.39  6.10
05>SORGHUM, GRAIN    0  2.70  1425  0.02  0.27  9.00  0.22  0.09  0.29  0.31  5.90
06>WHEAT, HARD WR    0  2.40  1500  0.05  0.35  12.20  0.38  0.15  0.37  0.36  6.35
07>SOYBEAN MEAL      625  6.50  1475  0.25  0.60  44.00  2.88  0.55  1.87  1.22  11.00
08>MEAT& SCRAP 50    0  2.80  1100  8.10  4.10  50.00  2.50  0.29  1.81  1.27  14.00
09>ALFALFA HAY        0 29.00  595  1.20  0.16  14.20  0.55  0.35  0.60  0.35  3.78
10>ALFALFA DEHY      0 25.00  720  1.30  0.23  17.00  0.80  0.36  0.75  0.58  5.50
11>WHEAT, MIDDS      0  7.50  1300  0.05  0.80  16.00  0.64  0.18  0.54  0.34  5.25
12>CALCIUM CARB.     42.4  0.00  0  38.00  0.00  0.00  0.00  0.00  0.00  0.00  2.25
13>DICAL              64  0.00  0  22.00  18.50  0.00  0.00  0.00  0.00  0.00  14.00
14>DI MONO PHOS.     0  0.00  0  17.50  21.00  0.00  0.00  0.00  0.00  0.00  15.00
15>VITAMIN TM PMX    10  0.00  0  0.00  0.00  0.00  0.00  0.00  0.00  0.00  75.00
16>SALT               20  0.00  0  0.00  0.00  0.00  0.00  0.00  0.00  0.00  2.25
17>>>>>>>>>>TOTAL  4000  PERCENT OR POUNDS "AS IS" MIXTURE.      COST PER BATCH $ --> 284.17
18>-----
  
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19>RATION PARTS ARE SHOWN IN THE TABLE BELOW
20>FEED NAME      PERCENT  C.F.   M.E.   CA.   PHOS   C.P.   LYS.   TRYPT  THREO  MET+CY  COST$
21>CORN, YELLOW   80.97  2.02  1214.5  0.01  0.20  7.12  0.19  0.07  0.26  0.32  4.94
22>SORGHUM, GRAIN  0.00  0.00  0  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
23>WHEAT, HARD WR  0.00  0.00  0  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
24>SOYBEAN MEAL   15.63  1.02  230.47  0.04  0.09  6.88  0.45  0.09  0.29  0.19  1.72
25>MEAT& SCRAP 50  0.00  0.00  0  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
26>ALFALFA HAY     0.00  0.00  0  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
27>ALFALFA DEHY   0.00  0.00  0  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
28>WHEAT, MIDDS   0.00  0.00  0  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
29>CALCIUM CARB.  1.06  0.00  0  0.40  0.00  0.00  0.00  0.00  0.00  0.00  0.02
30>DICAL           1.60  0.00  0  0.35  0.30  0.00  0.00  0.00  0.00  0.00  0.22
31>DI MONO PHOS.  0.00  0.00  0  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
32>VITAMIN TM PMX  0.25  0.00  0  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.19
33>SALT            0.50  0.00  0  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.01
34>-----
35>AS IS COMP.  % 100.00  3.04  1444.9  0.80  0.59  14.00  0.64  0.16  0.55  0.51  7.10
  
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Appendix 1. Listing of program statements for OSU SWINE ration program with heading statements deleted.

>M35:/F\$@SUM(M21...M33	>D30:/F\$+C13/C17*D13	>F25:/F\$+C8/C17*F8
>L35:/F\$@SUM(L21...L33	>C30:/F\$+C13/C17*100	>E25:/FG+C8/C17*E8
>K35:/F\$@SUM(K21...K33	>M29:/F\$+M12*C29*.01	>D25:/F\$+C8/C17*D8
>J35:/F\$@SUM(J21...J33	>L29:/F\$+C12/C17*L12	>C25:/F\$+C8/C17*100
>I35:/F\$@SUM(I21...I33	>K29:/F\$+C12/C17*K12	>M24:/F\$+M7*C24*.01
>H35:/F\$@SUM(H21...H33	>J29:/F\$+C12/C17*J12	>L24:/F\$+C7/C17*L7
>G35:/F\$@SUM(G21...G33	>I29:/F\$+C12/C17*I12	>K24:/F\$+C7/C17*K7
>F35:/F\$@SUM(F21...F33	>H29:/F\$+C12/C17*H12	>J24:/F\$+C7/C17*J7
>E35:@SUM(E21...E33	>G29:/F\$+C12/C17*G12	>I24:/F\$+C7/C17*I7
>D35:/F\$@SUM(D21...D33	>F29:/F\$+C12/C17*F12	>H24:/F\$+C7/C17*H7
>C35:/F\$@SUM(C21...C33	>E29:/FG+C12/C17*E12	>G24:/F\$+C7/C17*G7
>M33:/F\$+M16*C33*.01	>D29:/F\$+C12/C17*D12	>F24:/F\$+C7/C17*F7
>L33:/F\$+C16/C17*L16	>C29:/F\$+C12/C17*100	>E24:/FG+C7/C17*E7
>K33:/F\$+C16/C17*K16	>M28:/F\$+M11*C28*.01	>D24:/F\$+C7/C17*D7
>J33:/F\$+C16/C17*J16	>L28:/F\$+C11/C17*L11	>C24:/F\$+C7/C17*100
>I33:/F\$+C16/C17*I16	>K28:/F\$+C11/C17*K11	>M23:/F\$+M6*C23*.01
>H33:/F\$+C16/C17*H16	>J28:/F\$+C11/C17*J11	>L23:/F\$+C6/C17*L6
>G33:/F\$+C16/C17*G16	>I28:/F\$+C11/C17*I11	>K23:/F\$+C6/C17*K6
>F33:/F\$+C16/C17*F16	>H28:/F\$+C11/C17*H11	>J23:/F\$+C6/C17*J6
>E33:/FG+C16/C17*E16	>G28:/F\$+C11/C17*G11	>I23:/F\$+C6/C17*I6
>D33:/F\$+C16/C17*D16	>F28:/F\$+C11/C17*F11	>H23:/F\$+C6/C17*H6
>C33:/F\$+C16/C17*100	>E28:/FG+C11/C17*E11	>G23:/F\$+C6/C17*G6
>M32:/F\$+M15*C32*.01	>D28:/F\$+C11/C17*D11	>F23:/F\$+C6/C17*F6
>L32:/F\$+C15/C17*L15	>C28:/F\$+C11/C17*100	>E23:/FG+C6/C17*E6
>K32:/F\$+C15/C17*K15	>M27:/F\$+M10*C27*.01	>D23:/F\$+C6/C17*D6
>J32:/F\$+C15/C17*J15	>L27:/F\$+C10/C17*L10	>C23:/F\$+C6/C17*100
>I32:/F\$+C15/C17*I15	>K27:/F\$+C10/C17*K10	>M22:/F\$+M5*C22*.01
>H32:/F\$+C15/C17*H15	>J27:/F\$+C10/C17*J10	>L22:/F\$+C5/C17*L5
>G32:/F\$+C15/C17*G15	>I27:/F\$+C10/C17*I10	>K22:/F\$+C5/C17*K5
>F32:/F\$+C15/C17*F15	>H27:/F\$+C10/C17*H10	>J22:/F\$+C5/C17*J5
>E32:/FG+C15/C17*E15	>G27:/F\$+C10/C17*G10	>I22:/F\$+C5/C17*I5
>D32:/F\$+C15/C17*D15	>F27:/F\$+C10/C17*F10	>H22:/F\$+C5/C17*H5
>C32:/F\$+C15/C17*100	>E27:/FG+C10/C17*E10	>G22:/F\$+C5/C17*G5
>M31:/F\$+M14*C31*.01	>D27:/F\$+C10/C17*D10	>F22:/F\$+C5/C17*F5
>L31:/F\$+C14/C17*L14	>C27:/F\$+C10/C17*100	>E22:/FG+C5/C17*E5
>K31:/F\$+C14/C17*K14	>M26:/F\$+M9*C26*.01	>D22:/F\$+C5/C17*D5
>J31:/F\$+C14/C17*J14	>L26:/F\$+C9/C17*L9	>C22:/F\$+C5/C17*100
>I31:/F\$+C14/C17*I14	>K26:/F\$+C9/C17*K9	>M21:/F\$+M4*C21*.01
>H31:/F\$+C14/C17*H14	>J26:/F\$+C9/C17*J9	>L21:/F\$+C4/C17*L4
>G31:/F\$+C14/C17*G14	>I26:/F\$+C9/C17*I9	>K21:/F\$+C4/C17*K4
>F31:/F\$+C14/C17*F14	>H26:/F\$+C9/C17*H9	>J21:/F\$+C4/C17*J4
>E31:/FG+C14/C17*E14	>G26:/F\$+C9/C17*G9	>I21:/F\$+C4/C17*I4
>D31:/F\$+C14/C17*D14	>F26:/F\$+C9/C17*F9	>H21:/F\$+C4/C17*H4
>C31:/F\$+C14/C17*100	>E26:/FG+C9/C17*E9	>G21:/F\$+C4/C17*G4
>M30:/F\$+M13*C30*.01	>D26:/F\$+C9/C17*D9	>F21:/F\$+C4/C17*F4
>L30:/F\$+C13/C17*L13	>C26:/F\$+C9/C17*100	>E21:/FG+C4/C17*E4
>K30:/F\$+C13/C17*K13	>M25:/F\$+M8*C25*.01	>D21:/F\$+C4/C17*D4
>J30:/F\$+C13/C17*J13	>L25:/F\$+C8/C17*L8	>C21:/F\$+C4/C17*100
>I30:/F\$+C13/C17*I13	>K25:/F\$+C8/C17*K8	>M17:/F\$+C17*M35*.01
>H30:/F\$+C13/C17*H13	>J25:/F\$+C8/C17*J8	>C17:/FG@SUM(C4...C16
>G30:/F\$+C13/C17*G13	>I25:/F\$+C8/C17*I8	>R16:/F\$
>F30:/F\$+C13/C17*F13	>H25:/F\$+C8/C17*H8	>Q16:/F\$
>E30:/FG+C13/C17*E13	>G25:/F\$+C8/C17*G8	>P16:/F\$

>O16:/F\$
>N16:/F\$
>M16:/F\$2.25
>L16:/F\$0
>K16:/F\$0
>J16:/F\$0
>I16:/F\$0
>H16:/F\$0
>G16:/F\$0
>F16:/F\$0
>E16:/FG0
>D16:/F\$0
>C16:/FG20
>M15:/F\$75
>L15:/F\$0
>K15:/F\$0
>J15:/F\$0
>I15:/F\$0
>H15:/F\$0
>G15:/F\$0
>F15:/F\$0
>E15:/FG0
>D15:/F\$0
>C15:/FG10
>M14:/F\$15
>L14:/F\$0
>K14:/F\$0
>J14:/F\$0
>I14:/F\$0
>H14:/F\$0
>G14:/F\$21
>F14:/F\$17.5
>E14:/FG0
>D14:/F\$0
>C14:/FG0
>M13:/F\$14
>L13:/F\$0
>K13:/F\$0
>J13:/F\$0
>I13:/F\$0
>H13:/F\$0
>G13:/F\$18.5
>F13:/F\$22
>E13:/FG0
>D13:/F\$0
>C13:/FG64
>M12:/F\$2.25
>L12:/F\$0
>K12:/F\$0
>J12:/F\$0
>I12:/F\$0

>H12:/F\$0
>G12:/F\$0
>F12:/F\$38
>E12:/FG0
>D12:/F\$0
>C12:/FG42.4
>M11:/F\$5.25
>L11:/F\$.34
>K11:/F\$.54
>J11:/F\$.18
>I11:/F\$.64
>H11:/F\$16
>G11:/F\$.8
>F11:/F\$.05
>E11:/FG1300
>D11:/F\$7.5
>C11:/FG0
>M10:/F\$5.5
>L10:/F\$.58
>K10:/F\$.75
>J10:/F\$.36
>I10:/F\$.8
>H10:/F\$17
>G10:/F\$.23
>F10:/F\$1.3
>E10:/FG720
>D10:/F\$25
>C10:/FG0
>M9:/F\$3.78
>L9:/F\$.35
>K9:/F\$.6
>J9:/F\$.35
>I9:/F\$.55
>H9:/F\$14.2
>G9:/F\$.16
>F9:/F\$1.2
>E9:/FG595
>D9:/F\$29
>C9:/FG0
>M9:/F\$14
>L8:/F\$1.27
>K8:/F\$1.81
>J8:/F\$.29
>I8:/F\$2.5
>H8:/F\$50
>G8:/F\$4.1
>F8:/F\$8.1
>E8:/FG1100
>D8:/F\$2.8
>C8:/FG0
>M7:/F\$11

>L7:/F\$1.22
>K7:/F\$1.87
>J7:/F\$.55
>I7:/F\$2.88
>H7:/F\$44
>G7:/F\$.6
>F7:/F\$.25
>E7:/FG1475
>D7:/F\$6.5
>C7:/FG625
>M6:/F\$6.35
>L6:/F\$.36
>K6:/F\$.37
>J6:/F\$.15
>I6:/F\$.38
>H6:/F\$12.2
>G6:/F\$.35
>F6:/F\$.05
>E6:/FG1500
>D6:/F\$2.4
>C6:/FG0
>M5:/F\$5.9
>L5:/F\$.31
>K5:/F\$.29
>J5:/F\$.09
>I5:/F\$.22
>H5:/F\$9
>G5:/F\$.27
>F5:/F\$.02
>E5:/FG1425
>D5:/F\$2.7
>C5:/FG0
>M4:/F\$6.1
>L4:/F\$.39
>K4:/F\$.32
>J4:/F\$.09
>I4:/F\$.24
>H4:/F\$8.8
>G4:/F\$.25
>F4:/F\$.01
>E4:/FG1500
>D4:/F\$2.5
>C4:/FG3238.6
/W1
/GOC
/GRA
/XH17
/GFG
/GC7
/X>A1:>A1:;/GFG
/GC7
/X>A34:>A34:;