

DART - A New Computer Program for
Dairy Herd Management

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Traditionally, dairymen have made use of tools to help them manage their businesses better. Artificial insemination, Dairy Herd Improvement records, least cost ration formulation, enterprise budgets, estrus synchronization and embryo transfers are among the tools now being chosen by some dairymen to help them compete against inflation and other deterrents to business success. Florida dairymen have been particularly innovative in their pursuit of labor-saving instruments. One of the newer tools which is finding its way onto many dairy farms is the computer.

A computer can be justified for a potential user by one of three ways in that it can allow certain tasks to be accomplished: 1 - better, 2 - easier and 3 - cheaper. The following are examples of things done "better":

- a. provide unique information
- b. prevent management errors;
- c. locate problem areas;
- d. locate strong areas;
- e. evaluate planning; and
- f. evaluate methods.

A computer can only be justified in its ability to handle information. Computers do not originate information, they process it. So here lies the greatest potential failure -- that of providing inadequate information for the computer to process. It should be understood early in the game that a computer will not operate itself and can only provide answers to questions that have been asked properly.

There are at least four types of computer service which can be used by dairymen, directly.

1. Batch process - This is usually obtained through a mail-in situation. Data are accumulated, prepared, entered and processed in one "batch". The output is returned to the user usually by mail. The current DHI record system is processed in batch.
2. Time sharing - This method involves accessing a main-frame computer from a remote location via telephone and a computer terminal. Time on the main-frame is "shared" by the user to perform specific tasks. Several ration formulation systems operate this way as well as credit checks and travel reservations.

3. Mini-computer - A newer form of computer usage involves a configuration of hardware which will operate on a stand-alone basis. These devices usually include a keyboard, processer, cathode ray tube (CRT) display, one or more disk drives and a printer.
4. Combination - This refers to a situation where both #2 and #3 are used. The hardware consists of a mini-computer equipped with a modem and interface to allow communication with a main-frame computer via telephone. The concept is to perform some tasks locally and use time-sharing for others.

With this introduction, the remainder of my remarks will concern the DART program which is an example of #2, a time-sharing system. The DHI (Dairy Herd Improvement) Program has been serving the needs of the U.S. dairy industry since the early 1900's. Beginning as a tool to accumulate the history of a cow's milk and fat production, DHI has evolved into a system of management information for comprehensive decision-making. High speed electronic computers have replaced the tedious man-hours required to calculate records. These computers have opened a new dimension of options available to participating dairymen. Now with a second generation of advancement in microelectronics, computer hardware is becoming commonplace in many small and medium size businesses. In November of 1979, our regional DRPC (Dairy Records Processing Center) group voted to develop an on-farm computer system for use in the DHI records program serving the twelve southern states.

The program is being called "D A R T" which is short for Direct Access to Records by Telephone. DART is a program of remote information management being developed by DRPC at Raleigh. The DART concept gives dairymen "on-line" access to their DHI data file for retrieval of cow management reports constructed to their own individual specifications. DART allows dairymen to input changes in cow status, breeding and heat dates directly through the on-farm terminal. The DHI supervisor will continue to be responsible for authentication of cow identity, milk weights, and samples.

DART has been designed to meet four primary objectives:

1. Flexibility - Each individual dairyman can get the reports he wants without affecting other dairymen.
2. Timeliness - DART will provide immediate turn-around for all applications related to calving, drying and reproductive management.
3. Professional program maintenance - Dairymen can depend on professional maintenance of their data base and programs without having to hire a computer expert on the farm or purchase expensive software.
4. Simplicity - DART programs are being designed so that the on-farm terminal can be operated by people without special skills or training.

DART has been designed to function in a self-explanatory fashion and is relatively simple to use. The operator establishes contact with the DRPC computer in Raleigh by placing a direct-dialed station-to-station call to the appropriate number. After the initial sign-on procedure, DART operates in a conversational manner between the on-farm terminal and DRPC's computer.

There are three major applications:

1. Input of cow status changes
2. Creation of management reports
3. Printing of management reports

Management reports are maintained for each herd as a part of the herd's record until deleted or changed by the dairyman. An example "menu" of reports for an individual herd are included in the following pages.

The DART field test project is being conducted to refine the procedures prior to general offering. Twenty-two herds within the DRPC region have been enrolled as "test herds". These herds are using DART as their first-line cow information management system. Their experience and input will be used to modify the program prior to finalization. DRPC will be making observations to determine resources required and a suitable charge rate structure. The program is expected to be on line and available to DHI dairymen on August 1, 1981.

LLLLLLLLLLLLL

DRPC - RALEIGH, NC
ENTER 8-DIGIT HERD CODE NUMBER:
?58420070

ENTER YOUR PASSWORD
#####

APPLICATIONS:

- 1 - INPUT STATUS CHANGES
 - 2 - CREATE OR CHANGE MANAGEMENT REPORT(S)
 - 3 - PRINT MANAGEMENT REPORT(S)
 - 9 - SIGN OFF
- ENTER 1 DIGIT APPLICATION CODE
?3

ENTER 2-DIGIT REPORT #: 00 TO CHANGE REF. DATE FROM 051381; P TO PRINT LIST OF REPORTS;
99 AFTER LAST REPORT
?P

REPORTS CREATED FOR YOUR HERD:

- 01 - DRY COWS
- 02 - COWS FOR PREG CHECK
- 03 - COWS PAST DUE
- 04 - COWS TO CALVE IN NEXT 21 DAYS
- 05 - COWS TO TURN DRY
- 06 - COWS FRESH 40 DAYS - NO HEATS
- 07 - COWS OPEN OVER 120 DAYS
- 08 - LOW COWS - BELOW 30 LBS. & NOT PREG.
- 09 - COWS BELOW 10 LBS.
- 10 - COWS DRY LONGER THAN 100 DAYS
- 11 - COWS OVER 800 THOU. SCC

FIXED REPORTS FOR ALL HERDS:

- 90 - HEAT EXPECTANCY LIST
- 91 - PRINT INFORMATION ON A COW
- 92 - LIST DAUGHTERS OF A BULL
- 93 - LIST STATUS AND/OR BREEDING INPUTS
- 94 - CONCEPTION RATE SUMMARY BY TECHNICIAN
- 95 - LIST COWS BRED TO A BULL
- 96 - LIST OF NEW COWS(SINCE LAST TEST DAY)

ENTER 2-DIGIT REPORT #: 00 TO CHANGE REF. DATE FROM 051381; P TO PRINT LIST OF REPORTS;
99 AFTER LAST REPORT
?

G	R	P	BARN	LBS.	FRESH	DAILY	DATE	FRESH	MO-DA-YR	40TH	NO	D	HEAT	C	BRED-
			13-R	81			3-27-81			5-05					
			23	53			12-22-80			1-30					
			25	60			3-12-81			4-20					
			34-W	73			4-04-81			5-13					
			114	74			1-31-81			3-11					
			120	96			3-02-81			4-10					
			168-B	100			3-18-81			4-26					
			248	56			2-02-81			3-13					
			262-B	78			2-13-81			3-24					
			264-W	87			3-10-81			4-18					
			272	78			2-16-81			3-27					
			299-R	99			2-24-81			4-04					
			323	66			2-16-81			3-27					
			335-R	85			3-07-81			4-15					
			348	89			3-16-81			4-24					
			353	84			3-22-81			4-30					
			377-W	73			3-05-81			4-13					
			390	59			9-18-80			10-27					
			512-W	85			3-13-81			4-21					
			516	56			4-02-81			5-11					
			545	69			3-03-81			4-11					
			624-W	71			3-01-81			4-09					
			632	73			3-24-81			5-02					
			762-R	55			12-22-80			1-30					
			770	51			2-25-81			4-05					
			846	89			3-15-81			4-23					
			907	90			2-20-81			3-31					
			918	18			10-28-80			12-06					
			943	48			2-06-81			3-17					
			958	62			2-05-81			3-16					
			974	98			3-22-81			4-30					
			983-W	101			1-29-81			3-09					
			1152	47			3-16-81			4-24					
			1270-W	95			3-15-81			4-23					
			1274-0	16			12-28-80			2-05					
			1280-W	81			3-21-81			4-29					
			1365-0	84			3-23-81			5-01					
			1435	70			2-14-81			3-25					
			1655	68			2-21-81			4-01					
			1683	72			4-03-81			5-12					
			1688	78			3-07-81			4-15					
			1763-B	44			2-20-81			3-31					
			1940-B	88			2-28-81			4-08					

02 - COWS FOR PREG CHECK		DAILY DATE		SERV-		C BRED-	
G	R	BARN	LBS. MILK	FRESH MO-DA-YR	HEAT INT	NO BR	D HEAT
P		NAME	DRY			E	DATES
		17	60	11-01-79		8	1-23
		38	60	11-26-80		4	4-01
		57-B	17	10-20-80		6	3-28
		76-R	56	11-13-80		1	4-08
		82-R	36	8-24-80		4	2-13
		84	77	1-10-81		3	4-01
		86	73	12-26-80		1	2-03
		131-R	54	12-06-80		2	3-27
		146	69	1-28-81		1	3-17
		202	60	10-24-80		2	4-03
		206	19	7-05-80		2	3-31
		214	63	11-01-80		4	3-13
		229	65	11-22-80		3	3-21
		245-R	65	1-09-81		2	4-07
		247	88	11-14-80		3	3-21
		267	91	11-10-80		2	3-22
		279	DRY	12-14-79		9	1-23
		283	32	10-27-80		3	1-29
		289	37	10-22-80		1	3-15
		293	67	11-20-80		3	4-08
		327	62	1-02-81		1	3-24
		336	21	5-25-80		2	3-19
		346	30	9-18-80		3	4-02
		360	DRY	6-17-79		9	1-08
		375	11	11-13-79		9	2-26
		389	84	11-14-80		1	3-27
		391	48	12-05-80		2	3-10
		394-B	66	12-09-80		3	4-05
		452	16	7-12-80		8	4-04
		477	49	10-18-80		3	4-04
		478	82	12-08-80		1	4-06
		492-B	77	11-13-80		2	4-07
		522	12	8-07-80		9	4-03
		536	56	9-29-80		4	3-12
		546	75	12-29-80		1	4-02
		571	41	9-27-80		5	3-17
		575	66	1-05-81		1	3-13
		578-B	57	8-31-80		7	3-19
		586	73	2-01-81		1	3-18
		598	67	11-14-80		1	3-13
		600	57	10-22-80		1	3-13

BARN NAME	C	LAST MTH	MTH	THIS MTH	#SCC*	DAYS PROJECTED		IN MILK	305 DAY-ME	FAT	MILK	R NO.	A OF BR.	D	E	N	DATE DUE	SERVICE SIRE	DATE TO DRY
						IN MILK	305 DAY-ME												
26-W	3	35	28	00	01	330	12647	408	D	220	E	6	1-01	BULL	11-02				
57-B	3	27	17	15	08	206	7045	220	E	220	E	2	1-04	BULL	11-05				
206	3	26	19	05	06	313	13370	382	D	413	D	2	12-23	BULL	10-24				
336	3	32	21	03	03	354	13556	413	D	335	E	8	1-08	BULL	10-03				
375	2	30	11	00	00	547	20585	335	E	317	E	9	1-28	BULL	11-09				
452	2	19	16	02	03	306	11437	317	E	390	D	4	1-07	BULL	11-29				
458	2	17	11	04	04	557	20123	317	E	411	D	6	1-28	BULL	11-08				
522	2	23	12	07	11	280	11117	390	D	459	D	7	2-07	40H2719	12-09				
655	2	30	24	03	04	331	13347	459	D	236	E	8	1-01	40H2458	11-02				
690	3	35	21	05	11	239	12493	421	E	421	E	6	1-17	BULL	11-18				
740	3	28	23	01	01	183	10375	421	E	421	E	9	1-09	14H365	11-10				
748	3	21	28	02	02	395	12127	464	C	464	C	9	11-29	BULL	9-30				
816-B	3	23	20	15	12	237	6290	464	C	464	C	9	12-01	BULL	10-02				
817	3	22	17	06	03	374	12211	412	E	195	E	1	10-06	BULL	8-07				
821-B	3	15	8	21	01	65	15037	412	E	195	E	1	8-17	40H2822	6-18				
838	1	16	10	*D	10	359	10109	324	E	324	E	6	12-23	BULL	10-24				
865	2	16	18	10	10	198	6109	324	E	324	E	6	2-07	40H2521	12-09				
918	3	19	18	*D08	04	514	20481	323	E	323	E	6	2-03	BULL	12-05				
945-B	2	17	23	01	05	237	9467	438	D	438	D	2	2-07	40H2414	12-09				
1105-W	3	30	27	08	04	522	24703	433	D	433	D	3	8-04	40H2296	6-05				
1132-0	2	29	20	01	02	519	18654	425	C	425	C	5	1-08	BULL	11-09				
1154-0	2	20	20	01	02	519	18654	257	E	257	E	3	12-30	BULL	10-31				
1165-0	3	19	25	02	02	229	8030	261	E	261	E	3	1-03	14H588	11-04				
1187-W	3	24	5	*D07	07	285	14202	261	E	261	E	3	11-21	14H512	9-22				
1215-W	3	28	17	05	05	264	13287	217	E	217	E	4	1-02	BULL	11-03				
1221-W	2	37	26	01	04	271	15138	304	E	304	E	4	12-05	BULL	10-06				
1225-W	4	26	17	02	06	519	13986	248	E	248	E	3	10-22	14H546	8-23				
1257-W	3	29	23	04	04	276	9315	201	E	201	E	1	12-15	BULL	10-16				
1274-0	3	19	16	16	04	137	6018	369	E	369	E	6	1-23	14H594	11-24				
1610	1	16	8	8	04	88	4718	325	E	325	E	5	2-07	BULL	12-09				
1704	3	24	15	04	01	241	10882	552	B	552	B	5							
1773	3	12	2	06	06	283	7352	471	C	471	C	N							
1789	3	19	17	02	00	273	5573	309	15970	471	C	N							
1891	3	31	29	01	02	266	12290	325	E	325	E	5							
1970	1	35	27	04	03	75	9249	325	E	325	E	5							
2207	3	28	17	01	01	246	9249	325	E	325	E	5							
2282	3	28	28	04	02	348	14325	309	15970	471	C	N							
2302-B	4	35	20	02	01	70	9249	325	E	325	E	5							
2435	1	40	23	04	06	309	15970	471	C	471	C	N							

11 - COWS BRED IN LAST 60 DAYS

G	DAILY	DATE	SERV-	C	BRED-
R	BARN	LBS.	FRESH	HEAT	NO D
P	NAME	MILK	MO-DA-YR	INT BR	E DATES
	SOPHIE	79	1-14-81	1	3-16
	3X	34	9-29-80	46 5	3-28
	4	43	2-12-81	1	4-10
	12	47	7-06-80	21 9	4-03
	28X	54	11-06-80	59 3	3-23
	32	60	1-06-81	18 2	4-04
	36X	70	3-14-81	1	4-08
	40X	54	2-23-81	1	4-08
	45X	44	1-13-81	21 2	4-04
	55X	49	1-25-81	20 2	4-10
	JOSIE	47	9-17-80	44 6	4-13
	67	81	1-11-81	24 2	3-21
	74	56	2-10-81	1	3-23
	92	47	10-27-80	93 2	4-11
	111	71	10-29-80	21 4	3-17
	122	36	7-23-80	62 5	4-01
	130	45	10-21-80	45 3 P	3-21
	166	35	9-16-80	47 3	3-21
	195	33	7-06-80	122 4	4-09
	221	29	1-26-81	1	4-05
	226	42	1-26-81	1	3-25
	234	35	1-29-81	1	3-25
	345	25	10-21-80	24 5	3-28
	385	38	2-09-81	1	4-04
	734	42	11-20-80	88 2	4-08
	738	40	3-20-80	78 9	4-11
	748	47	12-28-80	1	3-22
	751	80	12-28-80	65 2	4-11
	763	61	12-02-80	44 3	3-14
	824	54	9-25-80	39 5	3-28
	866	18	9-14-80	44 5	4-07
	920	46	11-21-80	12 5	4-11
	923	38	8-26-80	41 5	4-03
	947	36	9-25-80	24 3	3-25
	2071X	51	12-22-80	23 3	4-04
	2091R	43	12-22-80	1	4-04
	4535	69	2-17-81	1	3-25
	4540	59	2-11-81	1	3-28
	7048	51	12-23-80	1	4-01
	7060R	74	1-10-81	26 2	3-26
	9184	38	10-03-80	23 1	4-02
	9745	60	12-29-80	19 1	3-14

AVERAGES FOR THE 42 COWS ON THIS LIST:

ITEM	NO. COWS	AVG.
DAILY MILK	42	48.9
DAILY % FAT	42	3.5
SCC (NEAREST 1,000)		
DAYS IN MILK	42	172
BODY WEIGHT	42	1360
DAYS CARRIED CALF	42	43
PROJ. 305 ME MILK	41	15724

ENTER 2-DIGIT REPORT #: 00 TO CHANGE REF. DATE FROM 051381; P TO PRINT L
99 AFTER LAST REPORT

?

G	R	P	BARN	LBS.	MILK	MO-DA-YR	FRESH	DAILY DATE	60TH DAY	NO BR	D HEAT	C BRED-
			ROXY	85		4-01-81		5-30				
			7	52		3-21-81		5-19				
			16X	DRY		8-16-80		10-14				N 1-12
			23X	74		3-14-81		5-12				
			27	DRY		12-01-79		1-29				P
			30X	60		4-20-81		6-18				
			34	42		10-11-80		12-09				
			41X	55		3-14-81		5-12				
			54X	65		2-21-81		4-21				
			75X	31		6-15-80		8-13				N 12-02
			82	50		3-04-81		5-02				
			88	71		3-26-81		5-24				
			95	38		2-09-81		4-09				
			103	20		3-01-81		4-29				
			106X	44		11-08-80		1-06				H 12-10
			131	38		11-07-80		1-05				N 1-14
			142	19		9-19-80		11-17				N 3-05
			161R	DRY		11-22-80		1-20				P
			193X	49		12-31-80		2-28				
			206X	61		3-21-81		5-19				
			218	40		3-17-81		5-15				
			222	53		3-11-81		5-09				
			223	39		1-31-81		3-31				
			228	50		2-11-81		4-11				
			245	54		2-20-81		4-20				
			351			4-28-81		6-26				
			353	70		3-07-81		5-05				
			366	34		3-14-81		5-12				
			391	32		2-03-81		4-03				
			398	85		3-26-81		5-24				
			470	36		4-17-81		6-15				
			502	41		4-07-81		6-05				
			553	17		4-17-81		6-15				
			554	90		3-26-81		5-24				
			741	60		3-16-81		5-14				
			765	71		2-09-81		4-09				
			791	68		3-26-81		5-24				
			798	77		3-30-81		5-28				
			803	84		3-23-81		5-21				
			906	73		3-09-81		5-07				
			7037	60		3-21-81		5-19				
			8303	47		2-03-81		4-03				H 4-07

91 IDENTITY TYPES (1 - COW INDEX ; 2 - BARN NAME ; 3 - REG. OR EARTAG NUMBER)
 ENTER ID TYPE FOLLOWED BY SLASH (/) AND THEN COWS IDENTITY; TYPE 9 AFTER ENTERING LAST

COW
 ?1/1720
 ?9
 ?2 ENTER 1 OR 2 (1=1 LINE PER COW; 2= COW PAGE)

** INDIVIDUAL COW RECORD **

IDENTITY	PRODUCTION	BREEDING
INDEX NO. 1720	LAST MO. MILK/DAY 93	LAST STATUS CALVED
BARN NAME 1720	THIS MO. MILK/DAY 94	DATE 02-04-81
REG./E.T. 8273563	THIS MO. FAT % 3.5	DAYS OPEN 61
BIRTH DATE 11-28-72	DAYS IN MILK(04-06) 62	NO. BREEDINGS 1
SIRE 7H58	ACTUAL MILK 5453	REPRO. CODE
SIRE REG. 1491007	ACTUAL FAT 181	LAST BRED DATE 04-06-81
DAM 6907529	FAT % 3.3	SERVICE SIRE 7H195
DAM REG. 6907529	PROJ. 305-ME MILK 19909	TECHNICIAN 1
BREED H	PROJ. 305-ME FAT 684	DATE DUE 01-10-82
GROUP 1	NO. LACTATIONS 6	PREV. BRED DATE
DATE FRESH 02-04-81	LIFETIME MILK 91859	INTERVAL (DAYS)
CALF I. D. 9560B1720	LIFETIME FAT % 3.3	
CALF CODE	ERPA MILK +124	
DATE PRINTED 05/13/81	USDA INDEX MILK +803	LAST TEST DAY 04-06-81

DO YOU WANT TO PRINT MORE COWS (Y OR N)
 ?

NOTE: SIRE REGIS. ATI NUM R: 1491007

92 - DAUGHTERS OF		1491007		- 7H58		+1470 PDM		+51 PDF		
G		DAYS PROJECTED		**USDA**		R		A		
BARN	FRESH	IN	305 DAY-ME	**ERPA**	COW INDEX	LCT	A	DATE	SERVICE	
NAME	MO-DA-YR	MILK	MILK	FAT	MILK	FAT	NO.	T	SIRE	
7	824	7-29-80	289	19260	657	+58	+33	1	B	2-13 7H191
8	829	2-21-80	448	18080	599	+427	+18	1	B	1-11 1H346
	846	9-17-79	402	20418	647	+1759	+56	1	A	
1	1711	1-17-80	483	18977	517	+1439	-69	11	5	12-12 15H180
3	1720	2-04-81	99	19909	684	+124	+10	803	6	1-10 7H195
3	1744	1-07-81	127	20023	594	+1447	+95	1179	4	12-14 7H195
8	1754	12-29-79	347	17965	492	+3060	+56	1060	4	
8	2001	3-28-80	412	19466	549	+1122	-8	1071	1	7-15 29H2719
3	2017	2-13-81	90	20991	568	-901	-55	757	17	1-28 29H1881
AVERAGE			300	19454	590	+948	+15	+957	+27	2.8

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53 - AVGS. ONLY -- JERSEY COWS IN MILK

AVERAGES FOR THE 303 COWS ON THIS LIST:

ITEM	NO.-COWS	AVG.
DAILY MILK	296	41.6
DAILY % FAT	296	4.3
SCC(NEAREST 1,000)	292	319
DAYS IN MILK	303	205
BODY WEIGHT	303	860
DAYS CARRIED CALF	256	100
PROJ. 305 ME MILK	256	13774

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** CONCEPTION RATE SUMMARY - MAY, 1981 **

TECHNICIAN #	0	1	2	3	4	5	6	7	8	9	TOTAL
OCT 80 (NO. BREEDINGS)	0	161	71	21	1	38	0	0	0	0	292
(% SUCCESSFUL)		34	21	29	100	26					30
NOV 80 (NO. BREEDINGS)	0	234	99	70	6	80	16	0	0	0	505
(% SUCCESSFUL)		43	16	40	50	49	50				39
DEC 80 (NO. BREEDINGS)	0	178	110	83	7	30	38	0	0	0	446
(% SUCCESSFUL)		48	22	47	29	47	37				40
JAN 81 (NO. BREEDINGS)	0	186	81	48	2	31	0	2	0	0	350
(% SUCCESSFUL)		58	14	63	50	42		0			47
FEB 81 (NO. BREEDINGS)	0	161	61	10	28	10	16	0	0	0	286
(% SUCCESSFUL)		50	20	70	57	50	38				44

5 MONTH SUMMARY

(NO. BREEDINGS)	0	920	422	232	44	189	70	2	0	0	1879
(% SUCCESSFUL)		47	18	47	55	43	40	0			40
MAR 81 (NO. BREEDINGS)	0	211	0	105	0	44	2	0	0	0	362
APR 81 (NO. BREEDINGS)	0	220	0	39	13	23	0	0	0	0	295
MAY 81 (NO. BREEDINGS)	0	55	0	8	17	0	0	0	0	0	80

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