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Staff Paper 165

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INFORMATION

SURVEY OF AVAILABILITY OF MICRO AND MINI COMPUTER
SOFTWARE

Report of the Joint Personal Computer Task Force

by

J. Robert Strain

also
Staff Paper 165

October 1980

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SURVEY OF AVAILABILITY OF MICRO AND MINI COMPUTER SOFTWARE

Report of the Joint Personal Computer Task Force

J. Robert Strain¹

INTRODUCTION

Micro and mini computers are becoming increasingly available to agriculture and related firms at affordable prices. However, little is known about how these machines might be used in agricultural applications, or about what is available for agricultural uses. A Southern Extension Farm Management-Marketing Committee Joint Personal Computer Task Force was formed to examine the possible role of these machines in agriculture. At a meeting in February, 1980, the Task Force decided to survey Land Grant Universities concerning equipment on hand and software developments to date. Subsequently, a mail questionnaire labeled "Survey of Availability of Micro and Mini Computer Software" was sent to the Dean or Director of the Cooperative Extension Service in each of the 50 states.

The majority of information presented in this report was summarized from responses to that mail questionnaire. However, in some cases, it was supplemented through followup phone calls.

Responses were received from all 50 states. In some cases, reports encompassed activities throughout the University. In other cases, reports listed no activity outside the department of the respondent. We hope this not an indication of some omissions in our summary, but we don't know.

In the material that follows, we present, first, responses to questions about equipment or hardware. Then we summarize responses about programs or software.

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EQUIPMENT, HARDWARE

Farmers With Small Computers

Forty-two (84 percent) of the 50 respondents reported knowledge of farmers in their states with computers. Respondant noted seven hundred and eighty-five farmers that owned computers. This averaged over 18 per state. A little over half were thought to be doing at least some of their own programming.

The distribution of farmer owned small computers by type of farm is shown in Table 1.

Table 1. DISTRIBUTION OF FARMS WITH SMALL COMPUTERS BY TYPE OF FARM AS REPORTED BY LAND GRANT UNIVERSITY RESPONDANTS, SUMMER 1980

TYPE OF FARM	NUMBER	AVERAGE SIZE	PERCENT OF REPORTED FARMS
Crops	66	12,030 A	8.4%
Cattle	2	300 Head	0.3%
Dairy	50	177 Cows	6.4%
Swine	6	270 Sows	0.8%
Poultry	6	12 Mill Birds	0.8%
General or Unspecified	654	710 Acres	83.3%
	785		100.0%

Of the 785 farms, about eight and a half percent were crop farms averaging over twelve thousand acres apiece. Over six percent were dairy farms which averaged 177 cows per farm. Two cattle operations were noted, and six each swine and poultry. The remainder (83 percent) were general or unspecified farms with an average size of 710 acres.

Universities With Small Computers

Thirty-two (64 percent) of the respondents reported one or more mini or micro computers in service at their institution. The total number reported was 250. The range was from one at ten institutions to one hundred and two in Indiana. Average for the thirty-two states was 7.6 units, but when Indiana was excluded, the average was 4.6 units.

Brands in Use

The Digital group made up 41 percent of total units reported (Table 2). All but one of them was in the Indiana system.

Radio Shack, the next largest group, represented 32 percent of the total. Twenty two states had one or more Radio Shack units. Eighteen states had one or more of the Model I and seven states had one or more of the new Model II units.

The Apple was the next most popular brand both in number of units reported and states reporting. Eight states reported 20 units which represented 8 percent of the total.

Twelve Cromemco Units were reported by three states. Four Hewlett-Packard units were reported by 3 states. Three Commodore Pet units were reported, one each by three states. Both Terack and Vector Graphics units each were reported by two states. None of the remaining brands were reported by more than one state.

Program Languages Used

Some form of basic computer language was reported as available at 31 of the 32 universities (Table 3). The only report not listing basic as an available language indicated no knowledge of the language used.

For the most part, languages other than basic appeared to be secondary to or available in addition to basic. Two universities reported Cobal and three reported Pascal in addition to Basic. Two states, Colorado and Pennsylvania, use Fortran for Extension programs even though both states also listed capabilities in Basic. Colorado is also developing programs in C-Basic as well as Fortran.

Plans to Buy Small Computers

Fourteen universities reported that 72 small computers were either on order or being planned for. However, 50 of the planned units were for one state, California. Average for the remainder was 1.7 units per university.

Five reports were from Universities that reported no units on hand at the present. When these plans are implemented, the percent of Universities with small computers on hand will rise from the present

Table 2: NUMBER OF SMALL COMPUTERS REPORTED BY LAND GRANT UNIVERSITY
RESPONDENTS BY BRAND OR TRADE NAME,
SUMMER, 1980

BRAND OR TRADE NAME	NUMBER OF INSTITUTIONS	UNITS REPORTED		AVERAGE MEMORY PER UNIT
		NUMBER OF UNITS	PERCENT OF TOTAL	
Alpha Micro	1	1	0.4%	64K
Altos	1	1	0.4%	64K
Apple	8	20	8.0%	48K
Billtngs	1	1	0.4%	64K
Cromemco	3	12	4.8%	32K
DEC (Digital Equipment Corp.)	2	103	41.4%	28K
Heath	1	1	0.4%	28K
Hewlett Packard	3	4	1.6%	520K
IBM	1	9	3.6%	38K
Intel SOK	1	7	2.8%	24K
IMSAI	1	1	0.4%	64K
Pet (Commodore)	3	3	1.2%	32K
Radio Shack I	18	64	25.7%	28K
Radio Shack II	7	16	6.4%	64K
Sol (Processor Technology)	1	1	0.4%	32K
Superbrain	1	2	0.8%	48K
Terack	2	2	0.8%	38K
Vector Graphics	2	3	1.2%	50K
Homemade	1	4	1.6%	64K
Average or Total Reports	33	250	100.0%	40K

Table 3. SMALL COMPUTER PROGRAM LANGUAGES IN USE AS REPORTED BY LAND
GRANT UNIVERSITY RESPONDENTS, SUMMER, 1980.

LANGUAGE	NUMBER OF INSTITUTIONS	NUMBER OF UNITS WITH CAPABILITY	USED AS A PRIMARY LANGUAGE	
			STATE	MACHINE
APL	1	9	0	0
BASIC	32	231	31	230
COBAL	2	2	0	0
FORTRAN	8	23	2	3
PASCAL	3	14	0	0
Others	4	12	1	1

64 percent to 74 percent.

No pattern appeared in brands being planned. Four respondents indicated Radio Shack II and three planned to get an Apple. The remainder were not ready to specify the brand that would be obtained.

Programming Assistance To Producers

Twenty-three states (46 percent) indicated they now assist farmers with the use of their business computers. Another sixteen states reported plans to do so in the future. If these plans materialize, 78 percent of those reporting will be assisting farmers with the use of their business computers.

PROGRAMS OR SOFTWARE

In the summary that follows, the programs reported by respondents were organized into subject matter categories as listed in Table 4. This same classification scheme was used for the reports received on commercial sources of software, university sources of software and university plans for future software development.

Commercial Sources of Software

Nineteen states supplied information on vendors that supply software for agricultural businesses. The programs and vendors reported are listed in Table 5. Seventeen sources of various business record programs were reported. For most of the other categories, not many vendors were noted. We don't know if there are really that few commercial vendors of agricultural programs, or if they exist without our respondents knowledge.

University Software

There was a rather large number of currently available programs reported by the respondents to the questionnaire. We attempted to classify them according to the categories listed in Table 4. Unfortunately we did not get enough information on the nature of some of the programs to feel comfortable while classifying them. However, we did the best we could. Some of the programs were listed more than once since they seemed to fit more than one subject category. We suspect that a number of others also might appropriately be listed in more than one category if we had known enough about their content or use.

The information we received on programs is summarized in Table 6. The table shows program name and purpose or use, the intended user of the program, program language, programmable memory required, machine programmed for, whether output was to a printer, to a screen or both, if documentation is available, what it would cost if available to other universities, and who to contact for more information about the program.

In general, responses provided insufficient information for two of the above areas being examined, namely language and memory needed. The BASIC language has many versions and variations. An indication

Table 4. SUBJECT MATTER CATEGORIES USED FOR CLASSIFYING THE SOFTWARE REPORTED IN THE SURVEY OF LAND GRANT UNIVERSITIES, SUMMER, 1980.

SUBJECT CODE	SUBJECT	SUBJECT CODE	SUBJECT
	<u>I. Business management, marketing</u>		<u>V. Livestock and poultry, general</u>
	A. Prices, markets B. Records, accounting budgets, inventories C. Financial-investment analysis D. Buildings, machinery, equipment E. Government programs F. Taxes G. Estates		A. Records, analyses B. Buildings, machinery, equipment C. Rations
	Z. Other miscellaneous and unclassified		<u>VI. Livestock and poultry, specific</u>
	<u>II. Crops, general</u>		A. Beef B. Dairy C. Hogs D. Horses E. Poultry F. Sheep
	A. Records, analyses B. Buildings, machinery, equipment C. Soil, water, fertilizer D. Weather		<u>VII. Home, family</u>
	<u>III. Crops, specific</u>		A. Household records, budgets, finance B. Food and Nutrition Z. Other miscellaneous and unclassified
	A. Corn B. Cotton C. Forage D. Grain, small E. Greenhouse, nursery F. Orchards, groves, other fruit G. Potatoes H. Soybeans I. Tobacco J. Truck crops (incl melons, vegetables)		<u>VIII. Youth and 4-H</u>
	<u>IV. Diseases, pests, weeds</u>		A. Calanders, events B. Publications C. Data files, enrollments, records D. Programs for 4-H club member use
	A. Diseases B. Pests C. Weeds		<u>IX. General and administrative</u>
			A. Calanders, events B. Word processing C. Data files, mailing lists D. Electronic mail, messages E. Statistical packages Z. Other miscellaneous and unclassified
			<u>X. Community and resource development</u>

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Table 5. PROGRAM VENDORS REPORTED BY LAND GRANT UNIVERSITY RESPONDENTS AS SUPPLYING SOFTWARE FOR AGRICULTURAL BUSINESSES, SUMMER, 1980.

SUBJECT	PROGRAM	VENDOR	STATE REPORTING
<u>IB. Business records</u>			
ACCOUNTING SYSTEMS		D. A. Sparks, Inc. 5620 W. 12th Little Rock, AR 72204	AR
ACCOUNTING SYSTEMS		Sycor Memphis, TN 38128	AR
ACCOUNTING & INVENTORY		Summerville Enterprises 104 Broad Street Aliceville, AL 35642	AL MS
ACCOUNTING & INVENTORY		Radio Shack Tandy Center Fort Worth, TX 76102	MS
AFARMS (50X50 linear program)		Beacon Electronics 213 Lincoln Way Ames, IA 50010	IA FL
AGRICULTURAL PAYROLL		Rick Remynes 9550 Ravine Rd Kalamazoo, MI 49009	MI
BUSINESS RECORDS		Radio Shack One Tandy Center Fort Worth, TX 76102	LA OK PA
BUSINESS RECORDS		Red River Computer 532 Cambridge Grand Forks, ND 58201	ND
BUSINESS RECORDS		Simmons 1st National Bank Pine Bluff, AR 72201	AR
BUSINESS RECORDS, ANALYSIS		Facts, Inc (John Roebuck) 4034 Ronnie S Box 28476 Memphis, TN 38128	FL
BUSINESS PACKAGE		Computer Store of Corvallis 2015 NW Circle Blvd Corvallis, OR 97330	OR
FARM BUDGETS		Wade Shaw, JR Agusta, GA 30133	SC
FARM RECORDS		Farmware Minneapolis, MN 55406	OH
GRAIN ELEVATOR		J. Scott Natonga, OK 73722	OK

Table 5. CONTINUED.

SUBJECT	PROGRAM	VENDOR	STATE REPORTING
GRAIN ELEVATOR		JFK Electronics N. Little Rock, AR 72115	AR.
RANCH BOOKKEEPING		R. W. Black Hinsdale, MT 59241	MI
WAREHOUSE CHARGES		Summerville Enterprises 104 Broad Street Aliceville, AL 35542	AL LA
IC. Financial analysis			
CASH FLOW		Nade Shaw, Jr Agusta, Ga 39093	SC
COMPLETE BUSINESS ANALYSIS		Summerville Enterprises 104 Broad Street Aliceville, AL 35542	AL LA
ID. Buildings, machinery			
MACHINERY RECORDS		R. W. Black	MI
MACHINERY PARTS INVENTORY		Hinsdale, MT 59241	
MACHINERY COST RECORDS			
IIIB. Cotton programs			
COTTON YIELD BY FIELDS		Summerville Enterprises	AL
COTTON GINNING CHARGES		104 Broad Street Aliceville, AL 35542	
III E. Greenhouse and nursery			
NURSERY INVENTORY MANAGEMENT		Dynamic Computing, Inc P.O. Box 2153 Tallahassee, FL 32304	FL
NURSERY RECORDS, ACCOUNTING		Newkirk Consulting Co.	FL
INVENTORY MANAGEMENT		500 E. Central Ave Winter Haven, FL 33880	
PRODUCT PICKING LIST			
SALES RECORDS, ANALYSES			
IIIF. Orchards, groves			
FRUIT GROWER RECORDS		Tri-Angle Grove Service P.O. Box 1351 Bartow, FL 33830	FL
VIA. Beef programs			
COW-CALF PERFORMANCE		University of Wyoming Laramie, WY 82070	SD

Table 5. CONTINUED.

SUBJECT	PROGRAM	VENDOR	STATE REPORTING
<u>VIB. Dairy programs</u>			
	DAIRY PRODUCTION	Agway Box 4933 Syracuse, NY 10314	PA
	ACCOUNTING	Herd Reproduction Services	MI
	ANIMAL RECORDS	P.O. Box 6011	PA
	REPRODUCTION RECORDS	Athens, GA 30604	VT
	PAYROLL		
	CROP RECORDS		
	HERD MANAGEMENT	MSC Corp P.O. Box 357 Telham, AL 35124	CO
	COW I.D.	Technical Industries, Inc	MN
	LEAST COST RATIONS	2711 SW 2nd Ave	
	FEED RECORDS	Ft. Lauderdale, FL 33315	
<u>VIC. Hog programs</u>			
	SWINE CONTROL	Agri-Electronics 1061 East Cliff Road Burnsville, MN 55337	MN
	SMALL BUSINESS		
	SWINE CONTROL	Farm Info Systems P.O. Box 302 Stillwater, MN 55082	MN
<u>OO. Miscellaneous references</u>			
		B&I Computer Systems Lewiston, ID 83542	ID
		Northwest Computer Center Boise, ID 83707	ID
		Ted Nelson Oklahoma State University Stillwater, OK 74074	KS SD
		Ramon Sammons 6500 Amarillo Blvd W. Amarillo, TX 79106	SD

Table 6. RTTY AND MICRO COMPUTER PROGRAMS REPORTED CURRENTLY IN USE AT U.S. LAND GRANT UNIVERSITIES, SUMMER, 1980.

PROGRAM NAME AND PURPOSE OR USE	TARGETED USERS	PROGRAM LANGUAGE	MEMORY (KBYTES)	DISCLOSURE PERIODICITY (PER)	FORMAT	DISCLOSURE- TAXONIC AVAILABILITY	COST (\$ FOR 100 COPIES)	CONTACT	
								DEPT	STATE
<u>I. Business management and marketing</u>									
<u>A. Markets, prices</u>									
01 GRAPH: produces a graph on screen from user input	farmers, ranchers	BASIC	16K	Radio Shack I	screen	yes	\$10	Ted Nelson	OK
02 EGRS: calculates weekly price summary, fleet financial analysis	educators, farmers	BASIC	32K	Radio Shack I	both	no	NC	Al Tinsley (Wichita-Falls)	SC
03 SOYBEAN PRICING AT ELEVATOR: net price after discount, stores results	elevators, educators	BASIC ^{ad}	16K	Radio Shack I	screen ^a	no	NC	Al Tinsley (Colo-Entrion)	SC
04 GRAIN MARKETING ALTERNATIVES: evaluates selling vs storage alternatives	farmers, elevators, educators	BASIC ^d	28K ²	DIG POP 11/80	both	yes	\$100	Lynn Busse	IN
<u>B. Records, accounting, budgets, inventories</u>									
01 ADVANCES PROGRAM: for keeping track of advances to crewmen	fishermen, marine agents	BASIC ^{ad}	30K	Apple II	IMS	IMS	\$20	Nelson Swartz	TX
02 WAGE RECORDS: for large labor force management	fruit & vegetable growers	BASIC	32K	Radio Shack I	both	IMS	IMS	Van Travis	NY
03 FARM RECORD: farm accounting program	farmers, ranchers	BASIC ^c BASIC ^{dt}	16K 32-48	Radio Shack I Radio Shack I	both both	yes yes	\$30 \$30	Ted Nelson Ted Nelson	OK
04 FARM ACCOUNTING:	farmers	BASIC ^{dt}	32K	Radio Shack I	both	yes	NA	Sherrill Nett	NJ
05 DEPRECIATION: calculates depreciation schedules	educators, farmers	BASIC	10K	Radio Shack I	screen ^a	no	NC	Al Tinsley (Sutton)	SC
06 DEPREC: analyzes depn method alt	farmers	BASIC	28K	Cromance Sys 3	IMS	IMS	IMS	Ken Schaefferger	KO
07 LEDGER: for record keeping and financial analysis	farmers	BASIC ^d	32K ²	Radio Shack I	IMS	no	NC ^b	Mes Wolfe	KS
08 BUDGET: for farm budgeting	educators, farmers	FORTRAN	100K ²	HP 3000	printer	no	NC	David Dohertie	KY
09 ENTERPRISE BUDGETS: for equip depn, expense and revenue by crop	educators, farmers	BASIC	21K	Radio Shack I	screen ^a	no	NC	Al Tinsley (Jim Rathwell)	SC
10 BREAK-EVEN ANALYSIS:	educators for farmers	BASIC	16K	Apple II +	both	no	NC ^b	Larry Bond	UT
11 COSTS AND RETURNS: budget information for sub-state areas	farmers	BASIC ^d	32K	Radio Shack I	both	yes	NC ^b	Mes Wolfe	KS
12 CROP RENT: for break-even land rental rate	educators, farmers	BASIC	8K	Radio Shack I	screen ^a	no	NC	Al Tinsley (Newton)	SC
13 DECISION TO FISH: weighs value of likely catch vs variable costs	fishermen, marine agents	BASIC ^{ad}	20K	Apple II	both	IMS	IMS	John Swartz	TX
14 LONGRUN BREAK-EVEN: for annual value of product vs fixed & variable costs	fishermen, marine agents	BASIC ^{ad}	20K	Apple II	IMS	IMS	\$20	Nelson Swartz	TX
15 INVENTORY MANAGER:	farmers, educators	BASIC ^d	32K	IBM 5100	both	yes	NC ^b	Earl Fuller	MI

Table 6. CONTINUED.

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PROGRAM NAME AND PURPOSE OR USE	TARGET USERS	PROGRAM LANGUAGE	NUMBER NEEDED	RUNTIME PROGRAMMING FOR	OUTPUT	BOOKKEEPING AVAILABLE	BUDGET \$1 FOR 1000	CONTACT STAFF (INITIAL) STATE		
								SCREEN ^a	NO	NC
16 ECONOMIC ORDER QUANTITY: for optimum quantity to re-order (inv age)	educators, agribusiness	BASIC	PC	Radio Shack I	screen ^a	no	NC	Al Tiesley (Leafgreen)	SC	
17 LP: linear program for up to a 30 X 30 matrix	research, extension	FORTRAN	400	Radio Shack I	both	yes	NC ^b	Des Wolfe (Short-Ridge)	KS	
18 LP: linear program for up to a 25 X 30	researchers, extension	BASIC ^d	22K	Vector Graphic printer	no	NC	James Swanson	TX		
19 LP: general purpose linear program	farmers, educators	BASIC ^d	32K	IBM 5100	both	yes	NC ^b	Carl Fuller	KS	
20 LPWELL: linear program for up to 30 X 30	farmers	FORTRAN	300	Cromance Sys 3	IMS	yes	105	Ken Schaeferberger	ND	
21 AFARM: linear program for up to 30 X 30	research, extension	BASIC ^d	400	Apple II ^c	both	yes	\$125	Mendall Hoffmann	IA	
<u>C. Financial-investment analysis</u>										
01 LOAN: interest, payment schedules, etc	farmers, ranchers	BASIC ^d	16K	Radio Shack I	both	yes	310	Ted Nelson	OK	
02 LOAN: interest, payment schedules, etc	farmers	BASIC ^d	7K	Radio Shack I	both	yes	NC ^b	Des Wolfe	KS	
03 FARM LOAN ANALYSIS: costs, schedules	farmers	BASIC	40K ^c	Apple II +	IMS	IMS	IMS	Bob Jolly	IA	
04 INTRATE: for calc interest rate paid	farmers	FORTRAN	105	Cromance Sys 3	IMS	yes	IMS	Ken Schaeferberger	ND	
05 ELDRM: for specified time of repayment	farmers	BASIC	105	Cromance Sys 3	IMS	yes	IMS	Ken Schaeferberger	ND	
06 ELDAM: for equal payment schedule	farmers	BASIC	105	Cromance Sys 3	IMS	yes	IMS	Ken Schaeferberger	ND	
07 MARINE LOAN ANAL: costs & payment sched	fishermen, marine agen	BASIC ^{d,e}	105	Apple II	IMS	IMS	120	Melissa Shantz	TX	
08 ANNUITY, DISCOUNT, LOAN CALCULATOR:	farmers, educators	BASIC ^d	32K ^c	IBM 5100	both	yes	NC ^b	Carl Fuller	KS	
09 RATE OF RETURN-NET WORTH: anal file att's	educators, farmers	BASIC ^d	20K ^c	DEC PDP 11/03	both	yes	\$100	Lynn Busse	IN	
10 SOLUTION FOR INTERVAL RATE OF RETURN: for analyzing financial att's	educators, farmers	BASIC	7K	Radio Shack I	screen ^a	no	NC	Al Tiesley (Leafgreen)	SC	
11 DISCOUNTING: for present value analysis	farmers	BASIC ^d	7K	Radio Shack I	both	yes	NC ^b	Des Wolfe	KS	
12 ANNUAL CASH FLOW: for cash flow analysis	farmers	BASIC ^d	22K ^c	Vector Graphic printer	no	NC	James Swanson	TX		
13 INVEST: for investment, cash flow anal	farmers	FORTRAN	105	Cromance Sys 3	IMS	yes	IMS	Ken Schaeferberger	ND	
14 RATTBS: analyzing financial situations	educators, agribusiness	FORTRAN	100K ^c	HP 3000	both	no	NC	Lynn Robbins	IN	
15 LAND: for maximum bid price	students, farmers	BASIC ^d	32K ^c	Sei	screen	no	NC	J. Forester	OK	
16 LANDET: for value of an additional acre	educators for farmers	FORTRAN	34K ^c	Altos AII 8000	printer	yes	NC	Bob Selvage	CB	
17 LANDET: for value of an additional acre	educators for farmers	BC-BASIC	64K ^c	Altos AII 8000	printer	yes	NC	Bob Selvage	CB	
18 LAND PURCHASE PRICE: val of add'l acre	farmers	BASIC ^d	22K ^c	Vector Graphic printer	no	NC	NC	James Swanson	TX	
19 MAXIMUM BID PRICE FOR LAND CALCULATOR:	educators, farmers	BASIC ^d	20K ^c	DEC PDP 11/03	both	yes	\$100	Lynn Busse	IN	
20 BID PRICE: for maximum land bid price	farmers	BASIC	105	Cromance Sys 3	IMS	yes	105	Ken Schaeferberger	ND	
21 MAXIMUM LAND BID ESTIMATOR:	farmers, educators	BASIC ^d	20K ^c	IBM 5100	both	yes	NC ^b	Carl Fuller	KS	
22 MAXIMUM LAND BID ESTIMATOR:	farmers, educators	BASIC ^d	32K ^c	Apple II	both	yes	NC	Carl Fuller	KS	

Table 6. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	PROGRAM LANGUAGE	MEMORY NEEDED	MACHINES PROGRAMMED FOR	OUTPUT	SOURCE-TATION AVAILABLE	COST OF ONE UNIT	CONTACT STAFF (NAME)	STATE
23 INSTALLMENT LAND CONTRACT: payment sched	educators, families	BASIC ^d	32K ^e	DIG POP 11/03	both	yes	\$100	Lynn Weste	IA
24 ANALYSIS: for present, future value	farmers	BASIC	8K ^f	Cromenco Sys 3	TDS	yes	125	Ken Schaeferger	MO
B. BUILDINGS, MACHINERY, EQUIPMENT									
01 FARM BLDG PLAN SERVICE CATALOG:	educators, farmers	BASIC ^d	32K ^e	DIG POP 11/03	both	yes	\$700	Lynn Weste	IA
02 JAMS: for layout, design, cost of a feed processing facility	educators, agribusiness	FORTRAN	80K	HP 3000	Printer	yes	NC ^g	Steve Leamer	NY
03 DEPRECIATION: provides depreciation schedules	educators, farmers	BASIC	10K	Radio Shack I	screen ^h	no	NC	Al Tinsley (Sutton)	SC
04 DEPRECIATION CALCULATION	farmers, educators	BASIC ^d	32K ^e	IBM 5100	both	yes	NC ^g	Earl Fuller	MI
05 DEPRECIATION CALCULATION	farmers, educators	BASIC ^d	32K ^e	Apple II	both	yes	NC ^g	Earl Fuller	MI
06 DEPREC: for comparing depr methods	farmers	BASIC	10K	Cromenco Sys 3	TDS	125	Ken Schaeferger	MO	
07 ANNUAL CAR FUEL COST:	4-H, general public	BASIC	16K	Radio Shack I	screen	yes	NC ^g	George Duncan	KY
08 CAR OPERATING COST:	4-H, general public	BASIC	16K	Radio Shack I	screen	yes	NC ^g	George Duncan	KY
09 AUTO: operating cost analysis	farmers	FORTRAN	10K	Cromenco Sys 3	TDS	125	Ken Schaeferger	MO	
10 CAR-TRUCK COST ANALYSIS: total, /mi., /hr	farmers	BASIC	48K ^e	Apple II +	TDS	125	Bob Jolly	IA	
11 MOTOR VEHICLE COST ANALYSIS: for factors involved in cost per mile	fishermen, marine agents	BASIC ^d	20K	Apple II	TDS	125	Nelson Swartz	TX	
12 VESSEL COST ANALYSIS: for operating costs per hour	fishermen, marine agents	BASIC ^d	20K	Apple II	TDS	125	Nelson Swartz	TX	
13 VESSEL FUEL COST ANALYSIS: for costs per hour, per day, per trip	fishermen, marine agents	BASIC ^d	20K	Apple II	TDS	125	Nelson Swartz	TX	
14 MACHINECOST: computes factors per hour, per acre, for up to 24 years	farmers, ranchers	BASIC ^d	16K	Radio Shack I	screen	yes	\$10	Ted Nelson	OK
15 ESTIMATING FARM MACHINERY COSTS:	farmers	BASIC ^d	64K ^e	Apple II +	TDS	125	Bob Jolly	IA	
16 MACHINERY COST:	farmers	BASIC	16K	Commodore Pet	both	yes	NC	Marion Hughes	NY
17 MACHINERY COST: estimates costs under varying amounts of use	educators, farmers	BASIC	9K	Radio Shack I	screen ^h	no	NC	Al Tinsley (Sutton)	SC
18 BUY VS CUSTOM HIRE: owning vs hiring	educators, farmers	BASIC	32K	Radio Shack I	screen ^h	no	NC	Al Tinsley	SC
19 BUY VS HIRE: for farm machinery	farmers	BASIC	32K	Radio Shack I	TDS	no	\$70	Robert C. Wells	DC
20 BUYCUS: for hiring vs owning machinery	farmers	BASIC	10K	Cromenco Sys 3	TDS	125	Ken Schaeferger	MO	
21 EQUIPMENT TRADING: compares cost per hour for old vs new equipment	farmers	BASIC ^d	3K	Radio Shack I	both	yes	NC ^g	Wes Wolfe	MO
22 TAX ADJUSTED CAR VS HIRE FOR COMBINES	farmers	BASIC	48K ^e	Apple II +	TDS	125	Bob Jolly	IA	
23 SPRAYER CALIBRATION:	farmers	BASIC	48K ^e	Apple II +	TDS	125	Bob Jolly	IA	

Table 6. CONTINUED

PROGRAM NAME AND PURPOSE OR USE	INTERESTED USERS	PROGRAM LANGUAGE	MEMORY USED	NUMBER PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST	CONTACT STAFF (INITIALS)	STATE
26 ESTIMATING FAN SIZES FOR GRAIN DRYING:	engineers, specialists	FORTRAN	5K ²	IBM 370	printer	yes	NC ³	Otto Lerner	KY
26 GRAIN DRYING PERFORMANCE EVALUATION:	engineers, specialists	FORTRAN	5K ²	IBM 370	printer	no	no	Otto Lerner	KY
26 DRYERATION PERFORMANCE EVALUATION:	engineers, specialists	FORTRAN	5K ²	IBM 370	printer	no	no	Otto Lerner	KY
27 NATURAL AIR-LGV TEMP DRYING PERFORMANCE EVAL:	engineers, specialists	FORTRAN	5K ²	IBM 370	printer	no	no	Otto Lerner	KY
28 FAN PERFORMANCE ON GRAIN DRYING BITS:	engineers, specialists	FORTRAN	5K ²	IBM 370	printer	no	no	Otto Lerner	KY
29 CHASE: for analyzing harvest-store alt's	engineers, specialists	FORTRAN	5K ²	IBM 320	printer	yes	NC ³	Otto Lerner	KY
E. Government programs									
01 GOVERNMENT PROGRAM: to anal '80 wheat, feedgrain, cotton participation	farmers, ranchers	BASIC ⁴	18K	Radio Shack I	screen	yes	\$10	Ted Nelson	OK
F. Taxes									
01 FAIR TAX: for federal income tax alg	educators, farmers	BASIC ⁴	18K	Radio Shack I	screen ⁵	no	NC	Al Tinsley	SC
02 INCOME TAX MGT: for fed income-soc sec	educators, farmers	BASIC ⁴	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
03 TAX FORM CHECKER: for 1040 & schedule A	farmers, educators	BASIC ⁴	2K	IBM 5100	both	yes	NC ³	Earl Fuller	IN
04 TAX: non-farm fed income tax calculator	educators, public	BASIC ⁴	7K	Radio Shack I	screen ⁵	no	NC	Al Tinsley	SC
05 TAX: non-farm fed income tax calculator	educators, public	BASIC ⁴	6K	Radio Shack I	both	yes	NC ⁷	Wes Wolfe (Al Tinsley)	MS
06 REAL ESTATE TAX TABLE GENERATOR: for net values, taxes and billings	educators, communities	BASIC ⁴	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
G. Estates									
01 ESTATE TAX ANAL: for fed & SC tax alt's	educators, farmers	BASIC	13K	Radio Shack I	screen ⁵	no	NC	Al Tinsley	SC
02 ESTATE PLANNING:	students, farmers	BASIC	32K ²	Sol	screen	no	NA	L. Forster	OK
H. Other									
01 BUS DB: for tax effect by type of organ	students, farmers	BASIC	32K ²	Sol	screen	no	NA	L. Forster	OK
I. Crops, general									
A. Records, analyses									
01 CROPS: for income-exp; landlord-tenant	educators, farmers	BASIC	17K	Radio Shack I	screen ⁵	no	NC	Al Tinsley	SC
02 KASHPROF: for KY corn, soy, wheat alt's	educators, farmers	FORTRAN	160K ²	HP 3000	printer	no	NC ³	Charles Moore	KY
03 CROP BUDGET: chain of four programs	farmers	BASIC	22K ²	Vector Graphic	screen	no	NC	Ramon Sampson	TX
04 BEST CROP SELECTION: TIS9 style program	farmers	BASIC ⁴	2K	IBM 5100	both	yes	NC ³	Earl Fuller	IN
05 NET RETURN EQUIVNT: compares crop alt's	farmers	BASIC ⁴	2K	Radio Shack I	both	yes	NC ⁷	Wes Wolfe	MS
06 CROPEQL: compares crop alternatives	farmers	BASIC	19K	Cromenco Sys 3	IWS	yes	IWS	Ken Schmetzberger	MS
07 DOUBLE CROP: for corn-soy single, double	educators, farmers	BASIC ⁴	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN

Table 6. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	PROGRAM LANGUAGE	MEMORY NEEDED	MODULES PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST OF FOR SALE	CONTACT STAFF (AUTHOR)	STATE
B. Buildings, machinery, equipment									
01 GRAINSTORAGE: cost-shrink-breakeven price	farmers, ranchers	BASIC ^a	16K	Radio Shack I	screen	yes	\$10	Ted Nelson	DE
02 FARM GRAIN STORAGE COSTS:	farmers, educators	BASIC ^d	32K ^b	IBM 5100	both	yes	NC ^c	Earl Fuller	ME
03 STORCST: for grain storage analysis	farmers	BASIC	16K	Cromance Sys 3	INS	yes	INS	Ken Schaeferberger	ND
04 FIELD EQUIP CALCULATOR: for machinery mgt	educators, farmers	BASIC ^d	256 ^b	DIG PDP 11/03	both	yes	\$100	Lynn Busse	IA
05 TAX ADJ COMPARISON: combine own vs hire	farmers	BASIC	48K ^b	Apple II +	INS	INS	INS	Bob Jolly	IA
06 SPRAYER CALIBRATION: for pesticides or liquid fertilizer	farmers	BASIC	48K ^b	Apple II +	INS	INS	INS	Bob Jolly	IA
07 SPRAYER CALIBRATION: for pesticides or liquid fertilizer	farmers	BASIC ^d	2K	Radio Shack I	both	yes	NC ^c	Wes Wolfe	ME
08 TANK CALIBRATOR: for horizontal tanks	farmers	BASIC ^d	4K	IBM 5100	both	yes	NC ^c	Earl Fuller	ME
09 TANK CALIBRATOR: for horizontal tanks	farmers	BASIC ^d	4K	Apple II	both	yes	NC ^c	Earl Fuller	ME
C. Soil, water, fertilizer									
01 LAND FORMING: for adding or removing soil for water conservation	farmers	BASIC	32K	Radio Shack I	both	no	\$10	Robert C. Wolfe	NC
02 IRRIGATION COSTS: break-even analysis for electric, gas or diesel pumps	farmers	BASIC ^d	256 ^b	Vector Graphic	screen	no	NC	Ramon Simmons	TX
03 IRRIGATION ANALYSIS: for cost-benefit comparison of irrigating	farmers	BASIC	6K	Radio Shack	screen ^b	no	NC	Al Timley	SC
04 SOIL MOISTURE: for irrigation scheduling	farmers	BASIC ^d	48K	Apple II +	both	yes	NC	John Jackson (Francis Ferguson)	FL
05 SLUDGE: for rates of application on land	students, farmers	BASIC	32K ^b	Sol	screen	no	SA	L. Forster	OH
D. Weather									
01 WEATHER REPORTS: for accessing daily weather forecasts	educators, farmers	BASIC ^d	256 ^b	DIG PDP 11/03	both	yes	\$100	Lynn Busse	IA
02 WEATHER INDEX CALCULATOR: for indeces	educators, farmers	BASIC ^d	256 ^b	DIG PDP 11/03	both	yes	\$100	Lynn Busse	IA
03 GEORGE'S NOCTURNAL PROF: for projecting nightly weather profiles	citrus grove owners	BASIC ^d	48K	Apple II +	printer	yes	NC	John Jackson (Jim George)	FL
04 DOBO: rice mgt info based on 30 yrs data	extension use only	BASIC ^d	4K	Radio Shack I	both	no	SA	Wes Wolfe	ME
E. Crops, specific									
A. Corn									
01 CORN DRYING: drying break-even analysis	educators, farmers	BASIC	3K	Radio Shack I	screen ^b	no	NC	Al Timley	SC
02 BIOMASS: economics of biomass for drying	educators, farmers	FORTRAN	60K	HP 2000	printer	yes	NC ^c	Otto Loewer	KY
03 CORN DRYING-STORING: for profitability of both drying and storing	educators, farmers	BASIC	3K	Radio Shack I	screen ^b	no	NC	Al Timley (Spray)	SC

Table 5. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	PROGRAM LANGUAGE	MEMORY REQUIRED	INPUT/OUTPUT PROGRAMMED FOR	OUTPUT	PORTABLE/STATIONARY	COST PER UNIT	CONTACT STAFF (ADDRESS)	STATE
01 CASH-DETERMINES FOR BUYING: drying costs vs price discounts	educators, farmers	BASIC	3K	Radio Shack I	screen ^a	no	NC	Al Tinsley (Spray)	SC
02 CASH: for analyzing harvest-storage alt	engineers, specialists	PASCAL	50K	IBM 360	printer	yes	NC ^b	Date Longer	SC
A. Crops									
03 COTTON CONTRACT: for evaluating cotton contract alternatives	educators, farmers	BASIC	7K	Radio Shack I	screen ^a	no	NC	Al Tinsley (Bottoms-Lloyd)	SC
B. Forests									
B. Grain, small									
01 GRAZOUT VS HARVEST BUDGET: for wheat	farmers	BASIC ^c	22K ^d	Vector Graphics	screen	no	NC	James Simmons	TX
02 RWD: rice wgt info based on 30 yrs data	extension use only	BASIC ^c	4K	Radio Shack I	both	no	NA	Mrs Wolfe	KS
C. Greenhouse/Nursery									
01 GREENHOUSE PLANT COST ESTIMATION: for costs per pot or per square foot	educators, nurserymen	BASIC ^c	20K ^d	Dig PDP 11/03	both	yes	\$100	Lynn Russo (Don Gunter)	IN
02 NURSERY: for estimating growing costs per plant	educators, nurserymen	BASIC	10K	Radio Shack I	both	no	NC	Jim Ratnwell (Don Gunter)	SC
03 GREENHOUSE COSTS ANAL: for analysis of a nursery business	nurserymen	BASIC ^c	40K	Apple II +	printer	yes	NC	J. Robert Straub PL (Don Gunter)	PL
04 PLANT COST PAT: for estimating cost per plant, printer version	nurserymen	BASIC ^c	40K ^d	Apple II +	printer	yes	NC	J. Robert Straub PL (Don Gunter)	PL
05 PLANT COST CRT: for estimating cost per plant, screen version	nurserymen	BASIC ^c	40K ^d	Apple II +	screen	yes	NC	J. Robert Straub PL (Don Gunter)	PL
06 RISK: decision tree risk analysis for choosing crops to grow	nurserymen	BASIC ^c	40K ^d	Apple II +	printer	yes	NC	J. Robert Straub PL (Don Gunter)	PL
07 RETAIL NURSERY ANALYSIS: business anal	retail nurserymen	BASIC ^c	40K	Apple II +	printer	yes	NC	J. Robert Straub PL	PL
E. Orchards, groves, other fruit									
01 PEACH ORCHARD SOURCE MANAGEMENT SYSTEM: for multiple orchard data	packing houses, educators, orchardmen	BASIC	30K	Radio Shack I	screen ^a	no	NC	Al Tinsley (Wright-Eentrill)	SC
02 ORCHARD ANALYSIS: for discounted cash flow of funds analysis	educators, orchardmen	BASIC	8K	Radio Shack I	screen ^a	no	NC	Al Tinsley (Rathwell)	SC
03 CITRUS TREE RESETTING:	citrus grove owners	BASIC ^c	40K ^d	Apple II +	both	yes	NC	John Jackson	FL
04 CITRUS BUDGET GENERATOR:	citrus grove owners	BASIC ^c	40K ^d	Apple II +	both	yes	NC	John Jackson	FL
05 SOIL MOISTURE: for scheduling irrigation	citrus grove owners	BASIC ^c	40K ^d	Apple II +	both	yes	NC	John Jackson (Francis Ferguson)	FL

Table 6. CONTINUED.

JES:10-10-80

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	PROGRAM LANGUAGE	MEMORY REQUIRED	MACHINE PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST IF FOR SALE	CONTACT STAFF MEMBER	STATE
G. Fruits									
01 BLITECAST: to forecast blight potential, fungicide spray schedules	educators, farmers	BASIC ^d	28K ²	Dig POP 11/83	both	yes	\$100	Lynn Busse	IN
02 BLITECAST: to forecast blight potential, fungicide spray schedules	students, farmers	BASIC	16K	Radio Shack I	both	no	NC	D. R. MacKenzie	PA
03 BLITECAST EDUCATOR:	students, farmers	BASIC	32K ²	Radio Shack I	both	no	NC	D. R. MacKenzie	PA
04 SPUDCROP: computer game	students, farmers	BASIC	32K ²	Radio Shack I	both	no	NC	D. R. MacKenzie	PA
05 SPORSE: computer game	students, farmers	BASIC	32K ²	Radio Shack I	both	no	NC	D. R. MacKenzie	PA
06 ROOTROT: computer game	students, farmers	BASIC	32K ²	Radio Shack I	both	no	NC	D. R. MacKenzie	PA
07 POATAO ACCOUNTING: for inventory and accounting records	students, farmers	BASIC	32K ²	Radio Shack I	both	no	NC	D. R. MacKenzie	PA
08 GPACAST: green peach aphid forecast system	students, farmers	BASIC	32K ²	Radio Shack I	both	no	NC	Zane Smilowitz	PA
09 SPUDCAST: for blight and green peach aphid management	students, farmers	BASIC	32K ²	Radio Shack I	both	no	NC	Zane Smilowitz	PA
H. Soybeans									
01 SOYBEAN VARIETY SELECTION: to match variety to conditions	educators, farmers	BASIC	32K	Radio Shack I	screen ^a	no	NC	Al Tinsley (Palmer-Miles)	SC
02 SOYBEAN SEEDING RATE: for obtaining recommended plant populations	educators, farmers	BASIC ^d	28K ²	Dig POP 11/83	both	yes	\$100	Lynn Busse	IN
03 SOYBEAN INSECTS: spraying recommendations from scouting reports	farmers	BASIC ^d	16K	Radio Shack I	both	yes	NC ^b	Wes Wolfe	MS
04 SOYBEAN PRICING AT ELEVATOR: net price after discounts: stores, retrieves	elevators, educators, farmers	BASIC	11K	Radio Shack I	screen ^a	no	NC	Al Tinsley (Culp-Entriken)	SC
I. Tobacco									
J. Truck crops									
K. Other									
01 TREES: for estimating costs of growing Christmas trees	educators, farmers	BASIC	31K	Radio Shack I	both	no	NC	Al Tinsley (Tinsley-Ray)	SC
02 TIMBER EVALUATION: for value by product from cruise data	timbermen	BASIC ^d	16K	Radio Shack I	both	yes	NC ^b	Wes Wolfe	MS
IV. Diseases, pests, weeds									
A. Diseases									
01 PLANT DISEASE PROFILE: reference info for prevention and control	educators, farmers	BASIC ^d	28K ²	Dig POP 11/83	both	yes	\$100	Lynn Busse	IN

Table 6. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	PROGRAM LANGUAGE	MEMORY REQUIREMENT	RATIONS PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST OF FOR SALE	CONTACT STAFF (NAME)	CONTACT STATE
05 RATIONS FOR BEEF CATTLE: to grow, finish 06 FEEDER CATTLE BUDGET:	educators, farmers farmers	BASIC ⁶ BASIC	20K ² 22K ²	Dig POP 11/83 Vector Graphic	both printer	yes no	\$100 NC	Lynn Busse Amen Sorenson	IN TX
07 LSTK MARKETING STRATEGIES: to analyze feeding alternatives	educators, farmers	BASIC	18K	Radio Shack I	screen ³	no	NC	Al Timley (Sutton)	SC
08 FEEDER CATTLE BREAK-EVEN: for analyzing feeding alternatives	educators, farmers	BASIC ⁶	22K ²	Dig POP 11/83	both	yes	\$100	Lynn Busse	IN
09 ECONOMICS OF CATTLE FEEDING:	farmers	BASIC	18K ²	Apple II +	INS	INS	INS	Bob Jolly	IA
10 FEAR: feedlot enterprise analysis report	ext agents for farmers	FORTRAN	64K ²	Altos ACS 8000	printer	yes	NC	Rob Salvage	CO
11 FEEDLOT CATTLE: T159 style gain-ENE calc	farmers, educators	BASIC ⁶	4K	IBM 5100	both	yes	NC ⁵	Earl Fuller	MI
12 BABYBEEF: animal growth evaluator	res., ext., farmers	FORTRAN	80K	HP 3000	both	no	NC ⁵	Otto Lechner	KY
13 BEEF CATTLE GROW DIET:	INS	BASIC ⁶	48K ²	Radio Shack I	both	INS	INS	Dan Fox	NY
14 BEEF GAIN SIMULATOR:	INS	BASIC ⁶	48K ²	Radio Shack I	both	INS	INS	Dan Fox	NY
15 FEEDLOT: for up to 17 pens	farmers	BASIC ⁶	32K	Radio Shack I	both	yes	\$30	Ted Nelson	OK
16 FEEDLOT: for up to 120 pens	farmers	BASIC ⁶	48K	Radio Shack I	both	yes	\$30	Ted Nelson	OK
17 STEER BUDGET:	farmers	BASIC	32K ²	Comodore Pet	both	no	n	Art Barnaby	EA
18 BEEFPROJECTION: to project daily gain, costs and returns	farmers	BASIC ⁶	16K	Radio Shack I	both	yes	\$10	Ted Nelson	OK
19 FCALF: bookkeeping for feeder calf sales	livestock markets	BASIC	32K	Radio Shack I	both	no	\$10	J. H. Patterson	NC
B. Dairy									
01 DAIRYCOM: ration evaluator, econ analysis	dairymen	BASIC ⁶	16K	Radio Shack I	screen	yes	\$10	Ted Nelson	OK
02 DAIRY: ration formulation, lactating cows	dairymen	FORTRAN	100K ²	HP 3000	both	no	NC	Perry Clark	KY
03 DAIRY CATTLE RATION ANALYSIS: for large	dairymen	BASIC	16K	Radio Shack I	both	INS	INS	Charles Sniffle	NY
04 DAIRY CATTLE RATION ANALYSIS: dairy herds	dairymen	BASIC	48K	Radio Shack I	both	INS	INS	Charles Sniffle	NY
05 DAIRY BALANCER: for balancing rations	dairymen	BASIC	32K	Apple II +	both	no	NC	Terry Howard	MI
06 LEAST COST DAIRY RATION:	dairymen	BASIC ⁶	16K	Radio Shack II	INS	INS	INS	Tom McGlucklin	MI
07 DAIRY POMAGE: ration needs from cow data	dairymen	BASIC ⁶	10K	Radio Shack I	both	no	NC	Wes Wolfe	MI
08 SILO INVENTORY: scheduling model	dairymen	BASIC	32K	Apple II +	both	no	NC	Terry Howard	MI
09 DAIRY: maintains individual farm & cumulative av costs of production	educators, farmers	BASIC	12K	Radio Shack I	both	no	NC	Al Timley (Buddy Mathias)	SC
10 DEAR: dairy enterprise analysis report	ext agents for farmers	FORTRAN	64K ²	Altos ACS 8000	printer	yes	NC	Rob Salvage	CO
11 BEAR W/AVERAGES: also lists state average	ext agents for farmers	FORTRAN	64K ²	Altos ACS 8000	printer	yes	NC	Rob Salvage	CO
12 BEAR W/AVERAGES: also lists state average	ext agents for farmers	C-BASIC	64K ²	Altos ACS 8000	printer	yes	NC	Rob Salvage	CO
13 DAIRY HEALTH MANAGEMENT: for managing large herd health records	dairymen	BASIC	64K ²	Dig Equity Corp	both	INS	INS	Jeff Davidson	NY

Table 6. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	PROGRAM LANGUAGE	MEMORY REQUIRED	MACHINE PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST PER COPY	CONTACT STAFF (AUTHOR)	STATE
14 DAIRY CATTLE REPRODUCTION & MGT: for mgt of large herd reproduction records	dairymen	BASIC	48K	Radio Shack I	TNS	TNS	TNS	Jeff Davidson	NY
15 YOUTH DAIRY PROJECT: quiz	4-H clubs, Farm Boys	BASIC	32K	Apple II +	both	no	NC	D. Kaiser	WI
C. Hogs									
01 RATION BALANCER: linear program for hogs	farmers, educators	BASIC ^a	28K ^b	IBM 8100	both	yes	NC ^c	Earl Miller	MI
02 SWIN PRODUCTIVITY INDEX: calculates index, allows accumulation, sow & group	educators, farmers	BASIC ^a	48K ^b	Radio Shack I	screen ^b	no	NC	Al Thiesley (Brown-Stewart)	SC
03 ECONOMICS OF FEEDER PIG PRODUCTION:	farmers	BASIC	48K ^b	Apple II +	TNS	TNS	TNS	Bob Jolly	IA
04 FEEDER PIG FINISHING:	farmers	BASIC	48K ^b	Apple II +	TNS	TNS	TNS	Bob Jolly	IA
05 ECONOMICS OF FARROW TO FINISH:	farmers	BASIC	48K ^b	Apple II +	TNS	TNS	TNS	Bob Jolly	IA
06 LSTK MARKETING STRATEGIES:	farmers	BASIC	48K ^b	Apple II +	TNS	TNS	TNS	Bob Jolly	IA
07 PORK CARCASS PERFORMANCE EVALUATION:	educators, judges	BASIC ^a	28K ^b	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
08 FEEDER PIG SALE: sales records, checks	sale barn operators	BASIC ^a	32K ^b	Radio Shack I	TNS	no	NC ^c	Wes Wolfe	MS
09 SWINE HEALTH MANAGEMENT:	ext agents, farmers	BASIC	32K	HP 85	both	TNS	TNS	Jeff Davidson	NY
D. Horses									
01 FEEDING PROGRAM FOR HORSES: nutrition mgmt	educators, horsemen	BASIC ^a	28K ^b	Dig PDP 11/03	both	yes	\$300	Lynn Busse	IN
E. Poultry									
01 EGGS: weekly price summary, flock financial analysis	educators, poultrymen	BASIC	16K	Radio Shack I	both	no	NC	Al Tinsley (Wether-Tinsley)	SC
02 BROTLER: cost analysis & projections	poultrymen	BASIC ^a	32K ^b	Radio Shack I	both	yes	NC ^c	Wes Wolfe	MS
03 BROTLER: for profitability analysis	educators, poultrymen	BASIC	11K	Radio Shack I	screen ^b	no	NC	Al Tinsley (Smith-Welton)	SC
F. Sheep									
01 FEEDER LAMB BUDGET:	farmers	BASIC	22K ^b	Vector Graphic	printer	no	NC	Ramon Sammons	TX
G. Home, Family									
A. Household records, budgets, finance									
01 TEEN: budget aid for youth and young marrieds	educators, youth	BASIC	11K	Radio Shack I	screen ^b	no	NC	Al Tinsley (Tinsley-Carmack)	SC
02 SPEEDY SPEND: family budget aid based on user's income, expense information	educators, families	BASIC	11K	Radio Shack I	screen ^b	no	NC	Al Tinsley (Tinsley-Carmack)	SC
03 SPEEDY SPEND: family budget aid	families	BASIC ^a	11K	Radio Shack I	both	yes	NC ^c	Wes Wolfe	MS
04 BUDGET: family budget aid	educators, families	BASIC ^a	28K ^b	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN

Table 6. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	PROGRAM LANGUAGE	MEMORY NEEDED	MACHINE PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST IF FOR SALE	CONTACT STAFF (NAME)	STATE
05 BUDGET: family budget aid	spec. agents, families	BASIC ⁴	32K	Radio Shack I	both	no	\$10	Thelma Ninson	SC
06 HOMEBDGT: annual budget planner	educators, families	FORTRAN	100K ⁵	HP 3000	both	no	NC	Karen Behn	KY
07 SPEND: compares actual exp with a norm	educators, families	FORTRAN	100K ⁵	HP 3000	both	no	NC	Karen Behn	KY
08 FOOD COSTS: designs a food spending plan	educators, families	BASIC ⁴	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
09 CHILDREN'S CLOTHING: compares exp w/norm	educators, families	BASIC ⁴	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
10 RETIRED COUPLE'S BUDGET: a budget aid	educators, families	BASIC ⁴	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
B. Food and nutrition									
01 FOOD COSTS: designs a food spending plan	educators, families	BASIC ⁴	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
02 PRESERVE: to access food preserving info	educators, families	BASIC ⁴	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
03 HOME CANNING COSTS ANALYSIS:	educators, families	BASIC	16K	Apple II +	both	no	NC	Larry Bond	UT
04 HOME STORAGE NUTRIENT ANALYSIS:	educators, families	BASIC	16K	Apple II +	both	no	NC	Van Mendenhall	UT
05 HOMEBEF: evaluates bulk beef buying alt's	educators, families	FORTRAN	100K ²	HP 3000	both	no	NC	Joe Davis	KY
06 DIETANAL: analyzes diet of user	educators, families	FORTRAN	100K ²	HP 3000	both	no	NC	Fudge Maruyama	KY
07 RECALL: analyzes diet of user	educator, families	FORTRAN	100K ²	HP 3000	both	no	NC	Fudge Maruyama	KY
C. Other									
01 HOME VEG GARDENING PLAN: layout, schedule	educators, families	BASIC ⁴	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
02 CLEAR: stain removal aid	educators, families	BASIC ⁴	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
03 STAIN: to access info on removing stains	educators, families	FORTRAN	100K ²	HP 3000	printer	no	NC	Jo Ann Miller	KY
04 ROOM AIR CONDITIONER COST: analyzes cost of operation	educators, families	BASIC	12K	Radio Shack I	screen ⁶	no	NC	Al Timley (Lambert)	SC
05 HOME INSULATION: analyzes needs, savings	educators, families	BASIC ⁴	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
06 HOME INSULATION: for needs, feasibility	educators, families	BASIC	32K	Radio Shack I	both	no	\$10	Robert C. Willis	NC
07 CHEAP: home energy (insulation) analysis	educators, families	FORTRAN	100K ²	HP 3000	printer	yes	NC	Robert Fehr	KY
08 BUY VS RENT HOME:	county agents	BASIC	32K	Commodore Pet	both	no	NC	Art Bernaby	KA
09 HOUSING:	spec. agents, families	BASIC	32K	Radio Shack I	both	no	\$10	Thelma Ninson	SC
10 WINDOW CONDENSATION TEMPERATURE:	4-H, general public	BASIC	16K	Radio Shack I	screen	yes	NC ⁶	George Duncan	KY
11 HHA: health hazard appraisal	educators, families	FORTRAN	100K ²	HP 3000	both	yes	NC	Fudge Maruyama	KY
D. Youth and Ag									
A. Agriculture									
B. Nutrition									

Table 6. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	PROGRAM LANGUAGE	MEMORY REQUIRED	MACHINE PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST IF FOR SALE	CONTACT STAFF (INITIALS)	STATE
C. Data files, enrollments, records									
01 STATE ENROLLMENT SYSTEM:	ext agents, teachers	BASIC ⁴	8K ²	DIG POP 11/03	both	yes	\$100	Lynn Buske	IN
D. Programs for 4-H club members									
01 ANNUAL CAR FUEL COST:	4-H, general public	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
02 WINDOW CONDENSATION TEMPERATURE:	4-H, general public	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
03 TELL ME ABOUT THE PARTS OF A CAR:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
04 TELL ME ABOUT KENTUCKY'S ENERGY:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
05 TELL ME ABOUT YOUR COUNTY:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
06 8 CYCLES AND RIDING:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
07 FIND THE VEGETABLE:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
08 FIND THE GOOD SNACKS:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
09 MISSING LETTERS AND FOOD GROUPS:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
10 FIND THE FOOD ITEMS:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
11 CAR OPERATING COSTS:	4-H, general public	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
12 TELL ME ABOUT YOUR BIKE:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
13 TELL ME ABOUT HAND TOOLS:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
14 OUR ENERGY PROBLEM:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
15 CAMP FIRST AID EMERGENCIES:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
16 OUR RESOURCES:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
17 ELECTRICAL ENERGY PUZZLES:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
18 ARE YOU A CLEAN CAMPER?:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
19 ENERGY CROSSWORD PUZZLE:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ³	George Duncan	KY
20 YOUTH DAIRY PROJECT: quiz	4-H, youth	BASIC	8K	Apple II +	both	no	NC	E. Kaiser	MS
E. General and administrative programs									
A. Calendars									
B. Word processing									
C. Data files, data handling									
01 ADDRESS LABELS:	university personnel	IMS -	8K ²	Homemade	both	no	IM	Robert C. Wells	NC
02 ADDRESS LABELS:	farmers, educators	BASIC ⁶	8K	IBM 5100	both	yes	NC ³	Earl Fuller	IN
03 RECORD SORT:	farmers, ranchers	BASIC ⁶	10K	Radio Shack I	both	yes	\$10	Ted Nelson	OK

Table 6. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	PROGRAM LANGUAGE	MEMORY NEEDED	MACHINE PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST IF FOR SALE	CONTACT STAFF (NAME)	STATE
04 SORTING AN ARRAY;	farmers, educators	BASIC ^d	4K	IBM 5100	both	yes	NC ^b	Earl Fuller	PA
05 PRINTJOB: for IBM 370 output files	univ adm, ext agents	FORTRAN	56K ^c	IBM 370	printer	yes	NC ^b	John Byars	KY
06 GENERAL PAYROLL SYSTEM:	farmers, educators	BASIC ^d	32K ^c	IBM 5100	both	yes	NC ^b	Earl Fuller	PA
<u>D. Electronic mail, messages</u>									
01 MAIL PROGRAM: to access network messages	univ adm, ext agents	BASIC ^d	32K ^c	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
02 TELEGRAM: for message transfer	univ adm, ext agents	FORTRAN	100K ^c	HP 3000	printer	yes	NC ^b	John Cowen	KY
<u>E. Statistical packages</u>									
01 COMBI: computes permutations-combinations	farmers	BASIC	INS	Cromenco Sys 3	INS	INS	INS	Ken Schneeberger	KD
02 CHISOR: for chi-square distribution curve	farmers	BASIC	INS	Cromenco Sys 3	INS	INS	INS	Ken Schneeberger	KD
03 SCIMP: for observation sample analysis	farmers	BASIC	INS	Cromenco Sys 3	INS	INS	INS	Ken Schneeberger	KD
04 WAVE: for weighted averages (to 10 var)	farmers	BASIC	INS	Cromenco Sys 3	INS	INS	INS	Ken Schneeberger	KD
05 CONTOUR: plots 3 dimensional resp surf	farmers	BASIC	INS	Cromenco Sys 3	INS	INS	INS	Ken Schneeberger	KD
06 ASSIGN: special linear programming appli	farmers	BASIC	INS	Cromenco Sys 3	INS	INS	INS	Ken Schneeberger	KD
<u>F. Other</u>									
01 SCORING JUDGING CASES: for contests; calculates scores	extension agents	BASIC	4K	Radio Shack I	screen ^a	no	NC	Al Tinsley (Lambert)	SC
02 JUDGING: tabulates winners (4-H contests)	extension agents	BASIC ^d	32K ^c	Radio Shack I	both	yes	NC ^b	Wes Wolfe	MS
03 TABLE GENERATOR: for financial projection	farmers, educators	BASIC ^d	32K ^c	IBM 5100	both	yes	NC ^b	Earl Fuller	PA
04 GRAPH: data displayed as a bar graph	farmers	BASIC ^d	32K ^c	Radio Shack I	screen	no	NC ^b	Wes Wolfe	MS
05 COPY: loads programs onto diskettes	univ adm, ext agents	BASIC ^d	28K ^c	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
06 MERITISS DOWNLOADERS:	farmers, educators	BASIC ^d	32K ^c	IBM 5100	both	yes	NC ^b	Earl Fuller	PA
07 MECC TEST SCRIPTS:	farmers, educators	BASIC ^d	4K	IBM 5100	both	yes	NC ^b	Earl Fuller	PA
<u>G. Community and resource development</u>									
<u>H. Data files, data handling</u>									
01 DISK: KY county social & economic data files	univ adm, ext agents	FORTRAN	100K ^c	HP 3000	printer	no	NC	Mike Green or Lynn Robbins	KY
02 EIS: KY state soc & econ data file	univ adm, ext agents	FORTRAN	100K ^c	HP 3000	printer	no	NC	Dave Debortin	KY
03 REAL ESTATE TAX TABLE: taxes, billings	educators, tax offices	BASIC ^d	28K ^c	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
04 BOX: for rural county solid waste budget	educators, counties	BASIC ^d	32K ^c	Radio Shack I	INS	no	NC ^b	Wes Wolfe	MS

Footnotes on the next page.

Table 8. CONTINUED.

JAN 10-23-68

PROGRAM NAME AND PURPOSE OR USE	CREATING SOURCE	PROGRAM MEMORY "LAUNCHER" SOURCE	MEMORY PER	DISPLAYED	OUTPUT	FORMAT . IF FOR	STAFF AVAILABILITY	DATE	STAFF (OPTION)	STATE
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APPENDIX

- b8 Information not supplied.
- NA Program not available for general distribution.
- NC Program available to other universities at no cost.
- a DOS 3.3 (Applesoft BASIC, disc operating system version 3.3).
- c Received from Canada free of charge.
- d Disc version.
- dd Double disc, one for operation, one for data storage.
- dt Choice of disc version or tape version.
- e Has not been determined yet.
- n Obtained from the University of Nebraska, Tom Thompson.
- r No charge, but requesting party should supply their own TRS DOS diskette.
- s Available to other universities for costs of transfer such as tapes, discs, and/or documentation.
- t Tape version.
- x Proceeding toward screen output with user option to print screen contents.
- z Information incomplete. Program will run on this size of machine, but how much of total memory is required was not specified.

of BASIC is insufficient information when trying to assess the transferability of a given program between machines. For memory needed, the size of the machine on which the program was operating was given more often than the memory required for the particular program. Thus, some programs actual suitable for people with smaller machines do not appear so in this listing. More elaborate thoughts on this subject appear immediately following this section.

Additional Software Planned or Being Developed

Quite a number of programs were reported as currently being developed or at least planned for the future.

These reports are summarized in Table 7. Information presented there consist of the program name and purpose or use, the intended user, the brand of machine planned for, the development status of the program (when it was supplied) and who to contact for more information about the program.

Software Sources for Universities

Nine states supplied information on vendors of software for agricultural businesses that they expect to use. About a third of the reports named commercial sources while the remainder named other universities. These reports are summarized in Table 8.

Table 7. MINI AND MICRO COMPUTER PROGRAMS PLANNED OR BEING DEVELOPED AT U.S. LAND GRANT UNIVERSITIES, SUMMER, 1980.

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	MACHINE PLANNED FOR	DEVELOPMENT STATUS	CONTACT	STATE
				START	END
T. Business management and marketing					
A. Prices and markets					
01 DAILY MARKETS: for accessing daily market information (corn, soys, wheat, etc.)	ext agents, farmers	Dig PDP 11/03	INS	Lynn Busse	IN
02 FUTURES & SPOT PRICE, STORAGE PLOTTING:	farmers	Radio Shack I	INS	K. Wegenhoff	LA
03 MARKET ANALYSIS: plot markets from data	marketing agents, farmers	Commodore Pet	INS	Art Barnaby	KA
04 MARKET MANAGEMENT:	farmers	CP/M operating sys	INS	Earl Fuller	MI
05 BUSINESS MANAGEMENT GAMES:	farmers	Apple II +	INS	Bob Jolly	IA
B. Records, accounting, budgets, inventories					
01 FARM RECORDS: farmer accounting system	ext agents, farmers	Radio Shack I & II	ID	Jim Loft	KY
02 FARM RECORD SYSTEM: for ext demonstration	ext farm agt agents	Radio Shack II	INS	Ed Brown	GA
03 RECORDS AND INVENTORIES: farm record sys	farmers	Radio Shack II	INS	Arlyn Scarobe	ND
04 FARM RECORD ANALYSIS: farm record system	ext agents for farmers	Apple II	INS	Larry Bond	UT
05 ACCOUNTING SYSTEM:	farmers	Commodore Pet	INS	Harlen Hughes	NY
06 FARM ACCOUNTING SYSTEM: for farm accounting	farmers	Radio Shack II	INS	Brad Garnick	MT
07 FARM RECORD & ACCOUNTING SYSTEM:	farmers	Apple II +	ID	Randall Hoffmann	IA
08 MICRO ACCOUNTING: complete farm record sys	farmers	Vector Graphics	PT	Ramon Simmons	TX
09 ACCOUNTING RECORDS:	farmers	Radio Shack II	ID	Tom McGuckin	MI
10 LEDGER: accounting, cash flow, partial budgets, income taxes	farmers	Radio Shack I	PT	Wes Wolfe	MS
11 CROP & LSKT BUDGETS: enterprise planning	ext agents, farmers	Dig PDP 11/03	INS	Lynn Busse	IN
12 CROP & LKTK BUDGETS: enterprise planning	ext agents, farmers	Radio Shack I & II	INS	Ted Nelson	OK
13 ENTERPRISE ANALYSIS: for ext demonstration	ext farm agt agents	Radio Shack II	INS	Ed Brown	GA
14 BREAK-EVEN ANALYSIS: enterprise planning	ext agents, farmers	Radio Shack I	INS	K. Wegenhoff	LA
15 EXPANDED BUDGET GENERATOR: facility costs, productivity anal, debt/equity pos	farmers	Apple II +	INS	Bob Jolly	IA
16 SWITCPOINTS:	farmers	Radio Shack II	INS	K. Wegenhoff	LA
17 LP MODEL: for least cost ratios	ext agents, farmers	Apple II	INS	Larry Bond	UT
C. Financial-Investment analysis					
01 FINM: access PUCC to process farm business planning & financial mgt data	ext agents, farmers	Dig PDP 11/03	INS	Lynn Busse	IN
02 CASH FLOW: for cash flow analysis	ext agents, farmers	Radio Shack I & II	INS	Ted Nelson	OK

Table 7. CONTINUED

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	MACHINE PLANNED FOR	DEVELOPMENT STATUS	CONTACT STAFF	STATE
05 DISCOUNDED CASH FLOW: for cash flow anal	farmers	Vector Graphics	TNS	Ramon Simmons	TX
06 FINANCIAL PROGRAM: for financial analysis	farmers	Vector Graphics	TNS	Ramon Simmons	TX
06 FINANCIAL/RISK ANALYSIS:	farmers	Apple II +	TNS	Bob Jolly	IA
06 LAND BUY: calculates value of land	agents for farmers	Apple II	TNS	Larry Bond	UT
07 LEASE VS BUY:	TNS	TNS	TNS	Gayle Willett	WA
08 LAND VALUE:	TNS	TNS	TNS	Gayle Willett	WA
09 INVESTMENT ANALYSIS:	TNS	TNS	TNS	Gayle Willett	WA
10 YEAR END:	ext agents, farmers	Commodore Pet	TNS	Marion Hughes	WY
11 GREENHOUSE INVESTMENT ANALYSIS:	nurserymen	Radio Shack I	TD	Wes Wolfe	MS
D. Buildings, machinery and equipment					
01 MACHINERY MANAGEMENT & SELECTION:	ext agents, farmers	RADIO SHACK I	TNS	Gary Smith	MD
02 MACHINERY COST:	TNS	TNS	TNS	Gayle Willett	WA
03 VEHICLE COST ANALYSIS: to compare cost alt	farmers	Vector Graphics	TNS	Ramon Simmons	TX
04 SIZING PLANT CAPACITIES: for milk systems	ext agents, agribusiness	Radio Shack I & II	TNS	Richard Adams	PA
05 MACHINERY ANALYSIS:	farmers	Vector Graphics	TNS	Ramon Simmons	TX
06 MACHINERY MANAGEMENT PROGRAMS:	TNS	Radio Shack I & II	TNS	George Duncan	KY
E. Tax analysis					
01 FARM INCOME TAX MGT: for ext demonstration	ext farm mgt agents	Radio Shack II	TNS	Ed Brown	GA
F. Estate planning					
01 ESTATE PLANNING:	ext agents, farmers	Radio Shack I & II	TNS	Ted Nelson	OK
02 ESTATE PLANNING: for ext demonstration	ext farm mgt agents	Radio Shack II	TNS	Ed Brown	GA
G. Crops, general					
A. Records and analysis					
01 CROP LEASING: lease alternative analysis	ext agents, farmers	Dig PDP 11/03	PT	Lynn Busse	IN
02 GENERALIZED CROP BUDGET: anal crop alt	ext agents, farmers	Dig PDP 11/03	TNS	Lynn Busse	IN
03 CROP BUDGET SYSTEM:	farmers	Radio Shack II	TD	Tom McGuirk	IN
04 FLEXCROP: cropping management model	ext agents, farmers	Superbrain	TNS	Brad Garrick	MT
05 GRAIN PROFIT: grain profit projections	ext agents for farmers	Apple II	TNS	Larry Bond	UT
06 FIELD INVENTORY:	ext agents, farmers	Radio Shack I & II	TNS	Jim Loft	KY

Table 7. CONTINUUED.

PROSPECTIVE NAME AND PURPOSE ON USE	EXPIRATION DATE	EXPIRATION DATE	EXPIRATION DATE	EXPIRATION DATE	EXPIRATION DATE
7.6.84110393, RECOMMENDED AND PREFERRED:					
01 SIMILAR SERVICE SYSTEM PERFORMANCE:					
02 FARM MACHINERY EQUIPMENT: Placing-up-fitilage etc;					
03 ECONOMICS OF PLANTING: Effect on yield per unit area					
04 SOIL MAP DATA BASE: to store survey, plots etc					
05 SOIL MAP & INTERPRETATION: access soil data					
01 FROST PROTECTION IN ORCHARDS: monitor temp					
02 FROST PROTECTION IN ARABLES: monitor temp					
03 SOIL AGENTS: Farmers					
04 SOIL AGENTS: Farmers					
05 SOIL AGENTS: Farmers					
01 FIELD CROP SEED: for field recommendation					
02 FIELD CROP SEED: for field recommendation					
03 FIELD CROP SEED: for field recommendation					
04 FIELD CROP SEED: to store survey, plots etc					
05 FIELD CROP SEED: to store survey, plots etc					
01 FIELD CROP SEED: to store survey, plots etc					
02 FIELD CROP SEED: to store survey, plots etc					
03 FIELD CROP SEED: to store survey, plots etc					
04 FIELD CROP SEED: to store survey, plots etc					
05 FIELD CROP SEED: to store survey, plots etc					
01 FIELD CROP SEED: to store survey, plots etc					
02 FIELD CROP SEED: to store survey, plots etc					
03 FIELD CROP SEED: to store survey, plots etc					
04 FIELD CROP SEED: to store survey, plots etc					
05 FIELD CROP SEED: to store survey, plots etc					
A. CROP					
01 CORN GROWTH SIMULATION: to compare variety	019 FEB 11/83	SNT	019 FEB 11/83	ext agents	01 CORN GROWTH SIMULATION: to compare variety
02 CORN GROWTH: for yield predictions	019 FEB 11/83	SNT	019 FEB 11/83	ext agents	01 CORN GROWTH SIMULATION: to compare variety
03 CORN GROWTH: for plant date, harvest & drying cost	019 FEB 11/83	SNT	019 FEB 11/83	ext agents	01 CORN GROWTH SIMULATION: to compare variety
C. PESTS					
01 MA LOCATOR: by diagnosis for identia	019 FEB 11/83	SNT	019 FEB 11/83	ext agents, farmers	02 MALETA INSPECT KEY: to identify insects
02 MA LOCATOR: by diagnosis for identia	019 FEB 11/83	SNT	019 FEB 11/83	ext agents, farmers	01 MA LOCATOR: by diagnosis for identia
D. EQUIPMENT					
01 SMALL GAIN DIAGNOSTIC GUIDE: to identify pests	019 FEB 11/83	SNT	019 FEB 11/83	ext agents, farmers	01 SMALL GAIN DIAGNOSTIC GUIDE: to identify pests
02 PEST CONTROL: to monitor, treat, protect	019 FEB 11/83	SNT	019 FEB 11/83	ext agents, farmers	02 PEST CONTROL: to monitor, treat, protect
E. OPERATIONS					
01 PESTICIDES, SPRAYS, OTHER TREATMENTS	019 FEB 11/83	SNT	019 FEB 11/83	ext agents, farmers	01 PESTICIDES, SPRAYS, OTHER TREATMENTS
02 PESTICIDES, SPRAYS, OTHER TREATMENTS	019 FEB 11/83	SNT	019 FEB 11/83	ext agents, farmers	02 PESTICIDES, SPRAYS, OTHER TREATMENTS

Table 7. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	TARGETED USERS	PACIFIC PLANNED FOR	DEVELOPMENT STATUS	CONTACT STAFF	CONTACT STATE
H. Soybeans					
01 SOYBEAN VARIETIES: to access data on 250 varieties incl agronomic, disease info	ext agents, farmers	Dig POP 11/88	INS	Lynn Busse	IN
02 SOYBEAN INSECT KEY: for identifying insects	ext agents, farmers	Dig POP 11/88	INS	Lynn Busse	IN
I. Tobacco					
J. Truck crops					
01 VEGETABLES: planting & care recommendations	ext agents, farmers	Dig POP 11/88	INS	Lynn Busse	IN
K. Diseases, pests and weeds					
A. Diseases					
01 BLITCAST: IPM forecasting	ext agents, farmers	Dig POP 11/88	INS	Arlin Granstrom	WI
02 BLITCAST: (revision of current program)	ext agents, farmers	Dig POP 11/88	INS	Lynn Busse	IN
03 BLITCAST SUMMARY REPORT	ext agents, farmers	Dig POP 11/88	INS	Lynn Busse	IN
B. Pests					
01 PESTICIDE INFO: to access pesticide info	ext agents, farmers	Dig POP 11/88	ID	Lynn Busse	IN
02 ALFALFA INSECT KEY: to identify insects	ext agents, farmers	Dig POP 11/88	INS	Lynn Busse	IN
03 SMALL GRAIN DIAGNOSTIC GUIDE: to identify insects, diseases, nutritional prob	ext agents, farmers	Dig POP 11/88	INS	Lynn Busse	IN
04 SOYBEAN INSECT KEY: for identifying insects	ext agents, farmers	Dig POP 11/88	INS	Lynn Busse	IN
05 INSECT PROFILE: redesign to disease format	ext agents, farmers	Dig POP 11/88	INS	Lynn Busse	IN
C. Weeds					
01 WEED KEY: control recommendations, incl sprayer calibration, herbicide effects	ext agents, farmers	Dig POP 11/88	INS	Lynn Busse	IN
L. Livestock, general					
A. Records and analysis					
01 HERD PERFORMANCE: business analysis	farmers	Radio Shack I	INS	Harlan Hayes	WI
02 LIVESTOCK RECORD KEEPING:	farmers	Radio Shack I	INS	Ann Davis	ID
03 LIVESTOCK CONTROL SYSTEM:	farmers, educators	CP/M operating sys	INS	Carl Fuller	IN
B. Building, machinery and equipment					
01 LSTK BLDG VENT & INSULATION: for heat, insulation, size of fan needed	ext agents, farmers	Dig POP 11/88	INS	Lynn Busse	IN
02 SIZING PUMP CAPACITIES: for milk systems	ext agents, agribusiness	Radio Shack I	INS	Richard Adams	PA

C. Ratios

PROGRAM NAME AND NUMBER OF USE		INTERVIEWS SINCE		MONTE PLANNING FOR		RELIABILITY	
NAME	SINCE	NAME	SINCE	NAME	SINCE	NAME	SINCE
01 LEAST COST RATIOS: For offices, boats, dairy	019 POP 11/00	02 FEEDS SINCE: For feeds etc formulation	019 POP 11/00	03 BEEF CROPS PENTOMALIC YAKI: 00 CROPS 00	019 POP 11/00	04 SNAIL CROPS: 00 CROPS	A. SELL
lawn buses	IN	lawn buses	IN	snailize diets for hams, cornsilage	IN	relicions from available ingredients	03 REEF ALIATION FOODS: For forms 00
01 LIVESTOCK: SWINE	IN	02 BEEF CROPS: compares ex 018	IN	ex 03000	IN	ratios for excesses of das/clemons	02 BEEF ALIATION: compares ex 018
lawn buses	IN	lawn buses	IN	in 3000	IN	ratios from available ingredients	01 DAIRY ALIATION: compares ex 018
01 DAIRY RATION ANALYZER: 00 compare nutrients	IN	01 DAIRY RATION ANALYZER: 00 compare nutrients	IN	in 3000	IN	ratios from available ingredients	02 DAIRY RATION FORMULATOR: to calc feed etc
offered with needs (dry matter basis)	IN	offered with needs (dry matter basis)	IN	out 3000	IN	ratios from available ingredients	03 DAIRY RATION FORMULATOR: to calc feed etc
01 DAIRY RATION ANALYZER: to compare nutrients	IN	01 DAIRY RATION ANALYZER: to compare nutrients	IN	out 3000	IN	ratios from available ingredients	04 DAIRY RATION PROGRAM-MEATLESS:
out agents, farmers	IN	out agents, farmers	IN	out 3000	IN	ratios from available ingredients	05 DAIRY RATION PROGRAM-DRY COWS:
01 DAIRY RATION ANALYZER: for dairy feeding	IN	01 DAIRY RATION ANALYZER: for dairy feeding	IN	out 3000	IN	ratios from available ingredients	06 RATION PROGRAM-DAIRY COWS:
dairyman	IN	dairyman	IN	out 3000	IN	ratios from available ingredients	07 SILAGE SIZING:
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	out 3000	IN	ratios from available ingredients	08 EXPANSION OF DAIRY ANALYSIS:
out agents, farmers	IN	out agents, farmers	IN	out 3000	IN	ratios from available ingredients	09 SIZING FEED CAPACITIES: for mil 1000
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	out 3000	IN	ratios from available ingredients	01 SOL RECORDS:
lawn buses	IN	lawn buses	IN	out 3000	IN	ratios from available ingredients	02 PIGS 1000: 00 MARKET: 00 CROPS 00
01 DAIRY RATION ANALYZER: 00 compare nutrients	IN	01 DAIRY RATION ANALYZER: 00 compare nutrients	IN	out 3000	IN	ratios from available ingredients	03 PIGS 1000: 00 MARKET: 00 CROPS 00
out agents, farmers	IN	out agents, farmers	IN	out 3000	IN	ratios from available ingredients	04 PIGS 1000: 00 MARKET: 00 CROPS 00
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	out 3000	IN	ratios from available ingredients	05 PIGS 1000: 00 MARKET: 00 CROPS 00
out agents, farmers	IN	out agents, farmers	IN	out 3000	IN	ratios from available ingredients	06 PIGS 1000: 00 MARKET: 00 CROPS 00
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	out 3000	IN	ratios from available ingredients	07 PIGS 1000: 00 MARKET: 00 CROPS 00
out agents, farmers	IN	out agents, farmers	IN	out 3000	IN	ratios from available ingredients	08 PIGS 1000: 00 MARKET: 00 CROPS 00
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	out 3000	IN	ratios from available ingredients	09 PIGS 1000: 00 MARKET: 00 CROPS 00
out agents, farmers	IN	out agents, farmers	IN	out 3000	IN	ratios from available ingredients	01 SWINE RATION FORMULATOR: for better use of hog
01 PIGS 1000: 00 MARKET: 00 CROPS 00	IN	01 PIGS 1000: 00 MARKET: 00 CROPS 00	IN	out 3000	IN	ratios from available ingredients	02 PIGS 1000: 00 MARKET: 00 CROPS 00
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	out 3000	IN	ratios from available ingredients	03 PIGS 1000: 00 MARKET: 00 CROPS 00
out agents, farmers	IN	out agents, farmers	IN	out 3000	IN	ratios from available ingredients	04 PIGS 1000: 00 MARKET: 00 CROPS 00
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	out 3000	IN	ratios from available ingredients	05 PIGS 1000: 00 MARKET: 00 CROPS 00
out agents, farmers	IN	out agents, farmers	IN	out 3000	IN	ratios from available ingredients	06 PIGS 1000: 00 MARKET: 00 CROPS 00
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	out 3000	IN	ratios from available ingredients	07 PIGS 1000: 00 MARKET: 00 CROPS 00
out agents, farmers	IN	out agents, farmers	IN	out 3000	IN	ratios from available ingredients	08 PIGS 1000: 00 MARKET: 00 CROPS 00
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	out 3000	IN	ratios from available ingredients	09 PIGS 1000: 00 MARKET: 00 CROPS 00
out agents, farmers	IN	out agents, farmers	IN	out 3000	IN	ratios from available ingredients	01 LIVESTOCK: SWINE
01 LEAST COST RATIOS: For offices, boats, dairy	019 POP 11/00	01 LIVESTOCK: SWINE	019 POP 11/00	01 LEAST COST RATIOS: For offices, boats, dairy	019 POP 11/00	01 LIVESTOCK: SWINE	A. SELL
lawn buses	IN	lawn buses	IN	lawn buses	IN	lawn buses	01 LIVESTOCK: SWINE
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	01 LIVESTOCK: SWINE
out agents, farmers	IN	out agents, farmers	IN	out agents, farmers	IN	out agents, farmers	01 LIVESTOCK: SWINE
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	02 LIVESTOCK: SWINE
out agents, farmers	IN	out agents, farmers	IN	out agents, farmers	IN	out agents, farmers	03 LIVESTOCK: SWINE
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	04 LIVESTOCK: SWINE
out agents, farmers	IN	out agents, farmers	IN	out agents, farmers	IN	out agents, farmers	05 LIVESTOCK: SWINE
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	06 LIVESTOCK: SWINE
out agents, farmers	IN	out agents, farmers	IN	out agents, farmers	IN	out agents, farmers	07 LIVESTOCK: SWINE
01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	IN	01 DAIRY RATION ANALYSIS	08 LIVESTOCK: SWINE
out agents, farmers	IN	out agents, farmers	IN	out agents, farmers	IN	out agents, farmers	09 LIVESTOCK: SWINE

TABLE 7. CONTINUED.

MS: 10-10-00

Table 7. CONTINUED.

PROGRAM NAME AND PURPOSE OF USE	INTENDED USERS	PACKAGE PLANNED FOR	DEVELOPMENT STATUS	CONTACT	
				STATE	STATE
VII. Home and Family					
A. Household records, budgets, finance					
01 CAN THE FAMILY AFFORD IT?: spending anal	ext agents, families	Dig POP 11/93	INS	Lynn Busse	IN
02 BUDGETING FOR RETIREMENT:	ext agents, farmers	Dig POP 11/93	INS	Lynn Busse	IN
B. Nutrition					
01 NUTRI I: nutritional analysis of food	ext agents, families	Dig POP 11/93	PT	Lynn Busse	IN
02 NUTRI II: nutrit anal of intake, 7-7 days	ext agents, families	Dig POP 11/93	INS	Lynn Busse	IN
C. Other miscellaneous and unclassified					
01 BATCH VEGETABLE GARDEN PLAN: to speed anal	ext agents	Dig POP 11/93	INS	Lynn Busse	IN
VIII. Youth and 4-H					
A. Calendars and events					
01 STATE EVENT: 4-H events calendar	ext personnel	INS	INS	PA	
B. Publications					
01 PUBLICATION ORDERS: for 4-H pub orders	ext personnel	INS	PT	INS	PA
C. Data files, enrollments, records					
01 FULLY SELECTIVE GENERATOR: for 4-H group	ext agents, leaders	Dig POP 11/93	INS	Lynn Busse	IN
02 SPECIAL INTEREST GROUP ENROLLMENT: for 4-H	ext agents, leaders	Dig POP 11/93	INS	Lynn Busse	IN
03 ENROLLMENT: for 4-H enrollment records	ext personnel	INS	INS	PA	
04 FULLY SELECTIVE MAILING LABEL GENERATOR:	ext agents, leaders	Dig POP 11/93	INS	Lynn Busse	IN
05 DATA BASE INTEGRITY TESTER: 4-H data base	ext agents	Dig POP 11/93	INS	Lynn Busse	IN
06 DATA BASE OPTIMIZER: for 4-H data base	ext agents	Dig POP 11/93	INS	Lynn Busse	IN
07 4-H RECORDS:	adm & field staff	INS	INS	Arlyn Stenaba	NO
X. General and administrative					
A. Calendars, events					
01 STATE EVENT: 4-H events calendar	ext personnel	INS	INS	PA	
02 MAIL LABEL PROGRAM: for general mailings	ext personnel	Dig POP 11/93	PT	Lynn Busse	IN
03 MAILING LABELS:	adm, field staff	INS	INS	Arlyn Stenaba	NO
04 FULLY SELECTIVE MAILING LABEL GENERATOR: for 4-H data base use	ext agents, leaders	Dig POP 11/93	INS	Lynn Busse	IN

Table 7. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	MACHINE PLANNED FOR	DEVELOPMENT STATUS	CONTACT	
				STAFF	STATE
B. Word processing					
01 WORD PROCESSING: to prepare, store duplicate documents	ext personnel	DIG PDP 11/03	INS	Lynn Busse	IN
02 ADDRESS LABEL FORM LETTER: to output record to a file instead of a printer	ext personnel	DIG PDP 11/03	INS	Lynn Busse	IN
03 WORD PROCESSING:	adm, field staff	INS	INS	Arllyn Staroba	ND
C. Data files, mailing lists					
01 HOME ECO-ECONICS ENROLLMENT: for home ec prog	ext personnel	DIG PDP 11/03	INS	Lynn Busse	IN
02 DATA BASES:	adm, field staff	INS	INS	Arllyn Staroba	ND
03 DATA BASE: for information retrieval	ext agents	Cromemco	INS	Arltin Brannstrom	WI
04 DATA BASE OPTIMIZER: to facilitate reports	adm, field staff	DIG PDP 11/03	INS	Lynn Busse	IN
I. Community and resource development					
Z. Miscellaneous and unclassified					
01 COMMUNITY SERVICES BULLETIN	adm, field staff	HP 3000	ID	M. J. Greene	KY
02 SOLID WASTE DISPOSAL	adm, field staff	HP 3000	ID	M. J. Greene	KY
03 FIRE PROTECTION	adm, field staff	HP 3000	ID	M. J. Greene	KY
04 RURAL HEALTH CLINICS	adm, field staff	HP 3000	ID	M. J. Greene	KY
05 EMERGENCY MEDICAL SERVICES	adm, field staff	HP 3000	ID	M. J. Greene	KY
06 ESTIMATING FUTURE COUNTY POPULATIONS	adm, field staff	HP 3000	ID	M. J. Greene	KY
III. Other					
01 C.H.A.R.L.I.E. CAREERS: student education, evaluation and counseling aid	student counselors	DIG PDP 11/03	FT	Lynn Busse	IN
02 SYSTEM VERSION 1.7: computer operating sys	ext personnel	DIG PDP 11/03	FT	Lynn Busse	IN
03 COUNTY FAIR PREMIUM ACCOUNTING: for fairs	ext personnel	DIG PDP 11/03	INS	Lynn Busse	IN
04 HETEROSTS: for animal breeding workshops	INS	Apple II	INS	W. M. Schutz	NE
05 RJE EMULATOR	PSU pesticide lab	INS	INS	Richard Adams	PA
06 TV VIDEO DIGITIZER: for research	D. R. Mackenzie	INS	INS	D. R. Mackenzie	PA
07 BEM AG DECISION AIDS:	Farmers	Radio Shack I	INS	Bill Brant	VA

FT: program has been developed, is currently being field tested

ID: program is in the process of being developed

INS: information not supplied

Table 8. PROGRAM VENDORS THAT RESPONDENTS EXPECT TO USE FOR SOFTWARE, U.S. LAND GRANT UNIVERSITIES, SUMMER, 1980

SUBJECT CODE	PROGRAM NAME	VENDOR	STATE REPORTING
<u>I B Business records, budgets</u>			
	LINEAR PROGRAM	University of Minnesota	OK
<u>VIA Beef programs</u>			
	BEEF FEEDLOT	Dr. Dan Fox Cornell University Ithica, NY	PA
<u>VIB Dairy Programs</u>			
	DAIRY FEEDING	Dr. Larry Chase (C. Sniffen) Cornell University Ithica, NY	PA
	LEAST COST RATION	Wisplan	WI
<u>VIE Poultry programs</u>			
	POULTRY PROGRAMS	Tam S. Hutchinson, Jr. P. O. Box 248 N. Wilksboro, NC 28659	NC
<u>IX General and administrative</u>			
	WORD PROCESSING	Radio Shack One Tandy Center Fort Worth, TX 76102	SC
	WORD PROCESSING		MN
	DATA BASE MANAGEMENT		MN
	SORTING, WORD PROCESSING	Local Computer Stores	TX
	MAILING LIST	Meta Technologies Euculid, OK	OK
<u>XII Miscellaneous and unclassified</u>			
	ARDJARK	Madison, Wisconsin	MN
	AGNET	University of Nebraska	PA
	AI Tinsley	Clemson University	GA
	CMM	University of Virginia	LA
	Cornell University		PA
	Micron		ME
	Oklahoma State University		MS
			LA
			PA

Table 8. CONTINUED

SUBJECT CODE	PROGRAM NAME	VENDOR	STATE REPORTING
	RACET		MS
	Radio Shack		MS
	The Bottom Shelf		MS
	Telplan		PA
	Michigan State University		

MISCELLANEOUS OBSERVATIONS

When we began this project, we thought we knew pretty well what we wanted to know. However, during the course of this investigation, a number of additional items surfaced as possibly important. But the original questionnaire was not designed with them in mind. Hence, observations on these items were not gathered systematically, nor in a manner that could be tabulated. Yet observations on these items may still be of some value, especially to those considering a follow-up questionnaire in the future. Hence they are presented here.

On the BASIC Languages

The great majority of programming work with the small computer has been done in BASIC. Yet, in terms of moving programs from one ~~one~~ computer to another, BASIC for one computer is not necessarily the same BASIC required in another brand of computer. Furthermore, within the same brand, different versions of BASIC will appear over time. The versions may be close enough that anyone familiar with programming could alter one listing so that it would run on another machine. But they are different enough that a recording of a program for one machine can not be loaded into another and operate with no difficulties, hangups or error messages. For many of us, and possibly more of our clients, this means that programs received from another machine are simply unusable on our machine.

On Operating Systems

A further complication concerns the machine operating system. Each computer manufacture develops their own set of machine operating instructions. Hence, a given sequence of Basic commands for one brand of machines may get the desired result. That same sequence in another machine may get different results, or no results.

To complicate things more, the owner of a given machine can elect to replace the manufacturer's operating system with a system from another company.

For the most part, differences are small. But the differences are often great enough that a program from one system will not run "as is" in another machine. In most cases, an experienced programmer

would have little difficulty re-writing a program listing from one operating system so that it would work on another. But this takes extra time and effort. And there is always the temptation, once in a program, to spend some more time trying to "improve" it.

For future work in the area, the most important immediate implication concerns collecting information on operating system used as well as machine brand and memory capacity.

There is another more philosophical long range implication. Probably the most satisfactory method of improving transferability of programs between universities would be the adoption of a standard operating system. One that would get the same results from a given sequence of commands no matter what the brand of machine used. Although no data was collected or tabulated on this subject, a number of comments were received. So far, the only system that has been suggested as a possible standard for all universities is one known as CP/M supplied by Digital Research of California. To say the least, this suggests an area for further investigation.

On Memory Requirements

There are a number of things that affect memory requirements. For one, program style affects memory requirements. For instance an interactive program for inexperienced people may request each item of user input as needed. But this requires more memory than the more efficient style of batch input of a series of data in a previously established sequence. Also, error detection routines to help goof-proof operation increase memory requirements. So does internal program documentation and explanatory remarks. Thus, two programs designed to accomplish the same thing can have quite different memory requirements.

Notations on program size are further complicated by method of presenting results. A standard routine in a machine that displays the results on a screen may have different memory requirements than the same routine presenting results through a printer.

For these reasons, the original intent was to obtain the memory requirements for loading and operating each program. Thus, others, especially those with smaller machines, could know if there was a chance to use a given program with their machine. However, the responses we received showed that memory requirements for a given program

were often unknown. All too frequently, all that was known was that the program operated on the machine which had a total capacity of such and such K. Often, the actual requirements were no where near the total capacity of the machine. Sometimes we got a number with no indication of whether it was for program size or machine size. In other cases, we got what we wanted, namely, the approximate memory capacity others need to have available in order to use the program.

The net intention of this discussion is to indicate that caution should be exercised when noting the memory requirements presented in table 6. We feel the question of memory requirements was a good one, but some of our answers were lacking.

For future work along this line, the implication is for placing more effort and more emphasis on this factor. One might think the importance of memory requirements would fade as people upgraded and expanded their equipment. But with the advent on 100K micros, and larger, we should expect the same problem to persist only at larger potential program sizes. And of course, some of us may be stuck for near forever with our 4K, 16K, or 32K machines.

On Philosophies Concerning Computer Systems and Extension Uses.

The primary assignment of this project concerned small computers. However, some differences in philosophies were noted relating to large computer systems in the various states, and to the role or relationship of small computers to the large system.

Philosophies seemed to fall into three general categories.

One centers on mainframe programs. With this philosophy, the major extension activities involving computers would be directed to the central campus mainframe. Two versions of this philosophy surfaced. One seemed to exclude small computers and non-city/inn office locations. Persons wishing the services of a campus computer would have to go to an extension agent for access through his terminal. The other version envisioned accommodation of non-extension worker needs. If client had a terminal, or a micro computer that could be used as a terminal, he could access the mainframe.

Under this philosophy, program development tends to be directed toward the mainframe. Rather large, elaborate programs are feasible as

long as the terminal or small computer has the capacity to receive the results.

A second philosophy centers on small computer programs. With this philosophy, a major portion of extension activities relating to computers is directed toward the development and use of small computer programs. Again, there are two versions of this philosophy. One expects the client to come to the extension office in order to use the program. This has the advantage of an extension agent at hand to assist in the operation and in the interpretation of results.

The other version expects the client to obtain the program and run it on his own machine. This has the advantage of being more private and available at his own time and place convenience. But it does require that the user have access to a compatible small computer.

Under this philosophy, program development tends to concentrate on small machine sized routines and problems. Especially under the second version, goof-proof routines and standard operating systems become of more concern.

The third is a down-loading philosophy. It is somewhat of a combination of the first two. It envisions the central campus mainframe as the place to catalog and store small computer sized programs. Clients, then, would dial the main computer, select their program, and down-load it into their own machine. Three advantages of this concept over some of the others are: 1. Phone connect time to down-load a program is much shorter than that required to run a program. 2. The client could run the program at his convenience, day or night. 3. The program and data base accessed would always be the latest version available.

Under this philosophy, programming attention would need to be directed more strongly toward maintaining up to date files and keeping programs current. It may also require more sensitivity concerning user's needs. User feedback to extension workers may not be as quick or as strong under this philosophy as it would be sitting beside the client in the county extension office.

Another difference in philosophies concerns client payments for computer services. At one extreme is the philosophy that all that is developed has been paid for by taxpayers, hence should be made available to the public at no cost.

this to various degrees. One, for example, suggests free computer assistance to those who come to an extension office and a fee arrangement for those who dial in with their own equipment. Quite a number of institutions are concerned, but have no policy on this item at this time.

III. Duplication of Programming Efforts

As one reviews the programs listed in Table 6 and programs planned in Table 7, he can see a number of signs of a duplication of efforts. Encouragers might be expected to denounce such duplication as wasteful. And indeed, if carried to an extreme, it would be. But in the early stages of development, we all need to go through a learning process in order to acquire understanding and program development skills. One of the very best ways to acquire these is by doing. Hence, from this point of view, duplication in software development is not all bad. It might be good if a certain amount of this sort of duplication continued so that we could teach each other our various approaches to problems and ways of doing things. But as some point in time, mankind might better be served through some sort of systematic communication and coordination of efforts to lessen the possibilities of excessive duplication of efforts.

IV. A Small Computer Program Library

One of the state computer philosophies mentioned elsewhere might well serve an informal role of facilitating communication and coordination among the states. That is the philosophy of maintaining programs "on line" at a central location for down-loading by individual states. To do this may require standardizing operating systems among the states. We don't know whether or not this would be as hard to manage among the states as it is among the clients of a given state. But if it could be managed, programs developed at one location could readily be made available to other locations. This could greatly facilitate the distribution of work among the states and could increase the opportunities for interchange of approaches to problems and ways of solving them.