



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Staff Paper 165

FL

GIANNINI FOUNDATION OF
AGRICULTURAL ECONOMICS
LIBRARY

SEP 17 1981

SURVEY OF AVAILABILITY OF MICRO AND MINI COMPUTER
SOFTWARE

Report of the Joint Personal Computer Task Force
by

J. Robert Strain

Staff Paper 165

October 1980

Staff papers are circulated without formal review by
the Food and Resource Economics Department. Content
is the sole responsibility of the author.

Food and Resource Economics Department
Institute of Food and Agricultural Sciences
University of Florida
Gainesville, Florida 32611

CONTENTS

	Page
ACKNOWLEDGEMENTS	1
LISTS OF TABLES	11
INTRODUCTION	1
EQUIPMENT, HARDWARE	2
Farmers With Small Computers	2
Universities With Small Computers	2
Brands in Use	3
Program Languages Used	3
Plans to Buy Small Computers	3
Programming Assistance to Producers	5
PROGRAMS OR SOFTWARE	6
Commercial Sources of Software	6
University Software	6
Additional Software Planned or Being Developed	25
Software Sources for Universities	25
MISCELLANEOUS OBSERVATIONS	35
On the BASIC Language	35
On Operating Systems	35
On Memory Requirements	36
On Philosophies Concerning Computer Systems and Extension Use	37
On Duplication of Programming Efforts	39
On a Small Computer Program Library	39

ACKNOWLEDGEMENTS

This report was made possible by many people at our Land Grant Universities who contributed the time and effort necessary to provide the data contained herein. In addition, the job of completing the report seemed lighter because of encouragement and support provided by some of the respondents. Deep appreciation is expressed to Dan Gunter who served as co-chairman of the Task Force and co-author of the preliminary draft of this Report prior to his leaving extension service in June of this year. And a special thanks is given to Susan Beverly for her much needed assistance in typing, assembling and making this report.

LIST OF TABLES

Table 1.	DISTRIBUTION OF FARMS WITH SMALL COMPUTERS BY TYPE OF FARM AS REPORTED BY LAND GRANT UNIVERSITY RESPONDANTS SUMMER, 1980	2
Table 2.	NUMBER OF SMALL COMPUTERS REPORTED BY LAND GRANT UNIVERSITY RESPONDANTS BY BRAND OR TRADE NAME, SUMMER, 1980.	4
Table 3.	SMALL COMPUTER PROGRAM LANGUAGES IN USE AS REPORTED BY LAND GRANT UNIVERSITY RESPONDANTS, SUMMER, 1980	5
Table 4.	SUBJECT MATTER CATEGORIES USED FOR CLASSIFYING THE SOFTWARE REPORTED IN THE SURVEY OF LAND GRANT UNIVERSITIES, SUMMER, 1980	7
Table 5.	PROGRAM VENDORS REPORTED BY LAND GRANT UNIVERSITY RESPONDANTS AS SUPPLYING SOFTWARE FOR AGRICULTURAL BUSINESSES, SUMMER, 1980	8
Table 6.	MINI AND MICRO COMPUTER PROGRAMS REPORTED CURRENTLY IN USE AT U.S. LAND GRANT UNIVERSITIES, SUMMER, 1980	11
Table 7.	MINI AND MICRO COMPUTER PROGRAMS PLANNED OR BEING DEVELOPED AT LAND GRANT UNIVERSITIES, SUMMER, 1980	26
Table 8.	PROGRAMS VENDORS THAT RESPONDANTS EXPECT TO USE FOR SOFTWARE, U.S. LAND GRANT UNIVERSITIES, SUMMER, 1980	33

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.

¹J. ROBERT STRAIN is Professor and Extension Economist in the Food and Resource Economics Department at the University of Florida, Gainesville, Florida. 32611; and Co-chairman of the Joint Personal Computer Task Force of the Southern Regional Extension Farm Management and Marketing Committees.

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 Mil Birds	0.8%
General or Unspecified	<u>654</u>	<u>710 Acres</u>	<u>83.3%</u>
	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
RESPONDANTS 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
Bitlings	1	1	0.4%	64K
Cromenco	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 80K	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 RESPONDANTS, 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		A. Records, analyses
	B. Records, accounting budgets, inventories		B. Buildings, machinery, equipment
	C. Financial-investment analysis		C. Rations
	D. Buildings, machinery, equipment		<u>VI. Livestock and poultry, specific</u>
	E. Government programs		A. Beef
	F. Taxes		B. Dairy
	G. Estates		C. Hogs
	Z. Other miscellaneous and unclassified		D. Horses
	<u>II. Crops, general</u>		E. Poultry
	A. Records, analyses		F. Sheep
	B. Buildings, machinery, equipment		<u>VII. Home, family</u>
	C. Soil, water, fertilizer		A. Household records, budgets, finance
	D. Weather		B. Food and Nutrition
	<u>III. Crops, specific</u>		Z. Other miscellaneous and unclassified
	A. Corn		<u>VIII. Youth and 4-H</u>
	B. Cotton		A. Calendars, events
	C. Forage		B. Publications
	D. Grain, small		C. Data files, enrollments, records
	E. Greenhouse, nursery		D. Programs for 4-H club member use
	F. Orchards, groves, other fruit		<u>IX. General and administrative</u>
	G. Potatoes		A. Calendars, events
	H. Soybeans		B. Word processing
	I. Tobacco		C. Data files, mailing lists
	J. Truck crops (incl melons, vegetables)		D. Electronic mail, messages
	<u>IV. Diseases, pests, weeds</u>		E. Statistical packages
	A. Diseases		Z. Other miscellaneous and unclassified
	B. Pests		<u>X. Community and resource development</u>
	C. Weeds		

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

SUBJECT	PROGRAM	VENDOR	STATE REPORTING
<u>1B. 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 One Tandy Center Fort Worth, TX 76102	MS
	AFARMS (50X50 linear program)	Beacon Electronics 213 Lincoln Way Ames, IA 50010	IA FL
	AGRICULTURAL PAYROLL	Rick Remyne 9550 Ravine Rd Kalamazo, 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 77201	AR
	BUSINESS RECORDS, ANALYSIS	Facts, Inc (John Roebuck) 4034 Ronnie S Box 28416 Memphis, TN 3128	FL
	BUSINESS PACKAGE	Computer Store of Corvallis 2015 NW Circle Blvd Corvallis, OR 97330	OR
	FARM BUDGETS	Wade Shaw, JR Agusta, GA 30113	SC
	FARM RECORDS	Farmware Minneapolis, MN 55406	OH
	GRAIN ELEVATOR	J. Scott Natonga, OK 73111	OK

Table 5. CONTINUED.

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

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	MN
	SMALL BUSINESS	1061 East Cliff Road Burnsville, MN 55337	
	SWINE CONTROL	Farm Info Systems	MN
		P.O. Box 302 Stillwater, MN 55082	
<u>OO. Miscellaneous references</u>			
		B&I Computer Systems	ID
		Lewiston, ID 61542	
		Northwest Computer Center	ID
		Boise, ID 83707	
		Ted Nelson	KS
		Oklahoma State University	SD
		Stillwater, OK 74074	
		Ramon Sammons	SD
		6500 Amarillo Blvd W.	
		Amarillo, TX 79106	

Table 6. IBM AND MICRO COMPUTER PROGRAMS REPORTED CURRENTLY IN USE AT U.S. LAND GRANT UNIVERSITIES, SUMMER, 1988.

399:10-10-88

PROGRAM NAME AND PURPOSE OR USE	DESIGNED FOR	PROGRAM LANGUAGE	MINIMUM MEMORY	REQUIRED PERIPHERALS	OUTPUT	DOCUMENTATION AVAILABLE	COST \$5 for sale	CONTACT	
								STAFF	STATE
I. Business management and marketing									
A. Markets, prices									
01 GRAPH: produces a graph on screen from user input	farmers, ranchers	BASIC ^{dt}	20K	Radio Shack I	screen	yes	\$10	Ted Nelson	OK
02 ESOS: calculates weekly price summary, flock financial analysis	educators, farmers	BASIC	30K	Radio Shack I	both	no	NC	Al Tinsley (Gibbs-Tinsley)	SC
03 SOYBEAN PRICING AT ELEVATOR: net price after discounts, stores results	elevators, educators	BASIC ^{dd}	10K	Radio Shack I	screen ^h	no	NC	Al Tinsley (Colp-Enrique)	SC
04 GRAIN MARKETING ALTERNATIVES: evaluates selling vs storage alternatives	farmers, elevators, educators	BASIC ^d	25K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
B. Records, accounting, budgets, inventories									
01 ADVANCES PROGRAM: for keeping track of advances to cropper	fishermen, marine agents	BASIC ^{add}	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 ² BASIC ^d	16K 32-48	Radio Shack I Radio Shack I	both both	yes yes	\$30 \$30	Ted Nelson Ted Nelson	OK OK
04 FARM ACCOUNTING:	farmers	BASIC ^{dt}	32K	Radio Shack I	both	yes	NA	Sherrill Kott	MI
05 DEPRECIATION: calculates depreciation schedules	educators, farmers	BASIC	10K	Radio Shack I	screen ^h	no	NC	Al Tinsley (Sutton)	SC
06 DEPREC: analyzes depn method alt	farmers	BASIC	70K	Cromenco Sys	IMS	IMS	IMS	Ken Schneberger	MO
07 LEDGER: for record keeping and financial analysis	farmers	BASIC ^d	32K ²	Radio Shack I	IMS	no	NC ²	Max Wolfe	MS
08 BUDGET: for farm budgeting	educators, farmers	FORTRAN	100K ²	HP 3000	printer	no	NC	David DeBartle	KY
09 ENTERPRISE BUDGETS: for equip depn, expense and revenue by crop	educators, farmers	BASIC	21K	Radio Shack I	screen ^h	no	NC	Al Tinsley (Jim Rathwell)	SC
10 BREAK-EVEN ANALYSIS:	educators for farmers	BASIC	16K	Apple II +	both	no	NC ^h	Larry Bond	UT
11 COSTS AND RETURNS: budget information for sub-state areas	farmers	BASIC ^d	32K	Radio Shack I	both	yes	NC ²	Max Wolfe	MS
12 CROP RENT: for breakeven land rental rate	educators, farmers	BASIC	8K	Radio Shack I	screen ^h	no	NC	Al Tinsley (Sutton)	SC
13 DECISION TO FISH: weighs value of libely catch vs variable costs	fishermen, marine agents	BASIC ^{add}	20K	Apple II	both	IMS	\$20	Nelson Swartz	TX
14 LONG-RUN BREAK-EVEN: for annual value of product vs fixed & variable costs	fishermen, marine agents	BASIC ^{add}	20K	Apple II	IMS	IMS	\$20	Nelson Swartz	TX
15 INVENTORY MANAGER:	farmers, educators	BASIC ^d	32K	IBM 5100	both	yes	NC ^h	Earl Fuller	MI

11

Table 6. CONTINUED.

JRS:10-18-80

PROGRAM NAME AND PURPOSE OR USE	TYPICAL USERS	PROGRAM LANGUAGE	MEMORY REQUIREMENTS	REQUIRED PROGRAMMING FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST \$K For 1000	CONTACT	
								STAFF (PERSONS)	STATE
16 ECONOMIC ORDER QUANTITY: for optimum quantity to re-order (inv mgmt)	educators, agribusiness	BASIC	7K	Radio Shack I	screen ^a	no	NC	Al Tinsley (Leafgreen)	SC
17 LP: linear program for up to a 30 X 30 matrix	research, extension	FORTRAN	40K	Radio Shack I	both	yes	NC	Mrs Wolfe (Hart-Ritcross)	MS
18 LP: linear program for up to a 25 X 30	researchers, extension	BASIC	22K	Vector Graphic	printer	no	NC	Ramon Somers	TX
19 LP: general purpose linear program	farmers, educators	BASIC ^d	35K	IBM 5100	both	yes	NC	Karl Fuller	MS
20 LP/QUEL: linear program for up to 30 X 30	farmers	FORTRAN	10K	Cromenco Sys 3	INS	yes	INS	Ken Schneebarger	MO
21 AFARM: linear program for up to 30 X 30	research, extension	BASIC ^d	40K	Apple II +	both	yes	\$125	Mendall Hoffmann	IA
C. Financial-investment analysis									
01 LOAN: interest, payment schedules, etc	farmers, ranchers	BASIC ^{de}	16K	Radio Shack I	both	yes	\$10	Ted Nelson	OK
02 LOAN: interest, payment schedules, etc	farmers	BASIC ^d	7K	Radio Shack I	both	yes	NC	Mrs Wolfe	MS
03 FARM LOAN ANALYSIS: costs, schedules	farmers	BASIC	40K ²	Apple II +	INS	INS	INS	Bob Jolly	IA
04 INTRATE: for calc interest rate paid	farmers	FORTRAN	1MS	Cromenco Sys 3	INS	yes	INS	Ken Schneebarger	MO
05 BLOAN: for specified time of repayment	farmers	BASIC	1MS	Cromenco Sys 3	INS	yes	INS	Ken Schneebarger	MO
06 ELOAN: for equal payment schedule	farmers	BASIC	1MS	Cromenco Sys 3	INS	yes	INS	Ken Schneebarger	MO
07 MARINE LOAN ANAL: costs & payment sched	fishermen, marine agen	BASIC ^{add}	1MS	Apple II	INS	INS	\$20	Nelson Schwartz	TX
08 ANNUITY, DISCOUNT, LOAN CALCULATOR:	farmers, educators	BASIC ^d	32K ²	IBM 5100	both	yes	NC	Karl Fuller	MS
09 RATE OF RETURN-NET WORTH: anal fin alt's	educators, farmers	BASIC ^d	20K ²	Big PDP 11/03	both	yes	\$100	Lynn Busse	IN
10 SOLUTION FOR INTERNAL RATE OF RETURN: for analyzing financial alt's	educators, farmers	BASIC	7K	Radio Shack I	screen ^a	no	NC	Al Tinsley (Leafgreen)	SC
11 DISCOUNTING: for present value analysis	farmers	BASIC ^d	7K	Radio Shack I	both	yes	NC	Mrs Wolfe	MS
12 ANNUAL CASH FLOW: for cash flow analysis	farmers	BASIC ^d	22K ²	Vector Graphic	printer	no	NC	Ramon Somers	TX
13 INVEST: for investment, cash flow anal	farmers	FORTRAN	1MS	Cromenco Sys 3	INS	yes	INS	Ken Schneebarger	MO
14 RATIOS: analyzing financial situations	educators, agribusiness	FORTRAN	100K ²	HP 3000	both	no	NC	Lynn Robbins	NY
15 LAND: for maximum bid price	students, farmers	BASIC	32K ²	Sol	screen	no	MS	L. Forester	OH
16 LAND: for value of an additional acre	educators for farmers	FORTRAN	84K ²	Altos ACS 8000	printer	yes	NC	Bob Salvago	CO
17 LAND: for value of an additional acre	educators for farmers	C-BASIC	64K ²	Altos ACS 8000	printer	yes	NC	Bob Salvago	CO
18 LAND PURCHASE PRICE: val of add'l acre	farmers	BASIC ^d	22K ²	Vector Graphic	printer	no	NC	Ramon Somers	TX
19 MAXIMUM BID PRICE FOR LAND CALCULATOR:	educators, farmers	BASIC ^d	20K ²	Big PDP 11/03	both	yes	\$100	Lynn Busse	IN
20 BID PRICE: for maximum land bid price	farmers	BASIC	1MS	Cromenco Sys 3	INS	yes	INS	Ken Schneebarger	MO
21 MAXIMUM LAND BID ESTIMATOR:	farmers, educators	BASIC ^d	35K ²	IBM 5100	both	yes	NC	Karl Fuller	MS
22 MAXIMUM LAND BID ESTIMATOR:	farmers, educators	BASIC ^d	32K ²	Apple II	both	yes	NC	Karl Fuller	MS

Table 6. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	PROGRAM LANGUAGE	MEMORY REQUIRED	MACHINE PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST of Lic \$000	CONTACT	
								STAFF (OWNER)	STATE
23 INSTALLMENT LAND CONTRACT: payment sched	educators, families	BASIC ^d	30K ²	Dig POP 11/03	both	yes	\$100	Lynn Basse	IB
24 ANALYSIS: for present, future value	farmers	BASIC	1NS	Cromenco Sys 2	INS	yes	1NS	Ken Schneberger	ND
B. Buildings, machinery, equipment									
01 FARM BLDG PLAN SERVICE CATALOG:	educators, farmers	BASIC ^d	30K ²	Dig POP 11/03	both	yes	\$700	Lynn Basse	IB
02 JUNS: for layout, design, cost of a food processing facility	educators, agribusiness	FORTRAN	50K	HP 3000	printer	yes	NC ²	Sten Leamer	KY
03 DEPRECIATION: provides depreciation schedules	educators, farmers	BASIC	70K	Radio Shack I	screen ²	no	NC	Al Tinsley (Sutton)	SC
04 DEPRECIATION CALCULATION	farmers, educators	BASIC ^d	32K ²	IBM 5100	both	yes	NC ²	Earl Fuller	MI
05 DEPRECIATION CALCULATION	farmers, educators	BASIC ^d	32K ²	Apple II	both	yes	NC ²	Earl Fuller	MI
06 DEPREC: for comparing degn methods	farmers	BASIC	1NS	Cromenco Sys 3	INS	INS	1NS	Ken Schneberger	ND
07 ANNUAL CAR FUEL COST:	4-H, general public	BASIC	16K	Radio Shack I	screen	yes	NC ²	George Duncan	KY
08 CAR OPERATING COST:	4-H, general public	BASIC	16K	Radio Shack I	screen	yes	NC ²	George Duncan	KY
09 AUTO: operating cost analysis	farmers	FORTRAN	1NS	Cromenco Sys 3	INS	INS	1NS	Ken Schneberger	ND
10 CAR-TRUCK COST ANALYSIS: total, /mi, /hr	farmers	BASIC	48K ²	Apple II +	INS	INS	1NS	Bob Jolly	IA
11 MOTOR VEHICLE COST ANALYSIS: for factors involved in cost per mile	fishermen, marine agents	BASIC ^{ad}	20K	Apple II	INS	INS	\$20	Nelson Swartz	TX
12 VESSEL COST ANALYSIS: for operating costs per hour	fishermen, marine agents	BASIC ^{ad}	20K	Apple II	INS	INS	\$20	Nelson Swartz	TX
13 VESSEL FUEL COST ANALYSIS: for costs per hour, per day, per trip	fishermen, marine agents	BASIC ^{ad}	20K	Apple II	INS	INS	\$20	Nelson Swartz	TX
14 MACHINECOST: computes factors per hour, per acre, for up to 24 years	farmers, ranchers	BASIC ^{dt}	16K	Radio Shack I	screen	yes	\$10	Ted Nelson	OK
15 ESTIMATING FARM MACHINERY COSTS:	farmers	BASIC ^d	48K ²	Apple II +	INS	INS	1NS	Bob Jolly	IA
16 MACHINERY COST:	farmers	BASIC	16K	Commodore Pet	both	yes	c	Marlan Hughes	NY
17 MACHINERY COST: estimates costs under varying amounts of use	educators, farmers	BASIC	9K	Radio Shack I	screen ²	no	NC	Al Tinsley (Sutton)	SC
18 BUY VS CUSTOM HIRE: owning vs hiring	educators, farmers	BASIC	33K	Radio Shack I	screen ²	no	NC	Al Tinsley	SC
19 BUY VS HIRE: for farm machinery	farmers	BASIC	32K	Radio Shack I	INS	no	\$70	Robert C. Wells	NC
20 BUY/US: for hiring vs owning machinery	farmers	BASIC	1NS	Cromenco Sys 3	INS	INS	1NS	Ken Schneberger	ND
21 EQUIPMENT TRADING: compares cost per hour for old vs new equipment	farmers	BASIC ^d	2K	Radio Shack I	both	yes	NC ²	Wes Wolfe	NE
22 TAX ADJUSTED CAR VS HIRE FOR COMBINES	farmers	BASIC	48K ²	Apple II +	INS	INS	1NS	Bob Jolly	IA
23 SPRAYER CALIBRATION:	farmers	BASIC	48K ²	Apple II +	INS	INS	1NS	Bob Jolly	IA

Table 6. CONTINUED

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	PROGRAM LANGUAGE	MEMORY REQUIRED	MACHINE PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST IF Fee	CONTACT	
								STAFF (ADDRESS)	STATE
26 ESTIMATING FAN SIZES FOR GRAIN DRYING:	engineers, specialists	FORTRAN	50K ²	IBM 370	printer	yes	NC ²	Otto Lender	KY
26 GRAIN DRYING PERFORMANCE EVALUATION:	engineers, specialists	FORTRAN	50K ²	IBM 370	printer	n	n	Otto Lender	KY
26 DRYERATION PERFORMANCE EVALUATION:	engineers, specialists	FORTRAN	50K ²	IBM 370	printer	w	n	Otto Lender	KY
27 NATURAL AIR-LOW TEMP DRYING PERFORM EVAL	engineers, specialists	FORTRAN	50K ²	IBM 370	printer	n	n	Otto Lender	KY
28 FAN PERFORMANCE ON GRAIN DRYING BINS:	engineers, specialists	FORTRAN	50K ²	IBM 370	printer	n	n	Otto Lender	KY
29 CHASE: for analyzing harvest-store alt's	engineers, specialists	FORTRAN	50K ²	IBM 320	printer	yes	NC ³	Otto Lender	KY
E. Government programs									
01 GOVERNMENT PROGRAM: to anal '80 wheat, feedgrain, cotton participation	farmers, ranchers	BASIC ^{4t}	14K	Radio Shack I	screen	yes	\$10	Ted Nelson	OK
G. Taxes									
01 FARM TAX: for federal income tax mgt	educators, farmers	BASIC	10K	Radio Shack I	screen ^x	no	NC	Al Tinsley	SC
02 INCOME TAX MGT: for fed income-soc sec	educators, farmers	BASIC ^d	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
03 TAX FORM CHECKER: for 1040 & schedule A	farmers, educators	BASIC ^d	2K	IBM 5100	both	yes	NC ²	Earl Fuller	IN
04 TAX: non-farm fed income tax calculator	educators, public	BASIC	7K	Radio Shack I	screen ^x	no	NC	Al Tinsley	SC
05 TAX: non-farm fed income tax calculator	educators, public	BASIC ^d	6K	Radio Shack I	both	yes	NC ²	Wes Wolfe (Al Tinsley)	MS
06 REAL ESTATE TAX TABLE GENERATOR: for net values, taxes and billings	educators, communities	BASIC ^d	28K ^x	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
H. Estates									
01 ESTATE TAX ANAL: for fed & SC tax alt's	educators, farmers	BASIC	13K	Radio Shack I	screen ^x	no	NC	Al Tinsley	SC
02 ESTATE PLANNING:	students, farmers	BASIC	32K ²	Sol	screen	no	MA	L. Forster	OH
I. Other									
01 BUS ORG: for tax effect by type of organ	students, farmers	BASIC	32K ²	Sol	screen	no	MA	L. Forster	OH
II. Crops, general									
A. Records, analyses									
01 CROPS: for income-exp; landlord-tenant	educators, farmers	BASIC	17K	Radio Shack I	screen ^x	no	NC	Al Tinsley	SC
02 KASHPROF: for KY corn, soy, wheat alt's	educators, farmers	FORTRAN	100K ²	HP 3000	printer	no	NC ⁵	Charles Moore	KY
03 CROP BUDGET: chain of four programs	farmers	BASIC	22K ^x	Vector Graphic	screen	no	NC	Ramon Sammons	TX
04 BEST CROP SELECTION: T159 style program	farmers	BASIC ^d	2K	IBM 5100	both	yes	NC ²	Earl Fuller	IN
05 NET RETURN EQUATING: compares crop alt's	farmers	BASIC ^d	2K	Radio Shack I	both	yes	NC ²	Wes Wolfe	MS
06 CROPEQL: compares crop alternatives	farmers	BASIC	1MS	Cromenco Sys 3	INS	yes	INS	Ken Schmeberger	MS
07 DOUBLE CROP: for corn-soy single, double	educators, farmers	BASIC ^d	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN

Table 6. CONTINUED.

JRS-16-10-80

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	PROGRAM LANGUAGE	MEMORY REQUISITE	MACHINE PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST \$1 per sale	CONTACT	
								STAFF (AUTHOR)	STATE
B. Buildings, machinery, equipment									
01 GRAIN STORAGE: cost-shrink-break-even price	farmers, ranchers	BASIC ^{OK}	16K	Radio Shack I	screen	yes	\$10	Ted Nelson	OK
02 FARM GRAIN STORAGE COSTS:	farmers, educators	BASIC ^d	32K ²	IBM 5100	both	yes	NC ²	Earl Fuller	MS
03 STORCST: for grain storage analysis	farmers	BASIC	18K	Cromenco Sys 3	INS	yes	INS	Ken Schmeberger	MO
04 FIELD EQUIP CALCULATOR: for machinery mgt	educators, farmers	BASIC ^d	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
05 TAX ADJ COMPARISON, COMBINE OWN VS HIRE	farmers	BASIC	48K ²	Apple II +	INS	INS	INS	Bob Jolly	IA
06 SPRAYER CALIBRATION: for pesticides or liquid fertilizer	farmers	BASIC	48K ²	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 ²	Wes Wolfe	MS
08 TANK CALIBRATOR: for horizontal tanks	farmers	BASIC ^d	4K	IBM 5100	both	yes	NC ²	Earl Fuller	MS
09 TANK CALIBRATOR: for horizontal tanks	farmers	BASIC ^d	4K	Apple II	both	yes	NC ²	Earl Fuller	MS
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. Wells	NC
02 IRRIGATION COSTS: break-even analysis for electric, gas or diesel pumps	farmers	BASIC ^d	22K ²	Vector Graphic	screen	no	NC	Ramon Simmons	TX
03 IRRIGATION ANALYSIS: for cost-benefit comparison of irrigating	farmers	BASIC	6K	Radio Shack	screen ^X	no	NC	Al Tinsley	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 ²	Sol	scraps	no	WA	L. Forster	OH
D. Weather									
01 WEATHER REPORTS: for accessing daily weather forecasts	educators, farmers	BASIC ^d	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
02 WEATHER INDEX CALCULATOR: for index	educators, farmers	BASIC ^d	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
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 BOGO: rice mgt info based on 30 yrs data	extension use only	BASIC ^d	4K	Radio Shack I	both	no	WA	Wes Wolfe	MS
III. Crops, specific									
A. Corn									
01 CORN DRYING: drying break-even analysis	educators, farmers	BASIC	3K	Radio Shack I	screen ^X	no	NC	Al Tinsley	SC
02 BIOMASS: economics of biomass for drying	educators, farmers	FORTRAN	60K	HP 3000	printer	yes	NC ²	Otto Leamer	KY
03 CORN DRYING-STORING: for profitability of both drying and storing	educators, farmers	BASIC	3K	Radio Shack I	screen ^X	no	NC	Al Tinsley (Spray)	SC

Table 2. CONTINUED.

RS-10-80

PROGRAM NAME AND PURPOSE OR USE	EXTENDED USERS	PROGRAM LANGUAGE	PROJECT NUMBER	INSTRUC PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST AS FOLLOWS	COST/ESTIMATED (COST/EST)	STATE
04 CROZ-DECISIONS FOR BUYING: drying costs vs price discounts	educators, farmers	BASIC	3K	Radio Shack I	screen	no	NC	Al Tinsley (Spray)	SC
05 CUBE: for analyzing harvest-storage alt	engineers, specialists	FORTRAN	68K	IBM 370	printer	yes	NC	DeLo Lowrey	KY
<u>B. Cotton</u>									
04 COTTON CONTRACT: for evaluating cotton contract alternatives	educators, farmers	BASIC	7K	Radio Shack I	screen	no	NC	Al Tinsley (Sutton-Loyd)	SC
<u>C. Forage</u>									
<u>D. Grain, small</u>									
01 GRAZOUT VS HARVEST BUDGET: for wheat	farmers	BASIC ^d	22K ²	Vector Graphic	screen	no	NC	Rando Sammons	TX
02 RISO: rice spt info based on 30 yrs data	extension use only	BASIC ^d	4K	Radio Shack I	both	no	MA	Wes Wolfe	MS
<u>E. Greenhouses, nurseries</u>									
01 GREENHOUSE PLANT COST ESTIMATION: for costs per pot or per square foot	educators, nurseryman	BASIC ^d	28K ²	Dig POP 11/03	both	yes	\$100	Lynn Basso (Dan Gunter)	IN
02 NURSERY: for estimating growing costs per plant	educators, nurseryman	BASIC	18K	Radio Shack I	both	no	NC	Jim Rathwell (Dan Gunter)	SC
03 GREENHOUSE COSTS ANAL: for analysis of a nursery business	nurseryman	BASIC ^d	48K	Apple II +	printer	yes	NC	J. Robert Strain (Dan Gunter)	FL
04 PLANT COST PRT: for estimating cost per plant, printer version	nurseryman	BASIC ^d	43K ²	Apple II +	printer	yes	NC	J. Robert Strain (Dan Gunter)	FL
05 PLANT COST CRT: for estimating cost per plant, screen version	nurseryman	BASIC ^d	42K ²	Apple II +	screen	yes	NC	J. Robert Strain (Dan Gunter)	FL
06 RISK: decision tree risk analysis for choosing crops to grow	nurseryman	BASIC ^d	48K ²	Apple II +	printer	yes	NC	J. Robert Strain (Dan Gunter)	FL
07 RETAIL NURSERY ANALYSIS: business anal	retail nurseryman	BASIC ^d	46K	Apple II +	printer	yes	NC	J. Robert Strain (Dan Gunter)	FL
<u>F. Orchards, groves, other fruit</u>									
01 PEACH ORCHARD SOURCE MANAGEMENT SYSTEM: for multiple orchard data	packing houses, educators, orchardmen	BASIC	33K	Radio Shack I	screen	no	NC	Al Tinsley (Brittain-Entriken)	SC
02 ORCHARD ANALYSIS: for discounted cash flow of funds analysis	educators, orchardmen	BASIC	8K	Radio Shack I	screen	no	NC	Al Tinsley (Rathwell)	SC
03 CITRUS TREE RESEYTING:	citrus grove owners	BASIC ^d	48K ²	Apple II +	both	yes	NC	John Jackson	FL
04 CITRUS BUDGET GENERATOR:	citrus grove owners	BASIC ^d	48K ²	Apple II +	both	yes	NC	John Jackson	FL
05 SOIL MOISTURE: for scheduling irrigation	citrus grove owners	BASIC ^d	48K ²	Apple II +	both	yes	NC	John Jackson (Francis Ferguson)	FL

Table 6. CONTINUED.

202:10-10-00

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	PROGRAM LANGUAGE	MEMORY REQUIRED	MACHINE PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST \$/COPY	CONTACT	
								STAFF (AUTHOR)	STATE
G. Peaches									
01 BLITECAST: to forecast blight potential, fungicide spray schedules.	educators, farmers	BASIC ^d	28K ²	Dig PDP 11/03	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 SPORE: 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 Sollowitz	PA
09 SPUDCAST: for blight and green peach aphid management	students, farmers	BASIC	32K ²	Radio Shack I	both	no	NC	Zane Sollowitz	PA
H. Soybeans									
01 SOYBEAN VARIETY SELECTION: to match variety to conditions	educators, farmers	BASIC	32K	Radio Shack I	screen ^x	no	NC	Al Yinsley (Palmer-Miles)	SC
02 SOYBEAN SEEDING RATE: for obtaining recommended plant populations	educators, farmers	BASIC ^d	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
03 SOYBEAN INSECTS: spraying recommendations from scouting reports	farmers	BASIC ^d	16K	Radio Shack I	both	yes	NC ^r	Mrs Wolfe	MS
04 SOYBEAN PRICING AT ELEVATOR: net price after discounts: stores, retrieves	elevator, educators, farmers	BASIC	11K	Radio Shack I	screen ^x	no	NC	Al Yinsley (Colp-Enrihon)	NC
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 Yinsley (Yinsley-Ray)	SC
02 TIMBER EVALUATION: for value by product from cruise data	timbermen	BASIC ^d	12K	Radio Shack I	both	yes	NC ^r	Mrs 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 PDP 11/03	both	yes	\$100	Lynn Busse	IN

Table 6. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTERESTED PARTS	PROGRAM NUMBER	REPORT NUMBER	MOBILE PROGRAMS	OUTPUT	BOOKS-TATIM AVAILABLE	COST	CONTACT
02 ALITECAST: to forecast blight potential, fungicide spray scheduler	educators, farmers	BASIC	28K	Big POP 11/83	both	yes	\$100	Lynn Bussio IN
03 BLITECAST: to forecast blight potential, fungicide spray scheduler	students, farmers	BASIC	18K	Radio Shack I	both	no		O. E. Mackenzie PA
04 EPACAST: green peach aphid forecast system	students, farmers	BASIC	38K	Radio Shack I	both	no		Zane Sankiewicz PA
05 SPACAST: for blight and green peach aphid management	students, farmers	BASIC	38K	Radio Shack I	both	no		Zane Sankiewicz PA
06 FUMSI: economic feasibility of application determined from field data	farmers	BASIC	28K	Radio Shack I	both	yes		Mrs Wolfe MS
01 CNOP PEST NET: to access diagnostic info	educators, farmers	BASIC	28K	Big POP 11/03	both	yes	\$100	Lynn Bussio IN
02 SOUTHEAN INSECTS: spraying recommendations	farmers	BASIC	18K	Radio Shack I	both	yes		Mrs Wolfe MS
03 EPACAST: green peach aphid forecast system	students, farmers	BASIC	32K	Radio Shack I	both	no		Zane Sankiewicz PA
A. Records, analysts								
01 LSTX MARKETING STRATEGIES: to analyze feeding alternatives	educators, farmers	BASIC	17K	Radio Shack I	screen	no		AT Tinsley SC (Section)
02 CODEET: for value of buying another cow	ext agents for farmers	PORTMAN	64K	Alicia ACS 8000	printer	yes		Rob Seilage CO
B. Buildings, machinery, equipment								
01 NATION POPULATION: 1189 style Pearson square analysis	farmers, educators	BASIC	6K	IBM 5100	both	yes		Earl Feltner MS
02 NATION BALANCING: heuristic approaches	farmers, educators	BASIC	38K	IBM 5100	both	yes		Earl Feltner MS
A. Short								
01 COM BUDGET: includes probability analysis	farmers	BASIC	16K	Comshare Pct	both	yes		Norton Hughes NY
02 COM-CALF BUDGET:	farmers	BASIC	22K	Vector Graphic	printer	no		Kamon Sammons TX
03 STOCKER CATTLE BUDGET:	farmers	BASIC	22K	Vector Graphic	printer	no		Kamon Sammons TX
04 BEEFATION: evaluates contents, indicates additional requirements	farmers	BASIC	16K	Radio Shack I	both	yes	\$10	Ted Nelson OK

Table 6. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	LICENSED USERS	PROGRAM LANGUAGE	MEMORY REQUIRED	HARDWARE PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST BY For sale	CONTACT	
								STAFF (OWNER)	STATE
05 RATIONS FOR BEEF CATTLE: to grow, finish	educators, farmers	BASIC ^d	20K ²	Dig POP 11/83	both	yes	\$100	Lynn Busse	IN
06 FEEDER CATTLE BUDGET:	farmers	BASIC	22K ²	Vector Graphic	printer	no	NC	Robert Seavege	VI
07 LITE MARKETING STRATEGIES: to analyze feeding alternatives	educators, farmers	BASIC	12K	Radio Shack I	screen ²	no	NC	Al Timley (Sutton)	SC
08 FEEDER CATTLE BREAKOVER: for analyzing feeding alternatives	educators, farmers	BASIC ^d	22K ²	Dig POP 11/83	both	yes	\$100	Lynn Busse	ID
09 ECONOMICS OF CATTLE FEEDING:	farmers	BASIC	48K ²	Apple II e	IMS	IMS	IMS	Bob Jolly	IA
10 FEAR: feedlot enterprise analysis report	ext agents for farmers	FORTRAN	64K ²	Altos ACS 8000	printer	yes	NC	Rob Seavege	CO
11 FEEDLOT CATTLE: T159 style gain-EME calc	farmers, educators	BASIC ^d	4K	IBM 5100	both	yes	NC ²	Earl Fuller	MI
12 BABYBEEF: animal growth evaluator	res, ext, farmers	FORTRAN	80K	HP 3000	both	no	NC ²	Otto Loomer	KY
13 BEEF CATTLE GROW DIET:	IMS	BASIC ^{ext}	48K ²	Radio Shack I	both	IMS	IMS	Don Fox	NY
14 BEEF GAIN SIMULATOR:	IMS	BASIC ^{ext}	48K ²	Radio Shack I	both	IMS	IMS	Don Fox	NY
15 FEEDLOT: for up to 17 pens	farmers	BASIC ^d	32K	Radio Shack I	both	yes	\$30	Ted Nelson	OK
16 FEEDLOT: for up to 120 pens	farmers	BASIC ^d	48K	Radio Shack I	both	yes	\$30	Ted Nelson	OK
17 STEER BUDGET:	farmers	BASIC	32K ²	Comodore Pet	both	no	"	Art Barnaby	EA
18 BEEF PROJECTION: to project daily gain, costs and returns	farmers	BASIC ^{ext}	16K	Radio Shack I	both	yes	\$10	Ted Nelson	OK
19 FCMLF: 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	dairyman	BASIC ^{ext}	16K	Radio Shack I	screen	yes	\$10	Ted Nelson	OK
02 DAIRY: ration formulation, lactating cows	dairyman	FORTRAN	100K ²	HP 3000	both	no	NC	Perry Clark	NY
03 DAIRY CATTLE RATION ANALYSIS: for large	dairyman	BASIC	16K	Radio Shack I	both	IMS	IMS	Charles Sniffin	NY
04 DAIRY CATTLE RATION ANALYSIS: dairy herds	dairyman	BASIC	48K	Radio Shack I	both	IMS	IMS	Charles Sniffin	NY
05 RABBIT BALANCER: for balancing rations	dairyman	BASIC	32K	Apple II +	both	no	NC	Terry Howard	MI
06 LEAST COST DAIRY RATION:	dairyman	BASIC ^{ext}	12K	Radio Shack II	IMS	IMS	IMS	Tom McGluckie	MI
07 DAIRY FORAGE: ration needs from cow data	dairyman	BASIC ^d	10K	Radio Shack I	both	no	NC	Mes Wolfe	MS
08 SILO INVENTORY: scheduling model	dairyman	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 Seavege	CO
11 DEAR W/AVERAGES: also lists state average	ext agents for farmers	FORTRAN	64K ²	Altos ACS 8000	printer	yes	NC	Rob Seavege	CO
12 DEAR W/AVERAGES: also lists state average	ext agents for farmers	C-BASIC	64K ²	Altos ACS 8000	printer	yes	NC	Rob Seavege	CO
13 DAIRY HEALTH MANAGEMENT: for managing large herd health records	dairyman	BASIC	64K ²	Dig Equip Corp	both	IMS	IMS	Jeff Davidson	NY

Table 6. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTERVIEW USERS	PROGRAM LANGUAGE	MEMORY REQUIRE	MACHINE PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST \$1 fee	CONTACT	
								STATE	ADDRESS
14 DAIRY CATTLE REPRODUCTION & MGT: for mgt of large herd reproduction records	dairyman	BASIC	48K	Radio Shack I	INS	INS	INS	Jeff Davidson	NY
15 YOUTH DAIRY PROJECT: quiz	4-6 club, farm dept	BASIC	32K	Apple II +	both	no	NC	D. Kelsor	WI
<u>C. Hogs</u>									
01 RATION BALANCER: linear program for hogs	farmers, educators	BASIC ^d	28K ²	IBM 5100	both	yes	NC ²	Earl Keller	MI
02 SOW PRODUCTIVITY INDEX: calculates index, allows accumulation, sow & group	educators, farmers	BASIC ^{hd}	48K ²	Radio Shack I	screen ²	no	NC	Al Tinsley (Brown-Stewart)	SC
03 ECONOMICS OF FEEDER PIG PRODUCTION:	farmers	BASIC	48K ²	Apple II +	INS	INS	INS	Bob Jolly	IA
04 FEEDER PIG FINISHING:	farmers	BASIC	48K ²	Apple II +	INS	INS	INS	Bob Jolly	IA
06 ECONOMICS OF PARRON TO FINISH:	farmers	BASIC	48K ²	Apple II +	INS	INS	INS	Bob Jolly	IA
06 LSTK MARKETING STRATEGIES:	farmers	BASIC	48K ²	Apple II +	INS	INS	INS	Bob Jolly	IA
07 PORK CARCASS PERFORMANCE EVALUATION:	educators, judges	BASIC ^d	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
08 FEEDER PIG SALE: sales records, checks	sale barn operators	BASIC ^d	32K ²	Radio Shack I	INS	no	NC ²	Mes Wolfe	MS
09 SWINE HEALTH MANAGEMENT:	ext agents, farmers	BASIC	32K	MP 85	both	INS	INS	Jeff Davidson	NY
<u>D. Horses</u>									
01 FEEDING PROGRAM FOR HORSES: nutrition mgt	educators, horsemen	BASIC ^d	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
<u>E. Poultry</u>									
01 EGGS: weekly price summary, flock financial analysis	educators, poultryman	BASIC	16K	Radio Shack I	both	no	NC	Al Tinsley (Welcher-Tinsley)	SC
02 BROILER: cost analysis & projections	poultryman	BASIC ^d	32K ²	Radio Shack I	both	yes	NC ²	Mes Wolfe	MS
03 BROILER: for profitability analysis	educators, poultryman	BASIC	11K	Radio Shack I	screen ²	no	NC	Al Tinsley (Smith-Welcher)	SC
<u>F. Sheep</u>									
01 FEEDER LAMB BUDGET:	farmers	BASIC	22K ²	Vector Graphic	printer	no	NC	Ramon Sammons	TX
<u>VII. Home, Family</u>									
<u>A. Household records, budgets, finance</u>									
01 TEEN: budget aid for youth and young marrieds	educators, youth	BASIC	11K	Radio Shack I	screen ²	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 ²	no	NC	Al Tinsley (Tinsley-Carmack)	SC
03 SPEEDY SPEND: family budget aid	families	BASIC ^d	11K	Radio Shack I	both	yes	NC ²	Mes Wolfe	MS
04 BUDGET: family budget aid	educators, families	BASIC ^d	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 REQUIRED	MACHINE PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST of fee per page	CONTACT	
								STAFF (NT/ST)	STATE
05 BUDGET: family budget aid	spec. agents, families	BASIC	32K	Radio Shack I	both	no	\$10	Thelma Minson	NC
06 NONEBUDG: annual budget planner	educators, families	FORTRAN	100K ^d	HP 3000	both	no	NC	Karen Behm	KY
07 SPEND: compares actual exp with a norm	educators, families	FORTRAN	100K ^d	HP 3000	both	no	NC	Karen Behm	KY
08 FOOD COSTS: designs a food spending plan	educators, families	BASIC ^d	28K ^z	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
09 CHILDREN'S CLOTHING: compares exp w/norm	educators, families	BASIC ^d	28K ^z	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
10 RETIRED COUPLE'S BUDGET: a budget aid	educators, families	BASIC ^d	28K ^z	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 ^d	28K ^z	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
02 PRESERVE: to access food preserving info	educators families	BASIC ^d	28K ^z	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 WMBEEF: evaluates bulk beef buying alt's	educators, families	FORTRAN	100K ^z	HP 3000	both	no	NC	Joe Davis	KY
06 DIETARIAL: analyze diet of user	educators, families	FORTRAN	100K ^z	HP 3000	both	no	NC	Fudge Maruyama	KY
07 NCALL: analyzes diet of user	educator, families	FORTRAN	100K ^z	HP 3000	both	no	NC	Fudge Maruyama	KY
C. Other									
01 HOME VEG GARDENING PLAN: layout, schedule	educators, families	BASIC ^d	28K ^z	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
02 CLEAN: stain removal aid	educators, families	BASIC ^d	28K ^z	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN
03 STAIN: to access info on removing stains	educators, families	FORTRAN	100K ^z	HP 3000	printer	no	NC	Jo Ann Hilliker	KY
04 ROOM AIR CONDITIONER COST: analyzes cost of operation	educators, families	BASIC	12K	Radio Shack I	screen ^x	no	NC	Al Tinsley (Lambert)	SC
05 HOME INSULATION: analyzes needs, savings	educators, families	BASIC ^d	28K ^z	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. Wells	NC
07 CHEAP: home energy (insulation) analysis	educators, families	FORTRAN	100K ^z	HP 3000	printer	yes	NC	Robert Fehr	KY
08 BUY VS RENT HOME:	county agents	BASIC	32K	Comodore Pet	both	no	"	Rrt Bernaby	KA
09 HOUSING:	spec. agents, families	BASIC	32K	Radio Shack I	both	no	\$10	Thelma Minson	NC
10 WINDOW CONDENSATION TEMPERATURE:	4-H, general public	BASIC	16K	Radio Shack I	screen	yes	NC ^d	George Duncan	KY
11 HMA: health hazard appraisal	educators, families	FORTRAN	100K ^z	HP 3000	both	yes	NC	Fudge Maruyama	KY

Table 6. CONTINUED.

JRS-13-18-80

PROGRAM NAME AND PURPOSE OR USE	INTENDED USER	PROGRAM LANGUAGE	MEMORY REQUIRED	MACHINE PROGRAMMED FOR	OUTPUT	DOCUMENTATION AVAILABLE	COST \$/COPY	CONTACT STAFF (AUTHOR)	STATE
C. Data files, enrollments, records									
01 STATE ENROLLMENT SYSTEM:	ext agents, leaders	BASIC ⁸	25K ²	Dig PDF 11/03	both	yes	\$700	Lynn Basse	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 ⁵	George Duncan	KY
02 WINDOW CONDENSATION TEMPERATURE:	4-H, general public	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
03 TELL ME ABOUT THE PARTS OF A CAR:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
04 TELL ME ABOUT KENTUCKY'S ENERGY:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
05 TELL ME ABOUT YOUR COUNTY:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
06 BICYCLES AND RIDING:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
07 FIND THE VEGETABLE:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
08 FIND THE GOOD SNACKS:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
09 MISSING LETTERS AND FOOD GROUPS:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
10 FIND THE FOOD ITEMS:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
11 CAR OPERATING COSTS:	4-H, general public	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
12 TELL ME ABOUT YOUR BIKE:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
13 TELL ME ABOUT HAND TOOLS:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
14 OUR ENERGY PROBLEM:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
15 CAMP FIRST AID EMERGENCIES:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
16 OUR RESOURCES:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
17 ELECTRICAL ENERGY PUZZLES:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
18 ARE YOU A CLEAN CARPENTER:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
19 ENERGY CROSSWORD PUZZLE:	4-H	BASIC	16K	Radio Shack I	screen	yes	NC ⁵	George Duncan	KY
20 YOUTH DAIRY PROJECT: quiz	4-H, youth	BASIC	32K	Apple II +	both	no	NC	B. Kaiser	MI
IX. General and administrative programs									
A. Calendars									
B. Word processing									
C. Data files, data handling									
01 ADDRESS LABELS:	university personnel	IMS	64K ²	Homemade	both	no	NA	Robert C. Wells	NC
02 ADDRESS LABELS:	farmers, educators	BASIC ⁶	6K	IBM 5100	both	yes	NC ⁵	Earl Fuller	MI
03 RECORD SORT:	farmers, ranchers	BASIC ^{6t}	10K	Radio Shack I	both	yes	\$70	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 (AUTHOR)		STATE
04 SORTING AN ARRAY:	farmers, educators	BASIC ^d	4K	IBM 5100	both	yes	NC ^b	Earl Fuller	MI	
05 PRINTJOB: for IBM 370 output files	univ adm, ext agents	FORTRAN	58K ²	IBM 370	printer	yes	NC ^a	John Byars	KY	
06 GENERAL PAYROLL SYSTEM:	farmers, educators	BASIC ^d	32K ²	IBM 5100	both	yes	NC ^b	Earl Fuller	MI	
D. Electronic mail, messages										
01 MAIL PROGRAM: to access network messages	univ adm, ext agents	BASIC ^d	38K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN	
02 TELEGRAM: for message transfer	univ adm, ext agents	FORTRAN	100K ²	HP 3000	printer	yes	NC ^a	John Cowan	KY	
E. Statistical packages										
01 COMBI: computes permutations-combinations	farmers	BASIC	1MS	Cromenco Sys 3	INS	INS	INS	Ken Schneeberger	MO	
02 CHISQR: for chi-square distribution curve	farmers	BASIC	1MS	Cromenco Sys 3	INS	INS	INS	Ken Schneeberger	MO	
03 SCIMP: for observation sample analysis	farmers	BASIC	1MS	Cromenco Sys 3	INS	INS	INS	Ken Schneeberger	MO	
04 WAVE: for weighted averages (to 10 var)	farmers	BASIC	1MS	Cromenco Sys 3	INS	INS	INS	Ken Schneeberger	MO	
05 CONTOUR: plots 3 dimensional resp surf	farmers	BASIC	1MS	Cromenco Sys 3	INS	INS	INS	Ken Schneeberger	MO	
06 ASSIGN: special linear programming appl	farmers	BASIC	1MS	Cromenco Sys 3	INS	INS	INS	Ken Schneeberger	MO	
2. Other										
01 SCORING JUDGING CARDS: for contests, calculates scores	extension agents	BASIC	4K	Radio Shack 1	screen ^x	no	NC	Al Tinsley (Lambert)	SC	
02 JUDGING: tabulates winners (4-K contests)	extension agents	BASIC ^d	32K ²	Radio Shack 1	both	yes	NC ^r	Wes Wolfe	MS	
03 TABLE GENERATOR: for financial projection	farmers, educators	BASIC ^d	32K ²	IBM 5100	both	yes	NC ^r	Earl Fuller	MI	
04 GRAPH: data displayed as a bar graph	farmers	BASIC ^d	32K ²	Radio Shack 1	screen	no	NC ^r	Wes Wolfe	MS	
05 COPY: loads programs onto diskettes	univ adm, ext agents	BASIC ^d	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN	
06 MERITISS DOWNLOADERS:	farmers, educators	BASIC ^d	32K ²	IBM 5100	both	yes	NC ^a	Earl Fuller	MI	
07 NECC TEST SCRIPTS:	farmers, educators	BASIC ^d	4K	IBM 5100	both	yes	NC ^a	Earl Fuller	MI	
F. Community and resource development										
G. Data files, data handling										
01 DISK: KY county social & economic data files	univ adm, ext agents	FORTRAN	100K ²	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 ²	HP 3000	printer	no	NC	Dave Debertin	KY	
03 REAL ESTATE TAX TABLE: taxes, billings	educators, tax offices	BASIC ^d	28K ²	Dig PDP 11/03	both	yes	\$100	Lynn Busse	IN	
04 BOX: for rural county solid waste budget	educators, counties	BASIC ^d	32K ²	Radio Shack 1	INS	no	NC ^r	Wes Wolfe	MS	

Footnotes on the next page.

Table 8. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	CREATING SOURCE	PROGRAM HISTORY LANGUAGE VERSION	PACKAGES FACILITIES FOR	OUTPUT	PACKAGES- COST TATION .12 for AVAILABLE only	CONTACT STAFF (ADDRESS)	STATE
---------------------------------	-----------------	-------------------------------------	-------------------------------	--------	--	-------------------------------	-------

FOOTNOTES

- IMS 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 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	INTERESTED USERS	MACHINE PLANNED FOR	DEVELOPMENT STATUS	CONTACT	
				STAFF	STATE
<u>I. Business management and marketing</u>					
<u>A. Prices and markets</u>					
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. Megenhoff	LA
03 MARKET ANALYSIS: plot markets from data	marketing agents, farmers	Cosmodore Pet	INS	Art Barnaby	KA
04 MARKET MANAGEMENT:	farmers	CP/M operating sys	INS	Earl Fuller	HN
05 BUSINESS MANAGEMENT GAMES:	farmers	Apple II +	INS	Bob Jolly	IA
<u>B. Records, accounting, budgets, inventories</u>					
01 FARM RECORDS: farmer accounting system	ext agents, farmers	Radio Shack I & II	ID	Jim Loefft	KY
02 FARM RECORD SYSTEM: for ext demonstration	ext farm mgt agents	Radio Shack II	INS	Ed Brown	GA
03 RECORDS AND INVENTORIES: farm record sys	farmers	Radio Shack II	INS	Arlyn Staroba	ND
04 FARM RECORD ANALYSIS: farm record system	ext agents for farmers	Apple II	INS	Larry Bond	UT
05 ACCOUNTING SYSTEM:	farmers	Cosmodore Pet	INS	Marian 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	FT	Ramon Semmons	TX
09 ACCOUNTING RECORDS:	farmers	Radio Shack II	ID	Tom McBuckie	NM
10 LEDGER: accounting, cash flow, partial budgets, income taxes	farmers	Radio Shack I	FT	Wes Wolfe	MS
11 CROP & LSMT 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 mgt agents	Radio Shack II	INS	Ed Brown	GA
14 BREAK-EVEN ANALYSIS: enterprise planning	ext agents, farmers	Radio Shack I	INS	K. Megenhoff	LA
15 EXPANDED BUDGET GENERATOR: facility costs, productivity anal, debt/equity pos	farmers	Apple II +	INS	Bob Jolly	IA
16 SWITCHPOINTS:	farmers	Radio Shack II	INS	K. Megenhoff	LA
17 LP MODEL: for least cost rations	ext agents, feeders	Apple II	INS	Larry Bond	UT
<u>C. Financial-investment analysis</u>					
01 FINN: 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 DISCOUNTED CASH FLOW: for cash flow anal	farmers	Vector Graphics	INS	Ramon Sammons	TX
06 FINANCIAL PROGRAM: for financial analysis	farmers	Vector Graphics	INS	Ramon Sammons	TX
06 FINANCIAL/RISK ANALYSIS:	farmers	Apple II +	INS	Bob Jelly	IA
06 LAND BUY: calculates value of land	agents for farmers	Apple II	INS	Larry Bond	UT
07 LEASE VS BUY:	INS	INS	INS	Gayle Willett	WA
08 LAND VALUE:	INS	INS	INS	Gayle Willett	WA
09 INVESTMENT ANALYSIS:	INS	INS	INS	Gayle Willett	WA
10 YEAR END:	ext agents, farmers	Comodore Pet	INS	Marion Hughes	WY
11 GREENHOUSE INVESTMENT ANALYSIS:	nurserymen	Radio Shack I	IO	Wes Wolfe	MS
<u>D. Buildings, machinery and equipment</u>					
01 MACHINERY MANAGEMENT & SELECTION:	ext agents, farmers	RADIO SHACK I	INS	Gary Smith	MO
02 MACHINERY COST:	INS	INS	INS	Gayle Willett	WA
03 VEHICLE COST ANALYSIS: to compare cost alt	farmers	Vector Graphics	INS	Ramon Sammons	TX
04 SIZING PUMP CAPACITIES: for milk systems	ext agents, agribusiness	Radio Shack I & II	INS	Richard Adams	PA
05 MACHINERY ANALYSIS:	farmers	Vector Graphics	INS	Ramon Sammons	TX
06 MACHINERY MANAGEMENT PROGRAMS:	INS	Radio Shack I & II	INS	George Duncan	KY
<u>G. Tax analysis</u>					
01 FARM INCOME TAX MGT: for ext demonstration	ext farm mgt agents	Radio Shack II	INS	Ed Brown	GA
<u>H. Estate planning</u>					
01 ESTATE PLANNING:	ext agents, farmers	Radio Shack I & II	INS	Ted Nelson	OK
02 ESTATE PLANNING: for ext demonstration	ext farm mgt agents	Radio Shack II	INS	Ed Brown	GA
<u>I. Crops, general</u>					
<u>A. Records and analysis</u>					
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	INS	Lynn Busse	IN
03 CROP BUDGET SYSTEM:	farmers	Radio Shack II	IO	Tom McGuckin	NM
04 FLEXCROP: cropping management model	ext agents, farmers	Superbrief	INS	Brad Garnick	MT
05 GRAIN PROFIT: grain profit projections	ext agents for farmers	Apple II	INS	Larry Bond	UT
06 FIELD INVENTORY:	ext agents, farmers	Radio Shack I & II	INS	Jim Loefft	KY

PROGRAM NAME AND PURPOSE OR USE	INTERED USERS	MACHINE PLANNED FOR	DEVELOPMENT STAGE	CONTACT
B. Buildings, machinery and equipment: 01 GAINING SYSTEM PERFORMANCE: 02 FARM MACH PERFORMANCE: plowing-tillage etc	ext agents, farmers	Dig PDP 11/03	INS	Lynn Bussio IN
C. Soils, water, fertilizer 01 FIELD CROP FEED: for fert recommendations 02 ECONOMICS OF DRAINAGE: affect on yield-pwt 03 IRRIGATION SCHEDULING: for time & amount 04 SOIL MAP DATA BASE: to store survey, plots 05 SOIL MAP & INTERPRETATION: access soil data	ext agents, farmers ext agents, farmers ext agents, farmers ext agents, farmers ext agents, farmers	Dig PDP 11/03 Dig PDP 11/03 Dig PDP 11/03 Dig PDP 11/03 Dig PDP 11/03	INS INS INS INS INS	Lynn Bussio IN Lynn Bussio IN Lynn Bussio IN Lynn Bussio IN Lynn Bussio IN
D. Weather 01 FROST PROTECTION IN ORCHARDS: monitor temp 02 FROST PROTECTION IN ORCHARDS: monitor temp	growers growers	Radio Shack II RDS 310	INS INS	C. T. Norton PA C. T. Norton PA
III. Crops, specific A. Corn 01 CORN GROWTH SIMULATION: to compare variety for plant date, harvest & drying cost 02 DOWN GROWTH: for yield predictions	ext agents ext agents	Dig PDP 11/03 Radio Shack I	INS INS	Lynn Bussio IN J. N. McManis PA
C. Forage 01 HAY LOCATOR: hay directory for Indiana 02 ALFALFA INSECT KEY: to identify insects	ext agents, farmers ext agents, farmers	Dig PDP 11/03 Dig PDP 11/03	INS INS	Lynn Bussio IN Lynn Bussio IN
B. Grain, small 01 SMALL GRAIN DIAGNOSTIC GUIDE: to identify insects, diseases, nutritional prob 02 ORCHARDS, grapes, other fruit	ext agents, farmers growers	Dig PDP 11/03 Radio Shack II RDS 310	INS INS INS	Lynn Bussio IN C. T. Norton PA C. T. Norton PA
B. Pests/Insects 01 POTATO BREEDING RECORDS: for research 02 MASCADINE PRODUCTION: 03 MASCADINE PRODUCTION:	growers growers growers	INS Radio Shack I RDS 310	INS INS INS	O. A. McManis Wes Wolfe PA C. T. Norton PA

Table 7. CONTINUED.

Table 7. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	EXTENDED USERS	MACHINE PLANNED FOR	DEVELOPMENT STATUS	CONTACT	
				STATE	STATE
H. Soybeans					
01 SOYBEAN VARIETIES: to access data on 200 varieties incl agronomic, disease info	ext agents, farmers	Dig POP 11/80	INS	Lynn Busse	IN
02 SOYBEAN INSECT KEY: for identifying insects	ext agents, farmers	Dig POP 11/83	INS	Lynn Busse	IN
I. Tobacco					
J. Truck CROPS					
01 VEGETABLES: planting & care recommendations	ext agents, families	Dig POP 11/80	INS	Lynn Busse	IN
IV. Diseases, pests and weeds					
A. Diseases					
01 BLITECAST: IPM forecasting	ext agents, farmers	---	INS	Arline Braunstrom	MI
02 BLITECAST: (revision of current program)	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
03 BLITECAST SLAMM: spray recommendations	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
B. Fungi					
01 PESTICIDE INFO: to access pesticide info	ext agents, farmers	Dig POP 11/00	ID	Lynn Busse	IN
02 ALFALFA INSECT KEY: to identify insects	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
03 SMALL GRAIN DIAGNOSTIC GUIDE: to identify insects, diseases, nutritional prob	ext agents, farmers	Dig POP 11/00	INS	Lynn Busse	IN
04 SOYBEAN INSECT KEY: for identifying insects	ext agents, farmers	Dig POP 11/00	INS	Lynn Busse	IN
05 INSECT PROFILE: redesign to disease format	ext agents, farmers	Dig POP 11/00	INS	Lynn Busse	IN
C. Needs					
01 NEED KEY: control recommendations, incl sprayer calibration, herbicide effect	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
V. Livestock, goats					
A. Records and analysis					
01 HEAD PERFORMANCE: business analysis	farmers	Radio Shack I	INS	Harlan Hughes	MT
02 LIVESTOCK RECORD KEEPING:	farmers	Radio Shack I	INS	Anna Davis	ID
03 LIVESTOCK CONTROL SYSTEM:	farmers, educators	CP/M operating sys	INS	Earl Fuller	OH
B. Building, machinery and equipment					
01 LSTK BLDG VENT & INSULATION: for heat, insulation, size of fan needed	ext agents, farmers	Dig POP 11/00	INS	Lynn Busse	OK
02 SIZING PUMP CAPACITIES: for milk systems	ext agents, agribusiness	Radio Shack I	INS	Richard Adams	PA

Table 7. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTENDED BENEF	MACHINE PLANNED FOR	DEVELOPMENT STATUS	CONTACT	STATE
C. Poultry 01 LEAST COST RATION: for swine, beef, dairy 02 FEED SHEET: for feed mix formulation 03 BEEF RATION FORMULATION: for formulating rations from available ingredients 02 BEEF RATION ANALYZER: compares existing ration for excesses or deficiencies 01 BEEF CARCASS PERFORMANCE: analyze data for herds, compares 02 BEEF RATION ANALYZER: compares existing ration for excesses or deficiencies 03 BEEF RATION FORMULATION: for formulating rations from available ingredients 04 RATION FORMULATION:	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
A. Beef 01 BEEF RATION ANALYZER: to compare nutrients offered with needs (dry matter basis) 02 DAIRY RATION FORMULATOR: to calc feed re-quirements from production, body wt 03 DAIRY RATION BALANCER: for dairy feeding 04 RATION PROGRAM-HEIFERS 05 RATION PROGRAM-DRY COWS 06 DAIRY FARM ANALYSIS 07 SILAGE SIZING 08 EXPANSION OF DAIRY FARM ANALYSIS: 09 SIZING PUMP CAPACITIES: for milking systems	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
5. Hogs 01 SOW RECORD 02 FEEDER PIG BREAKDOWN: breakdown analysis 03 FEEDER-HOG BREAKDOWN: for feeder mix and 04 SWINE RATION FORMULATOR: for balancing rations from available ingredients 05 LEAST COST RATION: from available ingredi	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN
	ext agents, farmers	Dig POP 11/03	INS	Lynn Busse	IN

03

Table 7. CONTINUED.

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

Table 7. CONTINUED.

PROGRAM NAME AND PURPOSE OR USE	INTENDED USERS	MACHINE PLANNED FOR	DEVELOPMENT STATUS	CONTACT	
				STAFF	STATE
<u>B. Word processing</u>					
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	Arlyn Staroba	ND
<u>C. Data files, mailing lists</u>					
01 HOME ECONOMICS ENROLLMENT: for home ec prog	ext personnel	Dig PDP 11/03	INS	Lynn Busse	IN
02 DATA BASES:	adm, field staff	INS	INS	Arlyn Staroba	ND
03 DATA BASE: for information retrieval	ext agents	Cromenco	INS	Arlie Brannstrom	MI
04 DATA BASE OPTIMIZER: to facilitate reports	adm, field staff	Dig PDP 11/03	INS	Lynn Busse	IN
<u>I. Community and resource development</u>					
<u>Z. Miscellaneous and unclassified</u>					
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
<u>III. Other</u>					
01 C.N.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 HETEROSIS: 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 RESPONDANTS EXPECT TO USE FOR SOFTWARE, U.S. LAND GRANT UNIVERSITIES, SUMMER, 1980

SUBJECT CODE	PROGRAM NAME	VENDOR	STATE REPROTING
<u>IB 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 (Cliff 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 Euclid, OK	OK
<u>XII Miscellaneous and unclassified</u>			
	ARJARK	Madison, Wisconsin	MN
	AGNET	University of Nebraska	PA
	Al Tinsley	Clemson University	GA
	CMN	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
		Telpian	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 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 unuseable 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-extension 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, good-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 main-frame 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. Other phil...

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.

On 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. Economists 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 at 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.

On 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 state. 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.