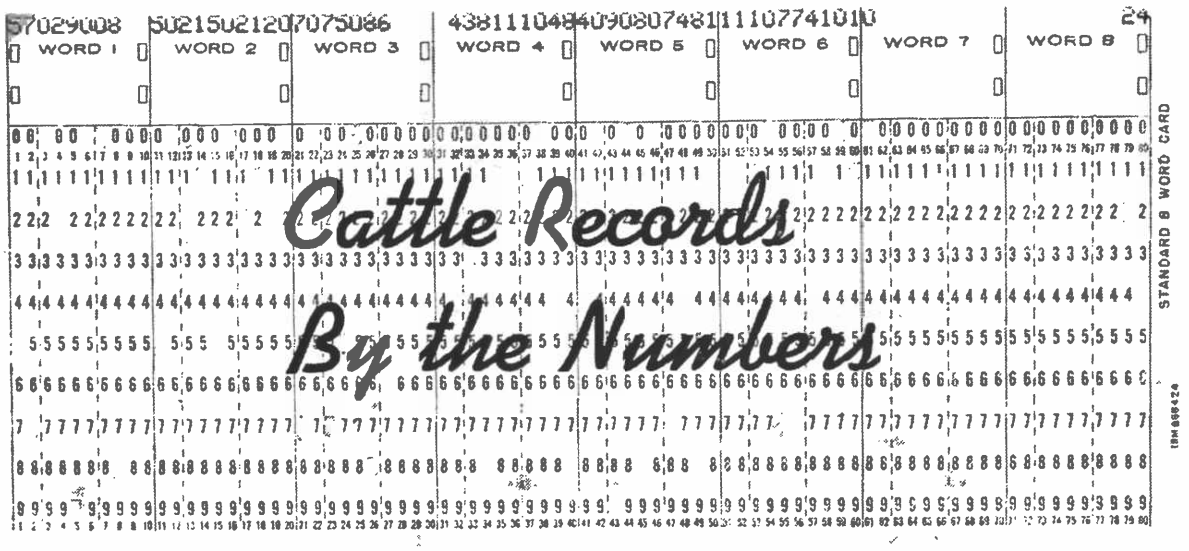

Cattle Records By the Numbers

By C. B. Roubicek

In the July issue of PROGRESSIVE AGRICULTURE IN ARIZONA, Henry Tucker described the potential value of automated records in cattle feedlot operations. Automation also has a place on the range for either purebred or commercial cattle operations.

Accurate records and prompt data summaries are of ever increasing importance in ranching. This is not a question of using the data for some new economic theory, or to show the neat rows of figures as an advertising gimmick. It is simply a matter of putting the ranch operation on a sound business basis in order to survive.

It Produces Information

Automation will not provide complete and accurate data for the rancher. This he must do himself. Automation can process the data and place them in the hands of the producer in a minimum of time. He can then use the information to make sound decisions for increasing herd productivity and efficiency.

The initial encounter with automated records doesn't have to be a 15 round championship bout; a three-round preliminary is still worthwhile. That is, a simple concise listing of the progeny of each female in the breeding herd can provide very helpful information.

The first thing that must be done is to prepare a data card for each animal. This includes animal identification and pertinent performance data that are available for this animal. An example of this is shown on the illustrated IBM card in our heading. The numbers punched in the card are

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Dr. Roubicek is a professor in the Department of Animal Science.

BELOW IS REPLICATED actual page from San Carlos Apache Indian herd records, set up by UA personnel. This Apache-University of Arizona co-operative study is the largest "large animal" research project in the world.

SAN CARLOS DATA -- PROJECT NUMBER 1053 -- CALVES BY DAM

DMNR	CFNR	SR	SRL	MGS	SX	AG	DOB	BW	IBCF	WW	WC	WD	LW	LC	LD	TW	TC	TD	XW	XC	XD	R1	R2
57029																							
	00001	008		021	2	07	075	086		438	11	10	484	09	08	0748	11	11	0774	10	10		
	60221	011		008	2	03	082	090		454	11	11	368	09	07	0692	11	11	0704	10	08		
	61256	005		008	1	04	088	088		500	11	11	440	11	07	0838	10	10	0722	09	08		
	62250	005		008	2	05	078	110		440	09	10	424	10	07	0768	10	10	0804	10	09		
	63242	061		008	2	06	060	090		466	12	11	404	10	06	0692	12	11	0710	11	10		
5																							
57156																							
	00001	008		021	2	03	124	080		348	10	10	392	10	08	0706	12	12	0730	10	10		
	60046	011		003	2	03	052	072		532	11	12	470	09	08	0792	11	11	0790	11	09		
	61014	017		003	2	04	042	068		480	13	11	404	11	07	0810	12	11	0840	11	10		
	62169	017		003	2	05	061	076		462	11	11	440	10	08	0806	12	11	0748	10	08		
	63154	051		003	2	06	055	078		450	12	11	416	10	06	0674	10	10	0722	11	09		
	64000	060		003																			
6																							
57164																							
	00001	003		035	2	03	127	086		352	10	10	404	09	09	0678	11	11	0706	10	09		
	60226	013		003	1	03	082	070		540	11	12	494	09	08	0710	11	11	0590	10	07		
	61052	012		003	2	04	049	078		426	13	12	370	10	08	0700	12	11	0650	10	10		
	62000	054		003																			
	63201	054		003	2	06	056	086		498	13	11	390	10	06	0632	10	10	0642	11	10		
	64040	073		003	2	07	045	066															
6																							
57119																							
	00001	007		040	2	06	109	086		406	12	12	434	11	10	0720	11	11	0712	10	10		
	60272	011		007	2	03	113	080		374	11	11	352	09	07	0676	11	12	0658	11	08		
	61290	002		007	2	04	127	090		362	10	10	334	11	07	0790	11	12	0762	11	11		
	62000	059		007																			
	63236	059		007	2	06	060	070		414	11	11	370	10	06	0626	12	10	0620	12	10		
	64000	059		007																			
6																							
57019																							
	00001	006		033	2	06	071	084		446	11	10	470	10	09	0734	11	11	0640	09	08		
	60276	011		006	1	03	056	072		502	11	11	456	09	07	0694	10	10	0608	10	07		
	61000	015		006																			
	62000	058		006																			
	63000	062		006																			

03

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also printed along the top edge. The information we have on this card uses the first 19 digits for animal identification and pedigree. The first 5 numbers, 57029, are the animal's tattoo, or permanent identification. By our system, the 57 designates the year of birth, the 029 shows that it was the 29th calf born that year.

Brevity Via Digits

The next 3 numbers, 008, are the code numbers for the sire of calf 57029. Instead of using the name or registration number of the bull, we assign each bull a code number and use it for our data cards. This makes the sire designation much shorter and easier to read.

The next numbers, 50215, are the dam of 57029. The sire of the dam is next and coded as 021. The following digit, 2, is for the sex of the calf (1 is male, 2 is a female). The 07 shows the age of the dam when the calf was born.

The remainder of the card is used for performance data. The numbers 075 are date of birth, the 75th day of the year (March 16). Her birth weight was 86 pounds. The next array of figures show weight and grade at various ages. As we read the card we see that her weaning weight was 438 pounds, conformation score 11, and condition score at weaning was 10. Weights and grades for 12, 18, and 24 months of age are also shown. The last 2 columns of the card (24) are the deck identification number.

Obviously the individual performance data will vary a great deal among ranches. This, however, is no problem and merely requires that certain fields in the card be assigned to the specific data that are available.

It is Her Diary

Once the individual record cards have been punched they can be used in a variety of ways. One example is shown at the left as a progeny listing by dam. Animal 57029 is now of interest to us as one of the cows in the breeding herd.

The first row of data (see again Page 12) is numbered 00001 and is the record of her own performance as we saw on the IBM card. The subsequent rows show the calves she has produced in the herd and lists their individual performance record.

Other cows are shown with their progeny records. A year number followed by 000 indicates that the cow was dry that year.

Even a brief study of these records would help a rancher in deciding which cows should be culled or saved, and where to look for replacement heifers.

Similar listings have been made for individual sires and for grandsires. In fact, any type of listing or summary that the owner wants can be quickly made available.

Genetic Correlations

The format presented here is the one we use in our cooperative cattle breeding project working with the Apache Indian Tribe at San Carlos. In addition to sire and dam summary listings we have used these data to determine heritability estimates and to compute genetic correlations among the various traits.

We are now undertaking a detailed study of these data to determine how accurately we can predict the potential lifetime production of a heifer from the records of her own growth performance and the production of direct and collateral relatives. The punch card then, can become a ticket that permits us to enter a whole new world of animal production.

BIG-EYED BUGS AS PREDATORS OF LYGUS BUGS

By G. D. Butler, Jr.

Laboratory studies to evaluate the potential effectiveness of some of the common predators of Arizona cotton fields in the destruction of bollworm eggs were discussed in Progressive Agriculture for July-August 1966. Similar studies were carried out during June 1966 on the relative effectiveness of different stages of a big-eyed bug, *Geocoris punctipes*, on lygus bug nymphs. Some 9000 lygus bug nymphs were fed to various predators and 400 daily feeding records determined.

Adult lygus bugs were collected from alfalfa and placed in gallon jars with green beans. Eggs, laid in the beans, hatched in approximately six days and the small nymphs were collected daily for the feeding tests. Small petri dishes were used as arenas and each was provided with a small piece of green bean to serve as food for the lygus bugs. After 24 hours, the number of missing lygus bugs was determined and each predator was transferred to another dish with a fresh supply of lygus bug nymphs.

Dr. Butler is an associate professor of Entomology.

Females Consumed More

The number of lygus bugs consumed by male and female big-eyed bugs is given in Table 1. Females consumed about twice as many first instar lygus bug nymphs as males. The number of lygus bugs consumed decreased as their size increased. This is due to the fact that a third instar lygus bug is approximately the same size as an adult big-eyed bug; therefore the larger lygus bug nymphs may decide not to hold still and may even "bite back."

Table 1. Number of Different-Sized Lygus Bug Nymphs Consumed per Individual Geocoris punctipes Adult in 24 Hours.

Sex of Geocoris	*Lygus bug instar*	*Number of feeding days*	*Mean No. consumed*
Male	first instar	63	12.1
	second instar	20	4.0
	third instar	10	2.4
Female	first instar	45	25.6
	second instar	5	6.2
	third instar	7	2.6

Newly hatched big-eyed bugs ate a few small lygus bug nymphs, as shown in Table 2, and, as might be expected, the number of lygus nymphs eaten increased as the size of the big-eyed bugs increased.

Table 2. Number of First Instar Lygus Bugs Consumed by Individual Geocoris punctipes Nymphs of Different Ages in 24 Hours.

Stage of Geocoris development	*Number of feeding days*	*Mean No. lygus bug nymphs consumed*
first instar	26	1.5
second instar	50	2.6
third instar	48	7.4

Intricate Interactions

(Unfortunately these studies were terminated when Dr. Butler transferred to the USDA Cotton Insects Branch to work full-time on lygus bugs.) These studies point up how sex and the age of the predator, as well as the age of the prey, affect the complex interaction of insect predators and their prey in Arizona crop areas.