VOL. 3, No. 2
APRIL 1964

PRICE 20c
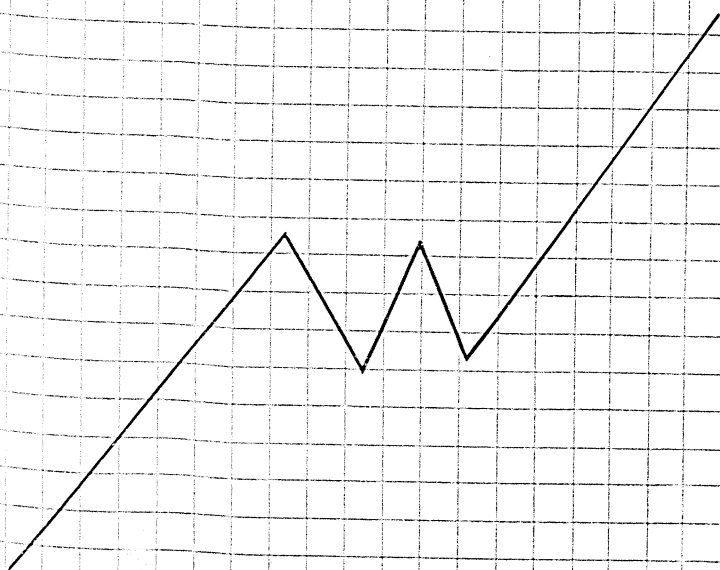
QUARTERLY JOURNAL
ON AGRICULTURAL
ECONOMICS

Agrekon

REQUIREMENTS FOR CONTRIBUTION

Deserving articles in the field of agricultural economics, for publication in this journal, will be welcomed.

These articles should have a maximum length of 10 folio pages (including tables, graphs, etc.), typed in double spacing. All contributions should be submitted in triplicate (preferably in both languages) to the editors, c.o. Department of Agricultural Economics and Marketing, Pretoria, and should be received by the editors at least one month prior to publication date.

The journal is being distributed by and is obtainable from the distributors: "Agrekon", Private Bag 144, Pretoria.

(The price is 20 cents per copy or 80 cents per annum, post free.)

Dates of issue, on a quarterly basis, are the following: January, April, July, and October.

"Agrekon" is also published in Afrikaans.

A Labour Budgeting Technique with Special Reference to Conditions in Natal

by

W. E. KASSIER

Faculty of Agriculture, University of Natal

Daily labour planning is an important means by which the amount of work can be reduced. Yearly planning of labour on the other hand serves as a control and sees to it that the labour demand is brought into harmony with the labour supply. Both the daily and yearly planning help in reducing working hours on the farm, or make time available for increased production. A reduction of the long daily hours in agriculture is necessary, while an increase in production on the other hand is imperative in certain cases if farmers do not want to face economic stagnation. An improvement in the use of labour means increased labour productivity and a resultant increase in income.

To start with, the daily work has to be planned. The execution of the daily chores should not be the result of coincidence, but should be the result of careful planning. One has to plan the proper order of the individual tasks, exactly how they are to be done, how long they should take and the proper organisation of the work site. In order to be able to do this, one has to know what one can expect from one's workers one has to have standards. In other words, the daily chores should first go through one's mind and then be put into practice. In this process of planning, two important questions have to be borne in mind: Firstly, does this work have to be done at all? If it has to be done, is there a better way of doing it than the method employed now?

In industry they generally ensure that no idle time occurs during the daily work process or during the whole year. Only under such conditions can one achieve a continued productive employment of labour, which is necessary for high productivity and stable income conditions. The work in industry is not affected by adverse weather conditions as it is in agricultre. Nevertheless, although we do not produce (in contrast to industry) in agriculture - the plant and animal produce; we merely provide the optimum conditions for such production - labour planning is still possible. The amount of work to be done on a farm varies considerably from time to time. Work cannot be postponed indefinitely because in agricultre we are bound to certain periods or seasons. These periods are usually limited - maize, for example, can be planted during a limited time only if one wants to obtain reasonable yields.

These time-spans, as they will be called henceforth, are rather short when considered from the crop husbandry point of view. However, from the point of view of labour, a longer time-span is more favourable as the work can then be accomplished with less labour and/or with fewer or smaller machines. In order to fix these time-spans, we have to make a compromise between these two extremes. (Let it suffice to say here that one cannot use "months" or "weeks" when constructing labour budgets as considerable inaccuracies can arise. One has to work with time-spans.) This compromise is arrived at as follows: The time-span can be increased, i.e., the number of days in which a job has to be done can be increased - up to a point where the decrease in yield is not offset anymore by the saving in the labour bill. Obviously,

the further we move away from the optimum time during which a job must be done, the less effective it will be.

The periods during which various jobs must be done either overlap or complement one another. It is therefore possible to group certain jobs together instead of determining time-spans for each job. Only when the labour requirements change suddenly, will it be necessary to move into another time-span.

Apart from the determination of the time-spans, one has to know the number of days which are available in the time-span for the jobs listed. The weather affects work on the fields in the following ways: during unfavourable weather the performance is reduced; the required number of hours or days to complete a job increase, and it may even cause a temporary suspension of the work. If the weather is favourable, the performance is increased, apart from the fact that the number of available work days also increases.

Data on the number of available days are obtained from labour diaries and from metereological data (rainfall statistics). As labour diaries are at present rarely kept by farmers, the number of available days are calculated using rainfall data only. These figures must therefore be considered as temporary. Different jobs are not affected to the same extent by unfavourable weather. This problem is solved by taking the least "sensitive" work within a time-span as the criterion for the number of available days, provided this particular work is of considerable importance in that time-span.

The number of available work days varies from region to region. For Natal, for instance, the various agro-economic regions were taken and the available labour days determined for each time-span in the different regions.

Another important point is that no proper budget can be constructed without accurately determined labour and machine standards. At the moment labour and machine input figures are being used (in contrast to labour and machine requirement figures, i.e. standards), which were obtained from a few selected "well-organised" farms. Accurate standards will be determined for all jobs by means of time studies and from labour diaries.

The procedure for constructing a labour budget is given below. It must be stressed again that these time-spans, as well as the available days, should not be regarded as final. Furthermore, it is assumed that the postponable jobs (repair on implements and buildings, etc.) can be carried out during slack periods or on "rainy days" when the other "time-bound" jobs cannot be carried out - a perfectly legitimate assumption in most cases.

Let us consider a mixed farm (say, in agro-economic region E3) which has the usual farm enterprises except wattles and sugar-cane. (If the farm has a wattle or a sugar-cane enterprise, additional schedules have to be used, although the principle remains exactly the same.)

Only a few of the tasks are listed in each time-span so as to save space. However, the method can be easily followed. The totals of the individual time-spans in Table 1 are transferred to Tables 2 and 3. The total hours per time-span are divided by the total number of available days thus giving the hours per day. The number of hours spent each day with the livestock has to be added as well as the required hours for the various haulage jobs and management; the latter includes the farmer and any other foreman or induna. The ox hours and tractor hours are treated the same way. The final figures are then represented graphically.

Assuming that the farm has 15 regular workers (and a 10 hour working day), we can see that they are well-occupied throughout the year. The postponable work is fitted into the slack periods. During the period of May to the middle of September

TABLE 1 – Labour budget for a mixed farm

Time-spans	Tasks (Average distances of fields from farmyard 1,000 yds)	Man hours requirement		Area (acres)	Draught power requirement (hours)					
					Oxen		25 h.p. Tractor		40 h.p. Tractor	
		Total	Per acre		Per acre	Total	Per acre	Total	Per acre	Total
I 15.9 – 15.10 21 available days	Ploughing for maize, potatoes etc.	117.0	0.9	130					0.9	117.0
	Hand hoeing madumbis	406.0	20.3	20						
	Making ridges for sweet-potatoes	148.0	3.7	40	5.0	200.0				
	etc.									
	etc.									
	Total	1,053.4	-	-	-	200.0	-	69.6	-	186.3
II 16.10 – 20.11 22 available days	Plant maize	120.0	1.6	75			0.3	22.5		
	Hand-hoeing potatoes	1,044.0	34.8	30						
	Plant sweet-potatoes	792.0	39.6	20						
	etc.									
	Total	2,045.6	-	-	-	-	0.3	89.9	-	17.6
III 21.11 – 31.1 36 available days	Mechanical cultivation for maize (3x)	270.0	1.2	225			0.3	67.5		
	Ridging potatoes	252.0	4.2	30	5.6	168.0				
	Ploughing for peas	18.0	0.9	20					0.9	18.0
	etc.									
	Total	5,678.2	-	-	5.6	244.8	0.3	123.1	-	37.3
IV 1.2 – 30.4 53 available days	Planting peas	32.0	1.6	20			0.3	6.0		
	Ridging madumbis (2x)	168.0	4.2	40	5.6	224.0				
	etc.									
	etc.									
	Total	5,307.6	-	-	5.6	333.0	-	165.8	-	181.6
V 1.5. – 31.7 75 available days	Maize harvest	1,005.0	13.4	75						
	Madumbi harvest	2,064.0	103.2	20						
	Sweet-potato harvest	6,326.0	316.3	20			1.4	28.0		
	etc.									
	Total	16,015.7	-	-	-	165.6	-	79.2	-	318.8
VI 1.8 – 14.9 35 available days	Planting madumbis	532.0	13.3	40					1.3	52.0
	Sweet-potato harvest	6,326.0	316.3	20			1.4	28.0		
	etc.									
	etc.									
	Total	7,547.2	-	-	-	-	-	86.9	-	149.2
	GRAND TOTAL	37,647.7				943.4		614.5		890.8

LABOUR BUDGET for "Mooifontein"
ARBEIDSBEGROTING vir
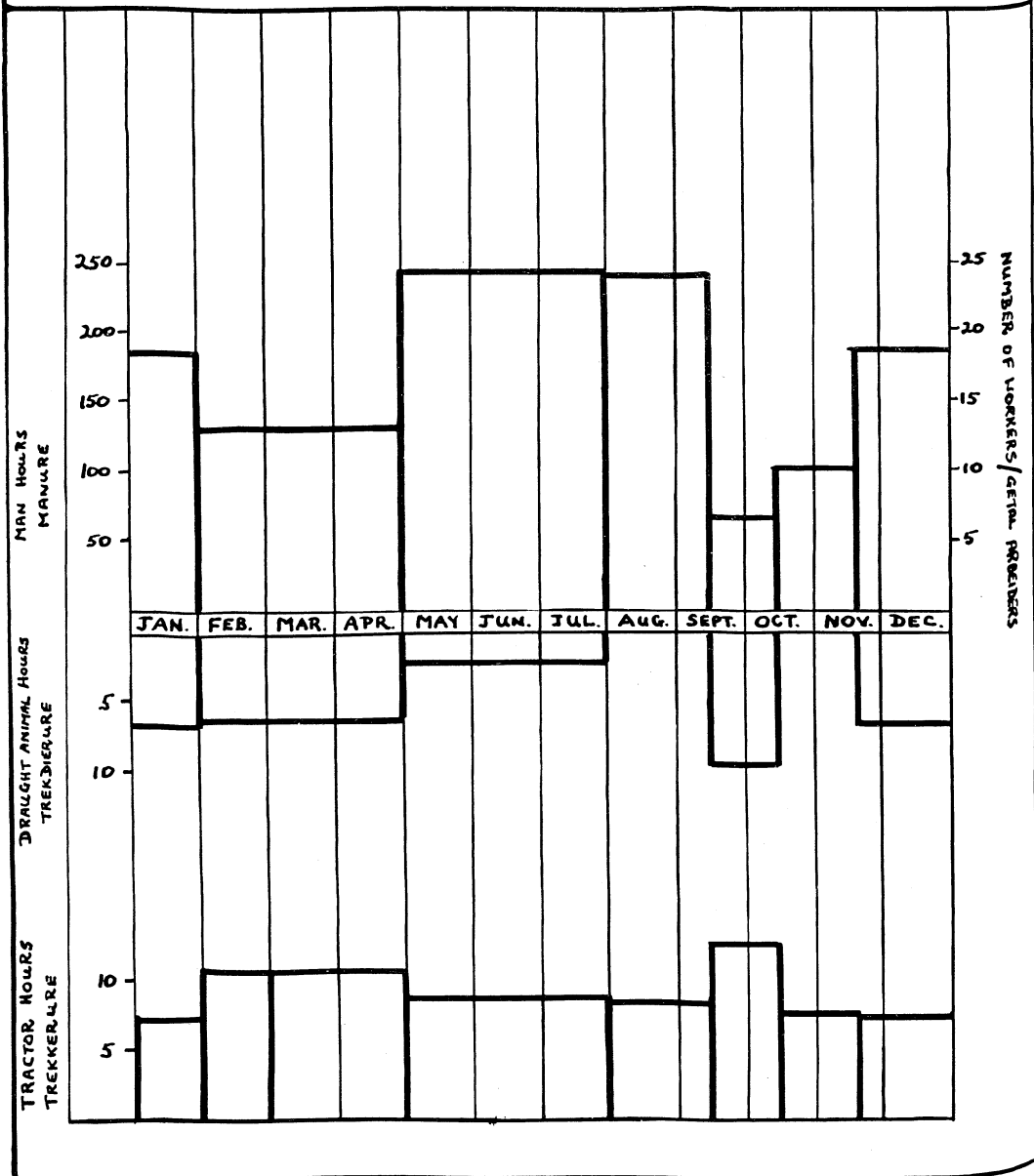
TABLE 2. – Labour unit hours in the individual time-spans

Time-spans	I	II	III	IV	V	VI
	15.9 to 15.10	16.10 to 20.11	21.11 to 31.1	1.2 to 30.4	1.5 to 31.7	1.8 to 14.9
Hours for field work	1,053.4	2,045.6	5,678.2	5,307.6	16,015.7	7,547.2
+ Available days	21	22	36	53	75	35
Hours for field work per day	50.2	93.0	157.7	100.1	213.5	215.6
Hours for livestock care per day	5.2	5.2	5.2	5.2	5.2	5.2
General haulage work. Hours per day	2.0	8.0	14.7	16.4	13.6	8.0
Management, etc. Hours per day.	10.0	10.0	10.0	10.0	10.0	10.0
TOTAL	57.4	106.2	177.6	121.7	232.3	228.8

TABLE 3. – Oxen and tractor hours in the individual time-spans

Time-spans	I	II	III	IV	V	VI
	15.9 to 15.10	16.10 to 20.11	21.11 to 31.1	1.2 to 30.4	1.5 to 31.7	1.8 to 14.9
Ox hours for field work (Oh)	200.0	–	244.8	333.0	165.6	–
+ Available days	21	22	36	53	75	35
Ox hours per day for field work	9.5	–	6.8	6.3	2.2	–
General haulage. Hours per day	–		–	–	2.2	–
Daily Oh	9.5	–	6.8	6.3	2.2	–
25 h.p. Tractor. Hours for field work	69.6	89.9	123.1	165.8	79.2	86.9
+ Available days	21	22	36	53	75	35
Tractor hours per day for field work	3.3	4.1	3.4	3.1	1.1	2.5
General haulage. Hours per day	0.5	1.2	2.8	3.0	2.2	1.3
Daily Th	3.8	5.3	6.2	6.1	3.3	3.8
40 h.p. Tractor. Hours for field work	186.3	37.3	17.6	181.6	318.8	149.2
+ Available days	21	22	36	53	75	35
Tractor hours per day for field work	8.9	1.7	0.5	3.4	4.3	4.1
General haulage. Hours per day	–	0.8	0.9	1.1	1.2	0.7
Daily Th	8.9	2.5	1.4	4.5	5.5	4.8
TOTAL Daily Th	12.7	7.8	7.6	10.6	8.8	8.6

the farmer will need 25 workers in all, i.e. he will have to find nine seasonal or togt workers. During the latter part of November and in December and January the work requires 19 workers, i.e. 15 regular plus four togt labourers.

The oxen (six altogether) are not fully utilised, but this is not a serious matter in many cases, as grazing land is usually available anyway and the oxen do not constitute a major running cost. The tractors are used regularly throughout the year with a minimum of 7.5 hours (i.e. an average of about 3.5 hours per tractor per day) per day and a maximum of about 6.5 hours per tractor per day. It may be argued by some that all this work could be done with one tractor. That is true, but such a move may make the organisation of the work difficult at times - it may even cause a waste in the use of labour - and the farmer may prefer (a point which is all too often neglected!) to have the work running smoothly, and have the assurance that all the work will be completed on time.

It may be said now that the labour budget serves no real useful purpose, as most farmers know anyway how much labour they need and whether they need one or two tractors. This may be so in certain cases, but what happens if the farming system is changed? When farms are being planned, it usually includes some degree of reorganisation of the various enterprises. What guarantee do we have that the draught power is sufficient, or excessive, now? How much labour does the farmer require now during the different time-spans? These questions can easily be answered by constructing a labour budget.

"Studies of the larger feeding operations in both corn-belt and western feeding areas often show lower costs of production, particularly in the items of nonfeed costs. Their cost advantages lie in the lower prices paid for feeder stock, and in lower costs per 100 pounds for buildings, equipment, and labor. Hence, on the surface, the smaller lots appear less profitable. However, complete analysis requires a look at the character of the costs and the effect of the cattle enterprise on net farm income."

- CO-OPERATIVE EXTENSION SERVICE, ILLINOIS (SEPTEMBER 1963).

"On many farms labor, forage and livestock facilities would be unused if cattle were not fed. Small livestock enterprises make a contribution to farm income by utilizing labor when it is not needed for crops. Forage produced on the farm may have no off-farm market. Nontillable and rotation pasture, meadow and small-grain aftermath and corn stover would be lost if cattle were not available to salvage it. Shelter for cattle may be furnished by structures that otherwise would stand empty. The small feeder may be able to keep machinery and equipment costs low by using general-purpose farm machinery already available."

- CO-OPERATIVE EXTENSION SERVICE, ILLINOIS (SEPTEMBER 1963).