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The Seasonal Labour Market in Agriculture - An Empirical Study

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INTRODUCTION

I Of all forms of economic activity, agriculture is most closely bound to the 'rhythms of nature'. While the behaviour of nature is at times entirely unpredictable, usually its rhythms follow a regular pattern. The cultivation of any crop, corresponding with this cycle in a particular way(which can differ according to the kind of crop planted), is thus seasonal in nature. To the extent that a farm specializes in one particular crop its production input requirements will follow this seasonal pattern.

One of the most striking features of Western Cape agriculture is the extent to which specific districts within the region have specialized in their choice of crops grown. In particular we find that the areas under study, namely Elgin and the Hex River Valley, have specialized in apples (although a few other fruit trees are also grown) and table grapes respectively. Fruit farming is noteworthy for the high degree of variability in labour requirements over the course of an annual production cycle. This paper has as its focus precisely that variability in the damand for labour.

While the implications of seasonal employment may be considered from the perspective of the seasonal worker, this will not be our focus (although some welfare implications will become apparent during the course of the discussion). We will rather consider the methods whereby farmers organize their labour requirements in order to minimize the costs of their labour inputs over the course of the production cycle. The various sources of supply of this labour, and the way in which information is disseminated from those who require labour to those who may wish to offer their services will ve investigated in some detail. Robertson offers a theoretical justification for this approach: "Since all demands for labour originate in one way or another from the need

to supply goods and services, labour's function is regarded fairly and squarely as part of the productive processes of our economy. The main criterion of economic analysis is therefore the efficiency of labour in production.....The wages and conditions that follow from labour's productive efforts are naturally of very considerable improtance and interest from other points of view, but the object of the market mechanism is to achieve an efficient allocation of labour, and therefore the production of desired goods at least cost." (1)

This study will attempt to illustrate how the market functions from the perspective of these criteria, in the real world. We will analyse the market for seasonal labour on Western Cape fruit farms.

II Problems of Definition

If we are to analyse the phenomenon of seasonal employment, it is necessary to be clear as to what we are considering, both so that we may understand the conceptual problems involved and in order to be certain that we are measuring only the relevant variables. Official agricultural statistics appear to be most inadequate in this regard: While data is provided for both "regular" and "casual" employment, no serious attempt is made to define what is meant by either "regular" or "casual" employees. Furthermore from the information obtained in this study it would appear that the method of data collection employed by the Department of Statistics (farmers are asked how many workers are "casually" employed at some arbitrarily chosen date) results in a serious underenumeration of the extent of non regular employment. (See Appendix I) While developing definitions adequate for statistical measurement is no simple matter as we shall see- our classification decisions may differ according to the various ways in which we wish to use the date - if measurement is to have any meaning some attempt at definition must be made.

For the purpose of this paper our first step must be to

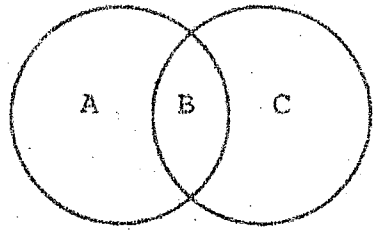
distinguish between two distinct but related concepts - namely casual and seasonal employment, and in turn distinguish them both from permanent employment. While both imply non-permanent employment, such a definition takes us no further in understanding either phenomenon. Since we are considering the employment of labour from the perspective of the workers' role in production there is little value in setting an arbitrary time period of employment to determine whether a worker is permanently or non-permanently employed: Such an approach fails to illustrate the different functions permanent, seasonal and casual workers perform in the production process. (Of course, if we were interested primarily in measuring the extent of employment provided, we would then use definitions based on time. While to some extent this information can be determined from the data in this paper, our focus is elsewhere and as a result we employ somewhat different definitions).

The permanent worker is employed on a regular basis, performing whatever work is required for the ongoing operation of the farm. I would suggest the distinction between seasonal and casual employment to be as follows: A worker is seasonally employed if he is hired to perform a specific function (recurring regularly with each annual production cycle) at a particular stage of production. A worker is casually employed if he is hired to perform a specific operation which can be done at any time of the year and is thus not dependent of seasonal fluctuations. (It is interesting to note that Saunders, in his study, makes a similar distinction between permanent, seasonal and casual employment.)

A useful way of distinguishing between these three modes of employment is to focus on the differences in the employment agreement in each case: The permanent worker is assured that (unless dismissed) employment - and thus earnings - will be provided on a regular basis (e.g. five or six days a week.) The casual worker on the other hand does not have such certainty- employment is provided entirely at the discretion of the employer.

While in principle the casual worker always has the option to seek permanent employment, as we shall see at times this decision can involve costs well in excess of the income gains resulting from the shift from casual to permanent employment. In general - although not necessarily - casual workers are paid on a daily basis. The seasonal worker may be employed either on a regular or a 'casual' basis for the duration of the season.

The above will become clearer if we focus on the relationship between seasonal and casual employment in some detail.



In position A the worker is casually but not seasonally employed. The worker may be hired purely on a daily basis, as in the case of women (and children) living on a farm who are often employed to perform various odd jobs on that farm on a casual basis; alternatively he may be hired to perform a specific task, (e.g. a fencing team contracted to fence a field) and paid on completion of that task.

In position B a worker is both casually and seasonally employed; that is, he is employed on a daily basis to perform a seasonal task. (We note that we are using 'casual' from the perspective of the 'employment agreement' rather than his 'function in production.' This rather loose usage is justified on the basis that it is necessary to distinguish this from other forms of seasonal employment - without complicating our discussion by introducing any new terms.)

In position C a worker is seasonally employed, but on a regular rather than casual basis (e.g. the migrant worker employed on a

short-term contract to perform a seasonal function.)

This paper concentrates on positions B and C (i.e. the various froms of seasonal employment) rather than position A.

III Method of Research

The seasonal labour market was analysed for two different fruit types in two distinct areas of the Western Cape - apples in Elgin and table grapes in the Hex River Valley. A list of all farmers registered with the Deciduous Fruit Board (DFB) was obtained. Using random number tables a sample was extracted from each universe: 33 from a universe of 61 in the Elgin district, and 48 from a universe of 176 in the Hex River Valley.

Ten of the 33 farmers in Elgin in the sample were eliminated on ascertaining that their farming activities were on too small a scale to warrant detailed attention. Fifteen of the remaining farmers (the other eight being absent from their farms) were interviewed.

Ten of the 48 farmers in the Hex River Valley sample - while defined in the "H group" by the DFB for administrative purposes - were not in fact in the Valley. On the assumption that this ratio was also valid for the initial 'universe' of 176, for the purpose of analysis the universe was reduced to 143 farms. A further seven farms were eliminated since they were too small to warrant detailed consideration, reducing our universe to 136. Eighteen of the 31 farmers remaining in our sample were randomly selected and interviewed (four others being away when visited.)

As already noted the method of data gathering was a semi-structured interview. While a questionnaire was drawn up, and all the questions asked, the questions were often in part open-ended and free-flowing discussion took place.

The constraints on this paper - especially limited time - have resulted in the sample being rather smaller than might have been preferred. While in both Elgin and the Hex River Valley practical considerations necessitated some departure from strictly random methods - and as a result some bias has been introducted into the sample in that smaller farmers were generally eliminated (furthermore it is theoretically possible that the absentee farmers may have exhibited some systematic characteristics had they been interviewed) - the process is felt to approximate random results sufficiently to warrant generalization appropriate to the size of the sample. (For a statistical analysis of the appropriate degree of generalization from the sample to the universe as a whole for certain important results see Appendix 2.)

IV The Areas Chosen

Before setting out the results of the research undertaken, some information concerning the nature of the areas surveyed provides a useful background:

(a) Elgin:

The Elgin valley stretches from Steenbras in the west to Houw Hoek in the east, and from Viljoen's Pass in the north to the Palmiet River in the south and south-east. According to the 1970 census 16 738 people live in the Elgin-Grabouw area, approximately 75% of them on farms. 68.7% of the population enumerated were 'Coloured', 17.1% Black and 14.1% White.

Apples, while not the only fruit grown in Elgin, are clearly the most important. According to an economic survey undertaken by the DFB in 1972, fully 92% of the area under soft-fruit cultivation (and a similar proportion of gross revenue) was planted with apple trees; pears comprising a further 6%, and plums and peaches approximately 1% each.

Figures from the DFB show that 45-60% of South Africa's total

apple production is generally sold on the foreign market each year. These exports comprise almost 70% of gross income from the production of apples. The following table, taken from Hofmeyer (2), sets out gross income from apples in the Elgin/Vyeboom district, for South Africa as a whole and considers the one as a percentage of the other. (The inclusions of the Vyeboom valley appears to increase our income levels by approximately one-third.)

Table 1 : Gross income from apple production (R '000's)

Year	A:Elgin/Vyeboom	B:South Africa	C: A as % of B
1971/2	R17 700	R32 200	55%
1972/3	R27 000	R45 700	59%
1973/4	R21 800	R36 300	60%
1974/5	R30 100	R56 300	53%

Source : Hofmeyr Pg. 12

(b) The Hex River Valley

The Hex River Valley is entirely closed in by mountains, lying between the Hex River Mountains in the North-West and the Kuraou mountains in the South East. De Doorns, with a population of 3 408 according to the 1970 census, is the only village of any note in the Valley (2 236 'Coloured', 804 White and 368 Africans). While the census did not provide a population figure for the number residing in the rural districts of the valley, an estimate of 16 000 was made by the DFB on the basis of a 1972 economic survey. The 1960 census however estimated a rural population of 8 886 (2 236 Coloured, 804 White and 368 African.)

Fully 97.5% of the area under soft-fruit cultivation is planted

with table grapes which provide over 99% of gross revenue. From the reasearch conducted it would appear that some grapes are grown for the purpose of viticulture.

The Hex River Valley is responsible for +60% of all table grapes grown in South Africa, and 70% of those exported.

V The Supply of Africultural Labour in the Western Cape - a Historical Perspective

This paper focuses primarily on the labour market in agricultire as it currently functions. While such a perspective is valid in itself, a more complete understanding is obtained if we consider, albeit only breifly (which given the nature of the paper is all we have space for) the historical circumstances which produced the social relations in Western Cape agriculture which now exist. These social relations are characterized by their racial divisions - while the fruit farmers, the employers of labour, are exclusively 'White', those who supply the labour consist almost exclusively of 'Coloured' and African workers. How this 'division of labour' developed is the subject of this section.

The orgins of the present-day 'Coloured' population appears to lie largely with the earlier Hottentot, Slave, Bushmen and European groups. By considering the history of each of these groups (or the relevant sections of them) in turn, we are able to gain some idea of how rural 'Coloured' people came to occupy the position that they do.

Ever since the beginnings of the colonial settlement slaves had been imported into the Cape Colony. By 1834, the year in which slavery was abolished, there were almost 39 000 slaves in the Colony, the vast majority in Cape Town and its agricultural hinterland. (3) The emancipation of the slaves did not imply that they had direct access to the means of production, but simply enabled them to use their labour as they chose. Notwithe

standing their freedom, agricultural employment still represented the most important avenue of work open to them.

Little more than a century after the arrival of the first European settlers, large numbers of Hottentots had died and their Hottentot community was effectively destroyed. This may be attributed to three major causes - smallpox epidemics, land loss and the effects of trade.

(i) Smallpox epidemics in 1713 and again in 1755 and 1767 wiped out large numbers of Hottentot and wrought havoc with their community organisation.

(ii) According to Marais, "In giving out farms to the European colonists the (Dutch East India) Company only in the rarest instances took the trouble to find out whether there were Hottentots living on the land. (Thus) by 1795 the Hottentots had sunk into the position of a landless proletariat - labourers or vagrants in the lands of their ancestors....." (4)

(iii) "The Hottentots lost not only their land but also their flocks and herds.....they were surprisingly ready to barter away their cattle in exchange for copper, beads, tobacco and intoxicating liquors like brandy or arrack". (5) While it may be argued that the trade represented a shift to a preferred position, it is nonetheless clear that as a result of this trade the Hottentot people lost those possessions on which their past survival had been based.

"(Except for) a limited number of Colonial Hottentots who could be accomodated on the "institutions" (i.e. mission stations).... there was practically no alternative save to live and work on the lands of the farmers." (6) The Hottentot people then numbered a few less (according to census figures of the time) than the slaves in the Colony.

We shall only briefly mention the process whereby the 'Bushman' and European elements of the 'Coloured' people came to find themselves landless. The 'Bushmen' were a conquered people: "The incoming Boers do not seem to have attempted to come to any sort of accomodation with the Bushmen whose hunting grounds they invaded, killing off their game and depriving them of their veldkos." (7) Marais suggests that this conquest went further than merely obtaining control over lands:" "According to evidence... attempts to exterminate the Bushmen must have been going on since about 1851 between the Orange River and Beaufort West." (8)

While 'mixed marriages' were not illegal ...."it soon (after 1664) came to be considered a disgrace for Christians (Europeans) to marry people of colour even if they were free."(9). The children of such mixed unions were thus usually illegitimate, and as such were unlikely to inherit land.

Against this background we can more fully understand why to such a large extent 'Coloured' people became landless agricultural farm workers. We turn now to consider briefly the background to the introduction of African farm workers into the Western Cape. Much research has been undertaken in an attempt to ascertain the process whereby African tribesmen came to offer their labour to distant employers. A number of alternative explanations have been offered and the subject is still being debated. We will not enter into this controversy here, but - given that the labour was supplied - will merely set out the origins of its use in the Western Cape.

Labour shortages, which had always been a serious problem in Western Cape agriculture, became acute after the emancipation of slaves in 1834."....The consensus of opinion was that the problem could best be solved by the systematic recruiting of labour from far afield. During the late 1870's nearly 4 000 Africans were brought in from the eastern frontier by the Government, and rapidly absorbed in jobs within thirty miles of Cape Town"(10). It is not clear that this was the first instance

of African migrants being used as farm workers; it does however seem certain that from this point farmers used migrant labour to an ever-increasing extent. Workers were recruited from as far afield as the Transkei, Mozambique and South West Africa. "In general men were brought to the farms.....on a contract basis. But many of them, on the expiry of their contract...chose to settle where they worked..."(11) For all except 'Section Ten' Africans (see later) this option no longer exists. On completion of a contract the African migrant worker is obliged to return to his place of origin.

Thus we see how, after gaining control of the land, the 'White' farmer employed the local inhabitants (and slaves) as labourers. When these sources proved insufficient to meet the farmers' needs, migrant workers were employed from further afield to supply the necessary labour.

VI Permanent Employment on Fruit Farms

The extent of seasonal fluctuations in employment only becomes apparent when compared with the level of permenent employment. Furthermore there may be some relationship between the composition of a farm's permanent labour force (and the number of workers permanently employed per hectare of the farm) and the composition (i.e. source of supply) and size of its seasonal work force, a hypothesis which will be examined later. For these reasons it is necessary to describe in some detail the nature of permanent employment in the areas researched.

(a) Elgin

As shown in Table 2 the fifteen farms visited employed a total of 771 permanent workers; the mean number per farm being 51.4. 405 of these workers, comprising 53% of the permanent labour force, were resident on the farms. Only seven of the farms employed African migrnat workers as permanent workers. For those seven farmers - they employed a combined total of 128 African

TABLE 2 : PERMANENT EMPLOYMENT

(a) In Elgin

PERMANENT WORKERS				
Farm	Resident	12 month contract	9 month adjusted	Total
A.	5	3	-	8
B.	4	5	-	9
C.	12	-	-	12
D.	-	16	-	16
E.	8	8	-	16
F.	20	-	-	20
G.	4	21	-	25
H.	26	-	-	26
I.	30	-	-	30
J.	20	-	15	35
K.	35	18	-	53
L.	20	40	-	60
M.	35	35	-	70
N.	76	-	105	181
O.	110	-	100	210
TOTAL	405	128	238	771

- = 0(ZERO)

(b) In The Hex River Valley

PERMANENT WORKERS			
Farm	Resident	Migrant	Total
A.	9	-	9
B.	12	-	12
C.	14	-	14
D.	14	-	14
E.	7	15	22
F.	17	5	22
G.	20	4	24
H.	25	-	25
I.	24	4	28
J.	29	1	30
K.	28	2	30
L.	30	-	30
M.	33	-	33
N.	43	2	45
O.	53	2	55
P.	57	3	60
Q.	60	16	76
R.	80	40	120
TOTAL	555	94	649

migrants on an annual contract - their African workers represented 63% of their permanent labour force (S.D. = 20%) In addition, for reasons to be explained later, almost half of the 502 workers recruited on 8-10 month contracts (i.e. 238 workers) have been included as permanent workers.

Only 26.7% of the farmers interviewed (four of fifteen) believed that it was becoming difficult to obtain the desired number of permanent workers. Two further farmers - while claiming to have no difficulty in recruiting the desired number of workers - complained of the inferior quality of the worker that was available. It is interesting to note that all of the farmers who perceived a shortage of labour were using African migrants as permanent workers. While this may be explained as being a consequence of their inability to procure Coloured workers, three of these farmers expressed a clear preference for working with African labour. This may well be a pointer to a somewhat surprising result in the light of current hypotheses regarding the level of African unemployment (further evidence of this result and a possible reconciliation of it with other information on the high level of African unemployment will be offered later); namely that, at least with regard to agricultural employment (and the wage which the farmer expects to be adequate to recruit migrants) the supply of labour in the Transkei appears to be drying up.

(b) Hex River Valley

From Table 2 we note that 649 workers are employed permanently on the eighteen farms visited, the mean number per farm being 36 workers. It was suggested as a 'rule of thumb' that one permanent worker per hectare may be regarded as the optimun level of employment for table grape farms in the valley.

Workers permanently resident on the farms, including both Coloured farm workers and permanent African workers (who qualify to remain permanently in the area in terms of Section 10 of the Natives (Urban Areas) Act as Amended) comprise 65,5% of the

permanent labour force in our sample. The remainder of this work force consists of 94 African migrant workers employed on an annual contract as permanent workers by eleven of the eighteen farmers interviewed. However only four of these farmers regarded the employment of this labour as necessary for the efficient functioning of their farming operation (as is clear from the numbers involved.) In all other cases, non-economic, personal considerations (e.g. the fact that the workers had already been employed on the farm for a long period of time) were the major reasons for the retention of this labour.

It must not however be deduced from these results that employment of migrant workers is an unimportant phenomenon in the area. On the contrary the Hex Vallei Boeregroep, established in 1966 to recruit migrant workers for its 240 member farmers in the Worcester is reliably estimated to recruit approximately 2-2 500 workers annually for farmers. We note however that this number is appreciably lower than Wilson's 1972 estimate of 3-500 men recruited a year.(12) This may be explained in terms of the tendency - already noted for Elgin - for African migrant workers to become increasingly difficult to obtain for agricultural purposes. According to a reliable source, the bulk of the workers obtained by the Boeregroep are youths and men, the only people prepared to accept agricultural employment. As further evidence of this trend the following incident was related to me:

A representative of the Boeregroep, curious to ascertain personally the problems of labour procurement in the Transkei, drove up to assist in the recruiting process. On arrival at the recruiting office, he was greeted by a vast crowd of work-seekers, who thronged around his vehicle, desirous of discovering what employment was being offered - to such an extent that he was unable to proceed at all. Immediately on informing the crowd that he was offering agricultural employment, the area was almost instantly deserted and he could continue forward without any difficulty.....

Not only diminished supply but also reduced demand may explain the apparently reduced number of Africans employed: It may be argued that the initial large increase in the numbers of migrants employed was a response to two "shocks" which served to reduce the local supply: Firstly, as a result of foreign pressure which threatened export markets, it became necessary to close the prison in the area which had been an important source of supply of labour. Secondly, the earthquake which shook the Boland and in 1969 resulted in a building boom which attracted labour from farms. It is arguable that as the impact of these phenomena recede into the distance, sources of supply of labour other than that immediately recruited evolved, resulting in a decline of the number of migrants required.

With the declaration of Worcester as a growth point, it is not unlikely that the process of drawing labour from farms could begin anew resulting in an increased demand for African migrant workers on annual contracts. In fact a number of farmers have already expressed concern over the possible impact of the giant new factory established by Rainbow Chickens in Worcester, apparently involving an investment of over R10 million.

VII The Nature of the Fluctuations: The Seasonal Demand for Labour on Fruit Farms

We are now ready to turn to the central focus of this paper - the seasonal nature of farming and its implications for employment. Before considering in detail the seasonal requirements for each of the areas surveyed, a number of general observations (some of them theoretical) are in order. As will be seen, labour is required seasonally not only for harvesting the crop but also for a number of vital pre-(and post-) harvest operations. While in our discussion below we have almost certainly not considered all of these seasonal activities, it would appear that we have included all those labour requirements of which are sufficiently large to warrant detailed investigation.

The theoretical underpinnings of our discussion of the demand for

seasonal labour will now be set out.

Fisher makes the important point that "The aggregate number of man-hours of labour (understood always as units of standard efficiency) which will be required to harvest a given crop is fixed." (13) It is argued that for a given crop size, the relevant decision is not how much of the crop to harvest, but whether to harvest at all. If the decision is made to harvest then all of the crop will be harvested. (While Fisher developed this analysis specifically for harvesting it may in fact be applied to all seasonal operations, provided they are organised - especially with respect to remuneration - in the same way as the harvesting operation.) This follows from his observation that harvest workers are paid on a piece work basis: As a result of this form of remuneration the cost per unit harvested remains constant over time. Since one farmer's production cannot influence the market price, if it is expected to be profitable to harvest some of the crop, then it must be expected profitable to harvest all of the crop. For as long as the production technology is unchanged, a given crop will be harvested with a given number of man-hours.

Two of the assumptions on which this conclusion depends must be subjected to closer scrutiny: The first is the assumption that the production of one farm cannot influence the market price. While it is not necessarily always true that farmers do not base their harvesting decisions on market price fluctuations, as the following extract from Saunders illustrates - "The demand for labour to pick fruit...fluctuates from day to day not only according to weather conditions but also according to market prices. A slight rise in prices is liable to produce a sudden increase in the demand for labour, very possibly a glut of the product, and an equally sudden collapse in employment"(14) - co-operative marketing practices, as well as modern cold-storage techniques, appear to ensure that in practice these decisions will not be based on day-to-day price fluctuations; having decided

to harvest farmers will harvest their entire crop.

The second assumption is however a little more problematic. Central to Fisher's conclusion is the assumption that the harvesting costs per unit are constant - i.e. workers are paid on a piecework basis. While this is often the basis of remuneration for seasonal activities in the Western Cape, as we shall see it is not always so. If workers are paid a fixed wage per day, on the assumption of diminishing marginal productivity it is theoretically possible that beyond some point the marginal costs of harvesting will exceed the marginal revenue and only part of the crop will be harvested. In fact from our research it would appear that in every case the entire crop has been prepared and harvested. While this is consistent with Fisher's conclusion, in those instances where a daily wage is paid it is explained by the fact that marginal revenue (which represents the price of the fruit) exceeded the marginal costs of harvesting over the entire crop, a reason different from that suggested by Fisher.

Although in terms of Fisher's analysis labour requirements are not determined, ceteris paribus, by the wage but rather by the crop, size, this certainly does not imply that the wage is irrelevant. Besides being an important element in deciding whether the seasonal operation will be undertaken al all (do expected revenues from the sale of the fruit exceed estimated labour costs?), the wage represents a cost to the entrepeneur which he will attempt to minimize. (As already noted, that the wage does not determine how much labour is required is true even for a daily wage system of payment as long as the marginal revenue product of labour exceeds its marginal cost, which arguably represents the real world position over the entire range of Western Cape seasonal employment considered in this study.) Fisher asserts that "whenever any significant range of choice exists, the advantage will, without exception, be with the more rapid rather than the less rapid harvest."(15) He argues that the more rapidly the crop is harvested the lower the risk of spoilation as a result of inclement weather, and the greater the range of marketing decisions open to the farmer. This analysis appears to neglect

an important consideration: The more rapidly one harvests, the greater the daily labour requirements, and thus - in the face of a scarce supply of labour - the higher the wage (generally, although not necessarily, piecework)that it is necessary to pay. Thus it appears that a trade-off may exist between the speed of harvesting and the total wage bill.

While the sources of supply of labour will be discussed in detail a little later, brief consideration of the nature of the seasonal labour supply in the Western Cape appears to provide support for the hypothesis of an inverse relationship between the harvest time period and the total wage bill. The most readily available, and presumably least costly (for reason we shall see later) source of supply of labour for the farmer is the limited number of dependents of permanent workers resident on the farms. To the extent that they can be utilized rather than seasonal workers from outside the farm (the recruitment of whom may involve fixed transport costs of varying degree, depending on their origins - besides possible higher wages) total labour costs are kept down. Furthermore farmers may simply prefer to provide employment for the dependents of their permanent workers - and may in fact have undertaken to do so when they hired these permanent workers. Thus to the extent that the farmer has control over the length of his harvest, we might expect him to extend this length (thereby flattening the peak and thus both reducing the need for seasonal workers from outside the farm, and providing employment for the dependents for a longer period of time) for as long as the returns from this increased length exceed the costs of increased risks and diminished options thereby incurred. Since different varieties of apples (and grapes) ripen at somewhat different times, it is primarily in his planting decisions that the farmer determines the length and amplitude of his seasonal peak. The greater the number of varieties of the fruit planted the more extended the peak. Invariably farmers have chosen to plant a number of varieties on their farms. In contrast with Fisher's hypothesis, it would thus appear that within certain constraints farmers in the Western Cape attempt to extend in length and reduce in amplitude the fluctuations in

their seasonal labour requirements.

The above analysis goes a long way to resolving the paradox that although farmers have always managed to complete their seasonal operations, some nonetheless complain that - at the going wage - they are not able to obtain the number of workers that they would prefer: For a given wage (it is in order to minimize these labour costs that farmers prefer to extend their peak) they wish to complete their seasonal work in the shortest possible time; the number of workers forthcoming at that wage is however such that (while total labour time utilized remains constant) the process continues for longer than they desire.

Thus we see that provided wages are paid on a piece rate basis (or, alternatively, the marginal costs of the seasonal operations are less than the revenue obtained from the sale of the fruit - which will almost certainly be the case over the entire relevant range) seasonal labour requirements are determined by crop size. Wages are determined by the time taken over the seasonal operation in the manner just described. Since in every case researched the entire crop was harvested, the data for seasonal employment presented below is thus an accurate reflection of total seasonal requirements. While this data was measured for the 1975/6 season, it appears that - after taking into account the expansion of farms - these requirements are fairly stable over time, variations in weather not affecting crop size in such a way as to alter markedly the size of the seasonal operation (for the areas researched) from year to year. We turn now to consider this data in some detail.

(a) The Elgin Apple Industry

In this sub-section we shall consider each seasonal activity in turn, briefly describing its function, setting out how many people are seasonally involved, and - where possible - providing some information of the level of earnings for each of these

activities. For obvious reasons this wage data is somewhat incomplete at times; the limited data that was obtained is nonetheless felt to be useful and is thus presented. Much of the information included in the text may be found in table 3 overleaf.

Thinning

The 'thinning' operation is undertaken in order to reduce the number of apples born by each tree. Reducing the number of apples apparently ensures that those remaining on the tree will be larger and of better quality - which is essential if the apples are to adhere to the export quality criteria laid down by the DFB. All except one (whose orchards consisted mostly of peach trees which required thinning a little earlier - in September and October) of the fifteen farmers interviewed thinned their orchards during November and December, four of them further extending the process for at least one month in either direction.

Fourteen of the fifteen farms found it necessary to supplement their permanent labour force with seasonal workers (376 workers 49% of the permanent labour force) for this operation. Twelve of these fourteen farmers drew their seasonal labour force from women resident on the farm; one farmer employed only African migrants and thus did not have any women permanently resident on the farm, the other employed the women resident on his farm as permanent workers (as defined earlier.) Five farmers needed to recruit women from the surrounding areas.

While a number of farmers pay their thinners piecework, the majority appear to pay on a daily basis. For the six farms from which information was obtained, the mean wage for a female thinner was R1,40 per day.

Picking

In general, the peak apple harvest period extends from February to May, although some farmers begin picking in January (notably those who have orchards other than apple trees on their farms.) Fourteen farmers from our sample introduced seasonal workers onto their farms for the picking operation (460 additional workers,

TABLE NO. 3 : SEASONAL EMPLOYMENT IN ELGIN

	THINNING				PICKING			PACKING		
Farm	Women on Farms	Outside Women	Short Term Migrants	Total	Short Term Migrants	Other	Total	Women on Farms	Outside Women	Total
A.	-	-	-	0*	5	-	5	-	-	-
B.	4	-	-	4	-	6	6	4	-	4
C.	9	-	-	9	10	-	10	9	-	9
D.	-	20	-	20	-	-	0	-	-	-
E.	-	30	-	30	12	-	12	-	12	12
F.	10	-	-	10	10	-	10	-	-	-
G.	10	10	-	20	13	-	13	10	10	20
H.	14	-	-	14	56	-	56	14	10	24
I.	25	-	-	25	20	-	20	25	-	25
J.	15	5	-	20	30	-	30	15	15	30
K.	25	-	-	25	18	-	18	25	-	25
L.	11	19	-	30	20	20	40	11	19	30
M.	24	-	35	59	35	-	35	24	8	32
N.	50	-	-	50	105	-	105	150	50	200
O.	60	-	-	60	100	-	100	65	15	80
TOTAL 257	84		35	376	434	26	460	352	139	491

* = No Seasonal Thinners or Pickers - = 0(ZERO)

60% of the permanent labour force.) Thirteen of these farmers used African migrants on short-term contracts for this purpose. The fourteenth farmer made use of his neighbour's labour - who were not required at the time - to pick his crop. In addition one farmer recruited Coloured labour from as far afield as George and Bredasdorp (both men and women from this area were available for picking.)

According to information obtained from ten farmers, short-term migrant workers were contracted for a mean basic daily cash wage of R2,05 per day. In addition six of these farmers offered some cash bonus according to the quantity actually picked.

Packing

While packing more or less coincides in time with picking, cold storage facilities make it possible for the packing season to be extended somewhat beyond the picking operation. Some farmers pack their fruit on their farms, others being members of one of two large packing co-operatives in Elgin. Here we shall briefly consider the packing operations both of the farms themselves and the packing co-operatives. We note that in all packing operations, besides the specific task of packing, a number of women are involved in the process of sorting apples into various grades.(All of the data provided in Table 2 reflects the combined number of packers and sorters.)

(i) Packing on farms

Twelve of the fifteen farmers interviewed packed their own fruit (apparently a somewhat higher proportion than is applicable to the area as a whole), all of them utilizing women resident on their farm as seasonal labour for this operation. In addition seven of these farmers recruited women from surrounding areas to supplement the number of workers (352 women resident on the farms + 139 women from surrounding areas, totalling 491 in all). Clearly a number of men, whom we have enumerated as either

permanent workers or seasonal 'pickers' are also active in the packsheds.

Packing - the more highly paid job - is usually paid on a piece-work basis, while sorting can be paid on either a daily or a piécework basis. Although being piecework, there is a wide disparity in earnings between workers, farmers were asked to estimate the mean earnings of a packer. The mean wage, for the eight farms from which information was obtained, was R4,60 per day.

(ii) The packing co-operatives

Although our focus is seasonal labour requirements on fruit farms, packing co-operatives merely represent an alternative form of organization of one of the seasonal activities of agriculture. Furthermore the co-operatives (Elgin Fruit Packers Co-operative; begun in 1948, now having 21 members, the Kromrivier apple co-operative with 36 members), are among the largest employers of labour in the district. For these reasons we will briefly consider their labour requirements.

Cold storage facilities enable the co-ops to continue packing and marketing (co-operative marketing being another of their functions), from mid-February through until December. Nonetheless they exhibit the same seasonal fluctuations in activity as farmers, operating at full capacity from the end of February until approximately the middle of May. At the hieght of their activity Elgin Fruit Packers employs ± 400 women as packers and sorters. These 'Coloured' women are drawn from the locality, other surrounding areas nearby (this group commute daily) and more distant areas (many of these women are accomodated in a hostel owned by the co-op during the season.) Off-season only women from nearby (few more than 100) - mostly the wives of men permanently employed by the co-op - are employed. While earnings are regarded as confidential, they are apparently competitive with those paid by farmers. In addition, 185 migrant workers are recruited from the Transkei, ninety percent of them on short-term (six month) contracts initially (although in some cases

the contracts are extended.)

While detailed information was not obtained for the Kromrivier co-operative, it appears to operate on almost as large a scale, notwithstanding the fact that it was only founded in 1970. Approximately three hundred women are employed in season (120 of whom are accomodated in the co-op's hostel), of a total in-season labour force of +500. Out of season this labour force declines to about 200.

Pruning

Pruning appears to be one of the most critical operations in the apple production cycle. To a great extent improved "tree training" techniques have been responsible for the increases in yield achieved over the past few years. While pruning is carried out at a specific stage in the production cycle and as such is seasonal, the operation does not appear to require large numbers of seasonal workers.

While in the past, pruning teams may have been responsible for the pruning of a large number of farms, this practice has to some extent fallen into disrepute with farmers, who are sceptical of the quality of work performed by the pruners. They have preferred to train their permanent workers for this specialized function. We note the possibility that as permanent labour becomes increasingly scarce and costly, farmers may attempt to reduce the number of permanent workers employed, and substitute them with short-term seasonal workers to an even greater extent than is documented here. Under these circumstances, highly skilled, specialized pruning teams may become commonplace. Currently however only four of the farmers interviewed make use of pruning teams (generally in June and July), two utilizing labour from Grabouw and another a team from Hawston.

(b) The Hex River Valley Table Grape Industry

We shall now consider seasonal fluctuations in the demand for

labour for another kind of fruit farming - the table (or dessert) grape industry. It must be emphasized that table grape farming involves entirely different processes, and thus different seasonal fluctuations, from the cultivation of wine grapes (viticulture). As we shall see the length and amplitude of the fluctuations are different from apple farming, with only one of the peaks necessitating the recruitment of labour from outside the farm to any great extent. We focus on each of the seasonal variations in some detail. Much of the statistical information included in the text may be found in Table 4 overleaf.

Pre-thinning Preparation

Preparation of grapes for export involves a number of distinct tasks, all of which are necessary if the crop is to be of a standard which meets with the requirements of the DFB. The various phases of this preparation generally begin in mid-November (although a few farmers begin a little earlier) culminating in the thinning operation which will be discussed separately. The major activities in the pre-thinning period are as follows:

"Lote opvleg" - the shoots of the vines are tied onto the vine trellice;
"Blare breek" - in order to give each bunch additional space and to prevent damage to the grapes, leaves around each bunch (excepting those above wich give shade) are broken off;
"Ankers afmaak" - additional shoots which may attach themselves to the trellicing are broken off;
"Debunching" - in order to ensure maximum size of the berries, only a limited number of bunches are permitted on each vine, the remainder being discarded (this activity, while similar in its goal to the thinning of apple trees, must be distinguished from the thinning of table grapes).
"Trosse punt" - since the DFB restricts the size of a bunch which may be packed for export, the length of the bunches is trimmed.

Only two of the eighteen farmers interviewed found it necessary

TABLE NO. 4 : SEASONAL EMPLOYMENT IN THE HEX RIVER VALLEY

	PRE-THINNING PREP.			THINNING				PACKING		
Farm	Farm Women	Other	Total	Women	Farm Children	Other	Total	Farm Women	Other	Total
A.	7	-	7	7	-	50	57	7	5	12
B.	8	-	8	8	10	30	48	8	-	8
C.	16	-	16	16	-	30	46	16	-	16
D.	14	-	14	14	25	-	39	14	-	14
E.	12	-	12	12	-	45	57	12	-	12
F.	18	12	30	18	-	45	63	18	4	22
G.	25	-	25	25	-	120 (20)	145 (45)	25	-	25
H.	30	-	30	30	-	50	80	30	-	30
I.	35	-	35	35	-	30	65	35	-	35
J.	20	-	20	20	-	80	100	20	10	30
K.	70	-	70	70	16	40	126	70	-	70
L.	30	-	30	30	-	150	180	30	10	40
M.	33	-	33	33	-	55	88	33	-	33
N.	30	-	30	30	10	60	100	30	-	30
O.	60	-	60	60	-	-	60	60	-	60
P.	75	40	115	75	-	200	275	75	-	75
Q.	80	-	80	80	75	120	275	80	-	80
R.	120	-	120	120	-	550	670	120	50	170
TOTAL	683	52	735	683	136	1655 (1555)	2474 (2374)	683	79	762

* 120 for 5 days corrected for 6 weeks - = 0(ZERO)

to recruit labour from outside their farm; in every other instance the women on the farm provided adequate labour for the completion of these operations.

Thinning

This highly labour-intensive operation generally referred to as "korreltjies uitknip" or "groendruiwe tyd" involves working through each of the fifteen to twenty bunches remaining on a vine, removing the small and undeveloped berries and generally reducing the number of berries on a bunch from ±200 to ±100.

The operation takes place on various farms at some time in December and January and generally continues for approximately six weeks. As was explained in the theoretical discussion at the beginning of this section, the number of man-hours worked is constant for a given crop size. However it is not possible to specify accurately the time period for which the operation will continue - or indeed the precise number of workers involved in the operation each year. Four farmers explained that they simply recruit as many workers as they are able to obtain for the thinning programme, the more workers they can obtain the shorter the time to completion of the operation (and therefore the fewer the number of man-hours worked per worker.) While the criteria suggested in the earlier theoretical discussion are not adequate to explain how farmers determine the optimal length of the seasonal thinning operation in the Hex River Valley- among other variables farmers possibly perceive a cost which they will attempt to minimize in the need to supervise a thinning labour force, - we will not attempt to develop systematically more satisfactory criteria in any detail. It would however appear that the earlier in the season a bunch is thinned, the smaller the berries and thus the simpler the process. Nonetheless, while somewhat more difficult to thin, the operation is still effective if begun later in the two month period.

In fact all except one of the eighteen farmers who utilized seasonal labour for thinning in the 1975/6 season required this labour for a time period varying between four and eight weeks, the mean being a little above six weeks. The eighteenth farmer completed his thinning operation in five days - he had arranged to share a team of thinners with four other farmers, the team thus being employed for a reasonable time period (in addition he claimed to offer a somewhat higher rate than other farmers which facilitated the recruitment of this large number of workers.) Only one of the eighteen farmers did not find it necessary to recruit labour from outside his farm (over and above the dependents active in thinning.)

All farmers paid their workers on a piece rate basis (by the vine) for thinning. While piece rate earnings diverge widely between individuals, farmers were asked to estimate the average earnings of thinners on their farm. The mean earnings per worker for seventeen farms was R1,38 per day.

While Table 4 shows a total number of 2 474 seasonal workers involved in the thinning process (2 374 if we transform the five-day thinning operation involving 120 workers into a six week equivalent involving twenty workers) - more than three times the number of permanent workers employed - this may be an overestimation of the actual number of individuals involved, since some people having thinned all the vines at one farm, might well have been included in the figures for another farm as well. (This would almost certainly have been the case if a census of all farms in the valley had been conducted.)

Id addition the numbers given by farmers are in themselves approximations, since workers can shift almost daily from farm to farm with the numbers on each farm liable to widespread fluctuation.

Picking and Packing

The picking and packing operations are completed in a period

extending for approximately three months (from February until May.) Grapes being highly perishable, they must be packed immediately after picking - in fact grapes picked in the valley in the morning are usually stored under refrigeration in the Cape Town docks that same night. Once picked, every bunch must be inspected before being packed and damaged berries must be removed from the bunch, in itself a labour-intensive operation. The less comprehensive the earlier thinning, the more work must be completed within the packshed if the grapes are to adhere to DFB standards.

In all cases it would appear that the permanent work force (sometimes assisted by the women active in the packsheds for short periods) is sufficient to pick the entire crop. Thirteen of the eighteen farmers interviewed had sufficient potential seasonal workers resident on the farm to enable them to complete their packshed operations addequately, only five farmers introducing limited quantities of labour (a total of 75 women, compared with 683 women resident on the farm) from outside their farms for this purpose.

Besides these activities, which provide almost continuous seasonal employment for women resident on the farm from November until May, further seasonal labour (excluding various casual jobs which we assume periodically become available), is required during pruning time - i.e. July and August; after the permanent workers prune, the women are occupied in removing pruned branches from the vineyards and in tying the vines to the trellices.

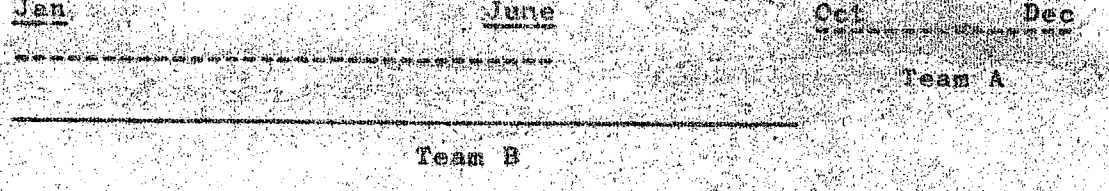
VIII Seasonal or Permanent Employment? A Special Case

In the previous section we noted that African migrant workers on "short-term" contracts made up a large proportion of the seasonal (picking) labour force on Elgin apple farms. However, as we shall see, Elgin farmers recruit migrant workers for contracts varying in length from less than six months to almost one year. On what basis will we decide whether a worker is permanently or seasonally employed?

While those workers employed on annual contracts may clearly be treated as permanent workers, and - given the nature of the seasonal peaks - those employed for contracts of seven months and under may be regarded as seasonal employees (as we have seen seasonal labour is required primarily between November and May in Elgin), it is not immediately clear where we are to classify those workers employed on eight to ten month contracts. This difficulty is however resolved to a considerable extent if we consider how farmers organize the recruitment and utilization of this labour. As a convenient simplification we shall treat all these eight to ten month contracts as if they were nine month contracts.

Four of the six farmers employing migrants on nine months contracts- utilizing 476 of the 502 African workers employed on this basis - organized these workers in a similar manner: They recruited them as two separate teams, arriving and departing at different times but overlapping for six months during the season when labour requirements were greatest. Thus one team would be recruited from the beginning of January until the end of September; the other from the beginning of October until the end of June. This is illustrated in Fig 1 :

Fig 1



The figure above leads us to an interesting observation : If Team A and Team B were the same size, let us say Y , (and in fact these four farmers did divide their nine month contract workers into twoteams of equal size), then the farm would have a constant number of migrant workers (Y workers) between July and December (inclusive) and twice that number from January until June. Thus if we consider how these workers are utilized purely from a statistical perspective - How many workers -

are present at any point in time? - It would seem as if Y workers were permanently employed, with a further Y workers being hired for the seasonal peak from January until June. It is on the basis of this approach that we have set out the number of migrant workers permanently - and the number seasonally - employed in Elgin; this data having been given earlier in the text and in Tables 1 and 2 respectively. Thus 238 migrant workers on nine month contracts have been included as permanent workers, and a further 238 are included as seasonals. (This resolution of our classification problem is not however entirely satisfactory: Two farms, employing a total of 26 workers on nine contracts, recruit all of these workers simultaneously. We have chosen - purely arbitrarily - to include all these workers as seasonal workers.)

Not only does the approach described above largely resolve our statistical difficulties, it also appears to offer a number of interesting insight into the nature of the employment contract. If, as it appears from our discussion, the farmer required Y permanent workers and Y seasonal workers, why did he not recruit them on that basis? Instead he has adopted a rather indirect method of achieving that end. In fact the indirect method appears to be the most efficient (that is, cost minimizing) manner of organizing his labour force. Since as we shall see migrant workers appear to prefer longer to shorter contracts, the farmer can recruit his labour for a lower total wage cost if he hires all on rather longer contracts, rather than some on longer contracts and others on short term contracts. The workers perceive merely that they are to be employed for nine months (which is apparently preferable in the aggregate to some combination of six and nine month contracts); the farmers - who treat labour as a production input - perceive the result somewhat differently. Through this somewhat complicated system of recruitment they have obtained their preferred levels of permanent and

seasonal employment (which as we have seen represent different kinds of production inputs) at the minimum cost.

IX The Supply of Seasonal Labour and the Flow of Information

Since the work involved is seasonal in nature, the farmer must discover a source of supply of workers, previously unemployed, who are willing to accept employment for a short period of time after which they will once again become unemployed.

Seasonal fluctuations in labour requirements are an international phenomenon, and it is interesting to note the sources of supply of this seasonal labour in other parts of the world: In England in the 1930's farmers often employed "organized groups of Irish migrants".(16) The source of supply of seasonal labour in California has undergone numerous changes over time: In the 1880's primarily Chinese workers performed this work. By the early twentieth century Chinese immigration had come to a halt and Japanese labourers became the chief Californian seasonal workers. They too came to be replaced - by Mexican and Filipino workers who comprised the major source of supply inthe 1950's.

Fruit farmers in Elgin and the Hex River Valley have much in common in their sources of supply of seasonal labour: In both areas a lagge proportion of their seasonal labour requirements are drawn from dependents of permanent workers, resident on the farms; and others who although not resident on the farms live within commuting distance from them. Apple farmers in Elgin also make use of African migrant workers hired on short-term contracts.

Since these three sources of supply are largely distinct from each other we will consider each of them separately, showing how they are integrated into the farming operation in both Elgin and the Hex River Valley. Where relevant we shall also

consider how information flows between those who seek labour, and those who wish to supply thier labour, thereby making possible the efficient functioning of the market.

(a) Dependents Resident of Farms

We see from the data in Tables 3 and 4 that dependents resident on farms constitute a substantial - and stable supply of seasonal labour. In Elgin, women resident on farms comprise almost seventy percent of the seasonal thinning labour force, (for our sample that is), and a marginally higher percentage of those involved in the packsheds. In the Hex River Valley more than 90% of those seasonally involved in the pre-thinning and packing operations were drawn from the farm itself, as were 34,5% of those thinning (16,6% of this group was made up of children resident of the farm - of all cases investigated, table grape thinning was the only seasonal activity in which children were involved.)

While in the Hex River Valley the number of seasonally active dependents, excluding the children employed for thinning, exceeded the total number of workers permanently employed (683 women and 649 permanent workers), in Elgin seasonally active dependents numbered less than fifty percent of the permanent work-force (362 women compared with 771 permanent workers.) However if we compare the number of active dependents with the number of permanent workers continuously resident on the farms (i.e. exclude permanent migrants) then active dependents comprise the equivalent of 90% of the permanent resident labour force. In the Hex River Valley where proportionately far fewer migrants are permanently employed than in Elgin, excluding the migrants hardly affects these proportions (they rise from 105% to 120%). Thus we see that the number of dependents relative to permanent workers depends on farmer's decision as to whether to employ African migrants or 'Coloured' workers. As a result of migrant labour legislation only if he chooses to work with 'Coloured' staff will dependents accompany his permanent labour force. Thus he must choose between employing largely African migrants, possibly at a lower wage

cost and certainly with little additional cost in housing, or 'Coloured' workers along with their dependents and incur their increased costs of a (possibly) higher wage bill and those of providing adequate family housing (which - especially in Elgin - is increasingly becoming a prerequisite for the attainment of permanent 'Coloured' workers.) The basis for - and changing nature of - this decision over time will be considered later. Nonetheless the above discussion helps us understand the economic rationale for a motion passed at the annual conference of the Boland Agricultural Union requesting that dependents of African migrants be permitted to accompany their husbands (17) - any such decision would reduce the opportunity cost of employing African migrants rather than 'Coloured' workers, since employing African workers would then not necessarily imply a lower number of dependents resident on the farms than otherwise.

In both Elgin and the Hex River Valley these women performed seasonal and casual functions (as defined earlier); farmers in the two areas estimated that they were employed - albeit non-continuously - for approximately eight and a half months of the year (somewhat surprisingly a similar figure was obtained for both areas.) If we do not consider the situation of these dependent workers from the perspective of the 'function in production' (from which perspective they are either seasonal or casual workers, depending on the function they are performing at any particular time) but rather from the nature of their 'employment agreement', then they may be regarded entirely as 'casual' workers - i.e. in the sense that their employment is on a daily basis. Clearly it is to the advantage of the farmer to have resident on his farm a potential labour force to perform casual (and seasonal) operations when necessary. Under these circumstances he is able to minimize his labour costs by only employing people for specific functions without being impelled to contract on the market - with all the costs involved, both in the dissemination of information and the provision of transport for those employed - each time he requires this labour.

It would appear that to ensure that this labour force does remain available dependents of permanent workers resident on the farm generally are obliged to work on the farm whenever they are required. The existence of such a policy on the part of farmers was not adequately documented for Elgin since it only became apparent quite late in the survey there. One Elgin farmer described it as an "unwritten law" that if a woman lives on a farm she is to work on that farm if required and not elsewhere. In four interviews it was made clear that if the wife of a permanent worker were to work outside the farm although her services were required by the farmer, then the permanent worker would lose his employment and the family would be required to vacate their house.

Documentation of the existence of such a policy is however far more substantial for the Hex River Valley: Thirteen of the eighteen farmers interviewed there explicitly confirmed that dependents of permanent workers resident on the farm are obliged to work on the farm when they are required. In fact four farmers noted that an important criterion in their hiring of permanent workers is the number of potentially productive dependents in the workers' family. As a further means of procuring guaranteed seasonal labour, two farmers constructed additional housing on their land which they rented out on the proviso that women resident in this housing would work on their farms during the seasonal peaks.

For the worker who must decide whether or not to seek agricultural employment, the fact that his wife would be compelled to accept casual employment on the farm (and thus may not be permanently employed elsewhere) is a criterion that must be considered in his decision. Whether he regards the compulsory provision of casual employment as a nett cost (his wife may earn more elsewhere) or a nett benefit (not only has he found employment but so has his wife, albeit only on a casual basis) is however not entirely clear.

(b) Seasonal Workers Not Resident on Farms

As a source of supply to meet seasonal fluctuations in labour requirements, seasonal workers not resident on farms (short-term migrants are not included under this heading) are relatively far more important in the Hex River Valley than in Elgin. Furthermore the recruitment and organization of this labour force follows somewhat different patterns in each of these districts. For these reasons we shall discuss the utilization of this labour force separately for the areas researched. Among other information we will attempt to set out from where this labour is recruited; how the market is organized - that is, how information is spread in order to bring buyers and sellers of labour together; and finally we will attempt to illustrate (within the constraints of the information available) how this seasonal labour force is active out of season.

(i) The Hex River Valley

While a few non-residents are employed seasonally for pre-thinning crop preparation and for packing, as may be seen from Table 4 the bulk of these seasonal workers are employed over the thinning season. We have already noted the amplitude of the seasonal thinning peak - an additional 2 374 workers (three and a half times the number of permanent workers employed) are employed over this period. Fully 70% of these workers are drawn from outside the farms. It is on this segment of the seasonal labour force that we will now focus. We will thus not directly consider those few non-residents employed for other seasonal functions. (For this discussion we have scaled down the 120 workers employed for 5 days to their six week equivalent - as discribed earlier.)

Farmers were asked to estimate the relative proportion of men, women and school children among their seasonal thinning work-force from outside the farm. From these estimates, weighting them according to the number actually employed by each farm, it

is calculated that fully 51% of the total workforce is made up of schoolchildren, 38% women and 11% adult men.

The thinning labour force is drawn from the following sources:

525 workers from Worcester by six farmers;
355 from De Doorns by eight farmers;
345 from Touws River by five farmers;
30 from Ceres by one farmer, and 10 from Orchard by one farmer. In addition two farmers drew a total of 210 workers from farms owned by friends or relatives some distance away where the women were not required over the thinning period. One noted that the number of people resident on his own farm increased over this period as family and friends of his permanent workers - aware that seasonal employment was available - came from as far afield as Cape Town (a second also believed some of his labour was attracted from the city.) One farmer chose not to use thinners from surrounding towns - according to him they were both far less efficient, and far less willing to accept the conditions of farm work imposed by the farmer. He preferred to wait until near the end of the thinning season and utilize resident seasonal labour (i.e. dependents) of neighbouring farmers when they had completed their own thinning programme.

Workers drawn from all of these sources are fetched daily and returned to their homes each evening. While no farmer interviewed was actually using the system himself, two knew of others who procured their labour from the more distant Karoo or Namaqualand, the labour then being resident on the farm for a longer time period. The use of labour from this source was apparently far more widespread in the past.

While varying in scope and efficiency, all farmers had developed some form of organization for the recruitment of their non-

resident seasonal labour force. In no case - of the sixteen investigated- did the farmer simply drive into the area from which he procured his labour, without making any prior arrangements whatsoever. The means employed and the efficiency with which prior information was disseminated did however vary widely.

The most common, and presumably most efficient, form of recruitment was through a "middleman" of sorts - nine farmers had organised contacts in the villages to procure a team of thinners and supervise this team while they were active. The agents-cum-team-leaders are generally paid a higher wage than their team and possibly a bonus per worker recruited. It would appear that farmers maintain the same agents over a long period of time, a reliable agent being regarded as a most valuable asset. In addition - and quite surprisingly - a large proportion of the seasonal work force organized by agents (ranging from a "solid core" to as much as 80%) returned to the same farm annually. This may imply that non-price historical factors play an important role in disseminating information and determining on which farm a worker is employed.

It is interesting - although, given the number of children involved in the thinning programme, not surprising - to note that four farmers made use of schoolteachers to superivse children working, often in teams organised by the teachers themselves. According to one farmer there is widespread competition among farmers for the services of the teachers who are thus highly paid. (Supervision is in fact necessary; dispite the large aggregate number of children involved some farmers refused to make use of any, believing that their work was in fact often a cause of damage to the bunches.)

Some farmers were far more haphazard in their manner of organization of their non-resident seasonal labour force. In fact two farmers simply began their thinning operation with a few workers who

returned annually, relying on word of mouth - usually with satisfactory results - to ensure that they obtained sufficient labour. It is interesting to note that of all farmers interviewed, these farmers reported the widest fluctuations in the composition of their thinning labour force, one farmer asserting that different people performed this work every week, and the other noting that only 25% of his thinning labour froce returned annually.

It may be argued that the supply of non-resident seasonal labour is price inelastic, there being little alternative work available for those who seek seasonal employment at this time, and presumably in this area. Under such conditions we might have expected farmers to collude in the recruitment of this labour, holding down the wage, thereby substantially reducing their total wage costs without causing much decline in the number of workers willing to supply their labour. In fact though there appears to be substantial wage competition between farmers attempting to procure additional thinning workers. A possible explanation is that while some form of monopsonistic collusion may be in the interests of those farmers less successful in the procurement of seasonal labour (and may even be more efficient in the aggregate for all farmers), it may not be in the interests of those farmers who have least difficulty procuring this labour force under a competitive system, especially if under the monopsonistic recruiting system labour is apportioned on a quota basis.

There appears to be sufficient labour available for all farmers in the valley to complete their thinning programme. Only two farmers complained of difficulty in obtaining the desired quantity of seasonal labour: In one case the farmer felt his difficulty was a result of entering the labour market a little late, after most of the labour had already been employed. (However - if he chose not to raise his wage offer - it would seem possible for him to have waited a little longer until adequate labour would again be available, with little prejudice to his crops.) The other farmer perceived his problem to result from the absence of any

adequate means of disseminating the information that employment was being offered - he appeared to have no reliable contact in any of the nearby villages.

Finally - to the extent that we are able - we turn to consider the activity of seasonal thinners from the villages when they are not employed on the farms in more detail. As a result of the limited time available, and consequently the limited number of interviews possible, the information is obtained indirectly via farmers, and not from the workers themselves. The schoolchildren, who as we have seen constitute a very substantial proportion of the thinning labour force, attend school. Given the large numbers of schoolchildren employed for thinning, it appears particularly fortunate for farmers that school holidays coincide with the thinning season. It seems that the men (besides the teachers) are almost all employed permanently in the building industry; they wish to supplement their earnings over the builders holiday. No clear conclusion can be drawn as to how the women are active for the rest of the year. Ten of the fourteen farmers who responded, asserted that at least some of the women not employed for the balance of the year (six of these felt that the majority were in fact unemployed.) Other alternatives suggested were variously that the women were employed as domestic workers (suggested by seven farmers), found jobs in factories - especially fruit processing factories in the area (eight farmers), or were engaged in other seasonal fruit farming activities in Ceres and Tulbagh (three farmers). One farmer asserted that some of the workers - from Touws River - found seasonal employment in the West Coast fishing industry.

(ii) Elgin

In sharp contrast to the Hex River Valley as we see from Table 3, non-resident seasonal workers are the least important source of supply of seasonal labour for farmers in Elgin, comprising only 22% of the thinning labour force (five farms use them for this purpose) and 28% of those packing (used by eight farms.)

The women are recruited from Pineview, the 'Coloured' township

alongside Grabouw, from where forty women were employed by three farmers in our samply; Sir Lowry's Pass which supplied thirty women to two farms; and various forestry stations in the area from which sixty workers were drawn. In addition five farmers employed approximately forty-five women from nearby farms who were not required to pack on their farm where they lived, generally because the farmer was a member of a packing co-operative. Beyers (18) pinpoints Genadendal, Hawston and Elim as major further sources of supply of seasonal labour, (all in addition Elgin fruit packers co-operative also draws some labour from Bot River, Greyton, Riviersonderend and Strand/Somerset West.) While some of the co-op workers live at the hostel provided, the rest live at their homes and are transported daily by the farmers employing them. Besides these sources, one farmer regularly made use of African women "illegally" in the area who, aware that there was work available, arrived annually at the farm (two from as far afield as the Transkei.) Another farmer drove ± 400km to George and Bredasdorp every year where he recruited twenty Coloured workers who worked on the farm for three weeks before being returned.

Overall the organization of recruitment of this non-resident (in most cases) seasonal labour force was far less sophisticated in Elgin than in the Hex River Valley. Only three farmers had established contacts in the area to act as their recruiting agents. A further three farmers maintained that it had become an established 'custom' that the same women were to be employed on the farm for specific period annually. In fact there appears to be a general awareness among communities in the region as to when seasonal employment is available; in five cases farmers simply drove trucks through the area and recruited on the spot.

There appear to be sufficient women in the area to perform the required work at the going wage (competitively determined), only two farmers asserting that they found it difficult to obtain their requirements of seasonally employed women.

For reasons mentioned earlier farmers (not workers) were asked how they thought the women were active in the off-season. Of the six who responded, four asserted that the women were unemployed, two of them noting that there was little activity in the area during the off-season. One farmer suggested that many of the women worked as 'chars' during the off-season. The sixth farmer believed that while most were unemployed, a few women found temporary work in factories, with some finding permanent employment and thus not returning the following season.

(c) Short-Term Migrants

While no short-term migrants are employed in the Hex River Valley, large numbers are introduced into Elgin during the harvest season; these migrants constitute almost 95% of the seasonal picking force (see Table 3) As explained earlier, for the purposes of guaging the magnitude of seasonal labour requirements (that is, seasonally required inputs of the factor of production labour) we divided migrants recruited for eight to ten months into permanent and short-term contract workers. However in this section we are considering the supply (offer) of migrant labour for contracts of varying lengths. It is thus necessary to distinguish between these different contract lengths. Table 5 illustrates the number of migrants employed by length of contract for our sample.

TABLE 5 : Number of Migrants, By Length of Contract

Contract Length	Number of Workers	Number of Farms
12 Month	128	7
8-10 Month	502	6
6-7 Month	67	3
Under 6 Months	103	6

For the duration of their contracts, the migrant workers - recruited almost entirely from the Transkei - live on the farms at which they are employed.

Farmers use a number of alternative methods in order to procure this labour. Five farmers sent a lorry to the Transkei to recruit labour; three farmers accompanied this truck in order to select their workers personally (two of them were accompanied by a permanent African worker able to speak the language.) Three farmers employed so-called 'boss boys' from the previous year's workers paying them (per worker) to recruit a team for the following year. A further three farmers asserted that it was largely the same workers who returned year after year. One farmer had organised an agent - permanently stationed in the Transkei - who (as a 'sideline') recruited his labour for him. Only one farmer arranged for labour to be sent via the Bantu labour offices.

There appears to be a very definite feeling among farmers - especially those making use of contract workers for six months or less - that migrant labour is becoming increasingly difficult to obtain. Only two of the nine farmers employing migrant workers on a short-term basis (i.e. for contracts of less than eight months duration) unreservedly asserted that they were experiencing no difficulty in obtaining the desired number of short-term contract workers. Four farmers felt that the wages it was necessary to offer to recruit labour successfully (+R2,00 per day minimum, as we saw earlier) were becoming excessive. One farmer suggested that the migrants were "pricing themselves out of a job". Two more farmers noted that the only African workers prepared to accept employment in agriculture were youths working for the first time and elderly men.

These results, appear to imply that an ever-increasing shortage of African labour is developing. Our discussion of the use of migrants on annual contracts as permanent workers led us to a similar conclusion. While superficially these findings appear to conflict with recent estimates of African unemployment (especially those of Simkins), there is in fact a plausible reconciliation: A major cost of accepting employment is the foregone opportunity

to search for alternative, possibly more preferred, employment. The constraints imposed by the migrant labour system make this cost especially marked for unemployed African workers, the opportunities for search once a contract is accepted being highly circumscribed. Furthermore the application of pass laws to prevent the migration of African agricultural workers to urban areas in response to increasing shortages of labour in those sectors has resulted in a "dual-wage" economy, with agricultural wages artificially being depressed far below the wages in industry. (We note however that this 'pass law explanation' of the large agricultural-industrial wage differential cannot be as successfully applied in the Western Cape where 'Coloured' people, not subject to pass-law restrictions, comprise a large proportion of the permanent agricultural labour force.) Although agricultural employment may be offered, in the light of both the conditions and earnings in this sector, workers may prefer to forego the possibility of earning now and continue searching for alternative employment in the expectation that the present value of future earnings (and the 'return' from more favourable conditions) may exceed the present value of agricultural employment.

Unlike the situation with respect to those migrants who were contracted for nine months - where a large proportion of the same workers (generally above 60% of them) appear to return to the same farm annually - fully five of seven farmers utilizing short-term contract labour reported that very few of these short-term workers returned to the following year. All of these farmers felt that on completion of this contract the workers attempted to find employment for a longer time-period.

Significant benefits accrue to farmers if workers are employed for the longer contract. African workers appear more willing to supply their labour for the longer contract, thus if farmers organize their recruitment and utilization of this labour efficiently (as permanent and seasonal workers in the manner described earlier) total wage costs may decline. In addition there is a far greater

likelihood of the same worker returning to the farm the following year - which farmers almost unanimously prefer. The rationality of the scheme whereby some farmers employ two overlapping teams of none-month contract workers is further demonstrated.

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The reasons for differences in the source of supply of seasonal labour for Elgin and the Hex River Valley are easily uncovered; they appear to be related to the length of the seasonal peak and the nature of the work that must be performed during this peak. While farmers have some control over the length of these peaks, this control is not unlimited. Whereas the picking and packing peaks in Elgin continue for more than three months, the thinning peak in the Hex River Valley - which is the peak which requires the largest seasonal additions to the labour force - continues for only six weeks. Given the high fixed costs (especially transport costs) of procuring migrants from the Transkei one would not expect them to be employed for such a short period of time, unless their daily (variable) wage cost are appreciably lower than those of any alternative source of labour (which definitely does not seem to be the case). It is thus not surprising that no migrants are seasonally employed in the Hex River Valley. A further explanation may be that the nature of the seasonal work in Elgin for which migrants are employed (picking) is such that women are not able to perform this job adequately. Since seasonal male 'Coloured' labour is apparently prohibitively expensive, migrants are employed for this purpose.

Thus we might expect the cost-minimizing farmer to employ migrants only after he has drawn from his cheaper alternative sources of labour - firstly dependents resident on his farm for whom no recruiting costs are required, and thereafter suitable non-residents from surrounding areas. Having borne the fixed costs of transporting the migrants from the Transkei to his farm, they will be employed continuously for the entire season: The farmer has contracted to employ them for a given time period. If the

farmer finds that he requires less labour than he had anticipated it is those workers employed on a daily basis who are dismissed first: Less, non-resident dependents - or none - will be employed. If the farmer still has excess labour, dependents resident on the farm - who are also employed on a daily basis - will not be offered work. Seasonal migrants will however continue to be employed as they had been guaranteed payment in advance.

X Structural Change in the Labour Market over Time

Other than a brief discussion of the historical circumstances which led to African and Coloured people working as farm labourers in the Western Cape, our analysis has been largely static in the sense that it has only considered the situation as it exists at present. We shall briefly attempt to fill in some of these gaps by considering structural changes in the labour market in the medium-term, that is over approximately the last twenty years. In addition a few hypotheses will be put forward as to what future prospects might be.

While adaptation is a continuing process, in the short-term changes appearing to be only marginal, over time some of these alterations may be far-reaching indeed. Some of the changes discussed are common to both Elgin and the Hex River Valley, while others are relevant to one area only. Although our focus is on seasonal labour, some consideration will also be given to changes in the permanent labour market as well. Detailed research into the historical patterns of supply of labour were not possible; thus while in principle much of what follows is verifiable, in fact much of the discussion still remains conjecture.

(i) There seems to have been a trend towards the substitution of African migrant workers for 'Coloured' workers (and - an enforced substitution - for prison labour in the Hex River Valley) over time in both permanent (Elgin and the Hex River Valley) and seasonal (Elgin only) employment. The supply of 'Coloured'

labour seems to have become increasingly scarce over time, relative to demand. The response of farmers was not simply to increase the wage of the Coloured worker, but rather to draw on an alternative source of labour supply, namely migrant workers from the Transkei.

One might expect the African migrant worker, entirely unfamiliar with the environment, to be relatively inefficient on a fruit farm. However, according to fully ten of the fifteen farmers interviewed in Elgin, this is to some extent offset by increased reliability, the African migrant motivated solely by a desire to maximize his earnings in the period that he is away from home. Notwithstanding both apparently lower nett efficiency and the apparent trade-off between reduced housing costs for African migrants and fewer dependents resident on the farm, the relatively lower total labour costs seem to have encouraged this substitution of African migrants for Coloured workers.

With an ever-increasing scarcity of migrant workers there may well be a renewed attempt to attract 'Coloured' workers back to the farms, and reduce, relatively, the number of Africans contracted. Rapidly improving living and working conditions for families based on farms (noticeable especially in Elgin) can be explained on this basis.

We note that the above discussion is based on a not-too-unrealistic assumption that the impact of economic growth on the demand for labour, relative to supply, resulted first in increases in the real income of 'Coloured' labour, shifting relative prices in favour of employing African workers. After some lag this effect was felt by African migrant workers; thus in recent years the relative price of African labour vis a vis 'Coloured' labour has again begun to rise.

(ii) Here we shall briefly discuss structural changes in the non-

resident seasonal labour market. We shall consider both a specific change in the source of supply of seasonal packers in Elgin, and develop a more general explanation (drawing a few examples from the Hex River Valley) of the direction of past and future changes in this market.

Until not long ago packing operations in Elgin were carried out largely by White women. As this labour became increasingly scarce and expensive, it became necessary to reorganize the process. Change was facilitated by technological advance which introduced new methods of packing, involving different skills, less complex than those previously required. The costs of training unskilled 'Coloured' women to perform this job were thus substantially reduced. Furthermore, since everyone had to be trained including packers already skilled in the old methods, it could be argued that in fact a new job had been created, making the introduction of 'Coloured' women into the packing operation politically less hazardous (they were not replacing White workers but performing different work!).

Thus we see that two distinct elements are involved in the change from White to 'Coloured' labour. Firstly technological advances helped, in the way that we have seen, make the shift possible. Secondly the increased demand for female White labour elsewhere in the economy (which made this source of supply more expensive thereby encouraging entrepeneurs to bring about the change) reduced - we assume - racial "job reservation" style resistance to the change.

It would appear that the major change that has taken place in the organization of the non-resident seasonal labour market is an inevitable consequence of the depopulation of many rural areas: Until the relatively recent past many farmers in the Hex River Valley used to travel to the Karoo from where they would recruit workers who remained on their farms for the entire season (i.e. November ot May). Some farmers interviewed were using this

system only three years ago; according to hearsay it still continues in a few isolated cases today. Furthermore those workers who lived in e.g. Touws River would come for an entire week, only returning home on weekends, the farmer thereby spending far less on transport than is necessary today.

As the Coloured population of the Karoo migranted to the Boland (the whole system of seasonal employment may have been an important contributory factor in this process) and as employment opportunities expanded leading to an improvement in the real earnings of Coloured workers, the system was transformed into the daily commuting operation described earlier.

Farmers disagree as to whether casual workers will become increasingly scarce in the future: Many expect the supply of casual workers to increase along with increasing population and economic activity in nearby towns such as Worcester (urban workers will always have dependents) while production in the Hex River Valley remains static. (In Elgin production has been continuously increasing; that this increase continues indefinitely is however unlikely). Other farmers believe that factories may begin to offer permanent employment which could siphon away the seasonal labour force. Perhaps more to the point, especially considering the composition of this thinning labour force, is the possibility that as the real income of the 'breadwinner' increases dependents will feel less inclined to supplement that income (the <u>family</u> backward sloping supply curve.....)

It seems possible that in the future farmers will find it increasingly difficult to obtain permanent agricultural labour (along with their dependents) and migrant workers which will necessitate their paying increased wages if they are to recruit the desired number of workers. It appears to be highly inefficient, at current relative prices of labour and capital and for existing techniques of production, to mechanize fruit farming to any great extent.

At any rate while technological advances may improve efficiency somewhat, there is only a finite potential for improvement. Furthermore not only are labour costs increasing, rising costs are common for all factors of production. Nor is there any basis to presume that revenues will necessarily rise along with increasing costs. Especially with respect to apples revenues on the export market suffered a decline in the most recent season. The reasons for this price decline (increased competition from South American suppliers; and improved storage facilities in Europe enabling suppliers there, who are members of the EEC and enjoy some tariff protection over foreign competitors, to carry sales of their crops into the winter months) imply that the decline may well be a portent of future market conditions.

If in fact revenues do not rise apace with increased costs farmers will have to accept a cut in profits, turn to some alternative crop or leave farming altogether. Already there appears to be a tendency in the Hex River Valley for farmers to substitute wine grapes (which are far less labour-intensive than table grapes and require no packing costs) for table grapes.

XI Conclusion : Seasonal Fluctuations and Cost Minimisation

In this paper we have focused on fruit farming in two areas of the Western Cape, setting out in some detail the nature of seasonal fluctuations in labour requirements. We have attempted to illustrate how farmers respond to these seasonal fluctuations, and the extent to which their behaviour is based on cost-minimizing principles.

Insofar as farmers are able to control the length and amplitude of their seasonal peaks their decisions appear to be based on criteria of efficiency. So too are their decisions with respect to labour utilization. Seasonal labour is recruited from three distinct sources. Farmers organize, and draw from, these

sources of supply in ways calculated to minimize their labour costs. The insistence that dependents of permanent workers are to work on the farm where they are resident when required, and the rather unusual method of organization of migrants recruited on nine month contracts are striking examples of this behaviour.

Thus it is hoped that the paper serves the dual purpose of providing detailed information of one aspect of labour utilization in agriculture, and offering some insight into the basis on which the farmer makes his employment decisions.