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

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

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Contents

	<u>Page</u>
I. EDITORIAL	1
II. ECONOMIC TENDENCIES IN THE SOUTH AFRICAN AGRICULTURE	3
III. ARTICLES	
1. Agriculture: Trends and Prospects, 1963/64 and 1964/65	5
- by C. van der Merwe	
2. All-risk Crop Insurance	8
- by O.E. Burger	
3. The Agricultural Economy of the Highveld Region	19
- by S.W. van der Merwe	
4. Differences in the growth in three sectors of the S.A. agriculture	27
- by J.A. Groenewald	
IV. STATISTICS	35
V. GENERAL, COMMENTS AND ANNOUNCEMENTS	44

X The Agricultural Economy of the Highveld Region *

by

S.W. VAN DER MERWE

Senior Professional Officer, Division of Agricultural Economic Research

The main purpose of this article is to review briefly the outstanding economic characteristics of the Highveld region. It may be of value to research workers who wish to gain an impression of the relative importance of certain products in the region; to extension officers who want a global view of the area in which they operate; and to other persons interested in the region for some reason or another.

It is not possible to discuss all products produced in the region separately; only the most important products, or products in respect of which the region is in a leading position, will be treated in this way.

GENERAL DESCRIPTION

Geographic location

Although the various agricultural regions were introduced mainly for purposes of organisation, the Highveld region is fortunately fairly homogeneous in respect of its agricultural characteristics. A variety of enterprises exist, of course, but the extremes in types of farming present in certain other regions, are not found to the same extent in this region.

*This article is the second in the series dealing with the agricultural regions. In this connection see also the Editorial, etc. of the October 1963 issue of "Agrekon". - Editor.

The map of the region shows that it virtually represents the "Mealie Triangle".

Magisterial districts are not shown on the map; these include the following:-

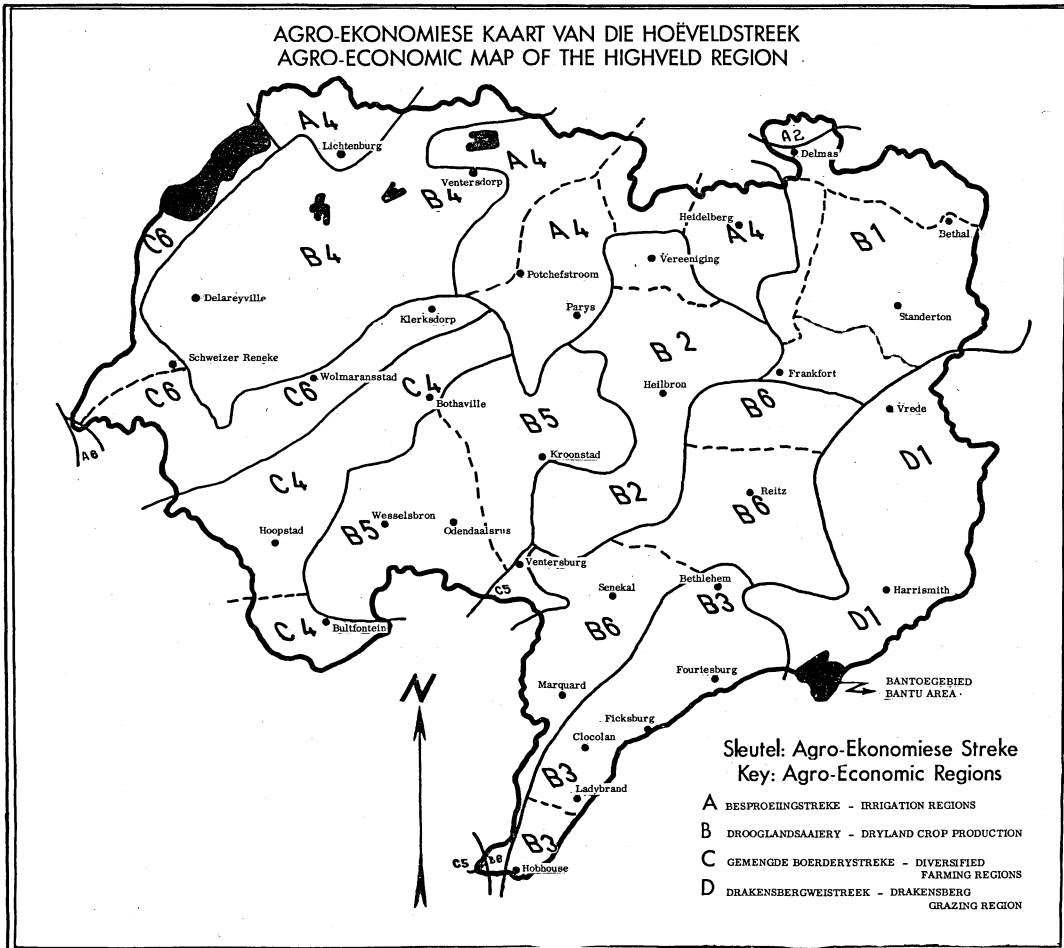
Transvaal Districts (17). - Bethal, Bloemhof, Delmas, Delareyville, Heidelberg, Klerksdorp, Lichtenburg, Nigel, Oberholzer, Potchefstroom, Randfontein, Schweizer Reneke, Standerton, Vanderbijlpark, Ventersdorp, Vereeniging and Wolmaransstad.

Free State Districts (27). - Bethlehem, Bothaville, Bultfontein, Clocolan, Ficksburg, Fouriesburg, Frankfort, Harri-smith, Hoopstad, Heilbron, Koppies, Kroonstad, Ladybrand, Lindley, Marquard, Odendaalsrust, Parys, Reitz, Sasolburg, Senekal, Ventersburg, Viljoenskroon, Virginia, Vrede, Vredefort, Welkom and Wesselsbron.

The region thus comprises 44 magisterial districts.

Actually the regional boundaries differ somewhat from those of the magisterial districts, which form the basis of the map. The reason for this is that the sub-districts of extension officers in some cases overlap the boundaries of the magisterial districts, while in other cases the extension districts fall short of the magisterial boundaries.

AGRO-EKONOMIESE KAART VAN DIE HOËVELDSTREEK
AGRO-ECONOMIC MAP OF THE HIGHVELD REGION



NATURAL FACTORS

Height above sea level

Height above sea level varies from 6,000 feet in the east to 4,000 feet in the west.

Rainfall

The total annual rainfall varies from 800 mm. (32") in the east to 500 mm. (20") in the western part of the region. The region has a summer rainfall, but from Harrismith to Ladybrand the distribution is such that 30 per cent of the rainfall generally occurs during autumn and winter months.

Climate

The western part of the region, in the vicinity of Wolmaransstad, with a frost-free period of 272 days, can be considered as relatively warmer than the eastern part, which has a frost-free period of 230 days.

Topography

The major part of the region is flat to rolling; the south-eastern part, however, is mountainous.

Soil

The following main areas, in respect of soil type, can be distinguished:-

1. The red sandy soils of Western Transvaal, with streaks of dark red dolomitic and doloritic clayloam soils in between. The top soil in most cases is quite deep. (The area between Lichtenburg, Schweizer Reneke and Potchefstroom is included.)

2. The "sandveld" of the North-western Free State. The top soil varies from a few inches to as much as 10 feet. (It covers the area which lies between Bloemhof, Bultfontein and Viljoenskroon.)

3. The sandy soils of the Eastern Free State. The depth of soil varies from two to five feet. (The area is situated between Lindley, Harrismith and Ladybrand.)

4. The sandy and clay soils of the Eastern Transvaal. (The area is situated between Bethal, Vrede and Kroonstad.) The grey sandy soils are found as scattered patches in the black clay soils. The top soil is often very shallow. The red sandy soils, which are found in the vicinity of Koppies, Bethal and Delmas, might be considered as a separate group. The top soil varies from three to four feet in depth.

ECONOMIC CHARACTERISTICS

Markets

The Highveld region has a favourable economic location. This is due to the considerable concentration of the population in or near the region. This fact favours the region greatly in respect of the large variety of products that can be produced for the market. The industrial and mining complex of the Witwatersrand is located towards the north-eastern section of the region; and the part of this complex, which is not actually in the region, is on its border. Thus an important market is within reach of the region. This also applies to certain highly perishable products.

In the southern part of the region the mining centre at Welkom-Odendaalsrust is expanding rapidly, and it may be expected that farming here will adopt a more intensive pattern.

Transport and communication

These facilities are fairly well distributed throughout the region. The main railway line from Johannesburg to Cape Town passes through the region, while the railway line from the Reef to Durban also passes through a part of

the region. Furthermore, a network of roads and telephone services exist.

Labour

The region is bordered by Basutoland in the mid-east and by the Drakensberg area to the north-east. Bantu territories are also located within the area. The availability of labour is thus satisfactory.

THE WIDER ECONOMIC PATTERN

Crop production

The production of summer grains is the most important enterprise. However, in the mid-eastern parts dryland cultivation of wheat is also important. There are 36,000 morgen under irrigation. Irrigation is largely in the form of private irrigation schemes, which comprise a very small part of the farming unit, or irrigation plots around the cities, which are often not run as economic units.

Livestock production

Dairy cattle play an important part, especially in the north-eastern section of the region. Beef production, on an intensive as well as extensive basis, has a reasonable share in livestock production. Sheep, especially woolled sheep, are also an important factor in the farming system.

THE AGRO-ECONOMIC REGIONS

Portions or the whole of the following regions are incorporated in the Highveld region:-

Oasis regions

1. A small portion (\pm 4 per cent) of A2.
2. Two portions (together \pm 85 per cent) of A4.
3. A small portion (\pm 2 per cent) of A6.

Inland plateau dryland cultivation regions

1. The major portion (\pm 95 per cent) of B1.
2. The whole of B2 (i.e. 100 per cent).
3. The major portion (\pm 80 per cent) of B3.
4. Almost the whole (\pm 96 per cent) of B4.

5. The major portion (\pm 90 per cent) of B5.
6. The major portion (\pm 90 per cent) of B6.

Diversified farming regions

1. A large part (\pm 58 per cent) of C4.
2. A small portion (\pm 8 per cent) of C5.
3. More or less one-half (\pm 50 per cent) of C6.

Grazing regions of the eastern escarpment

An important part (\pm 35 per cent) of D1.

RELATIVE IMPORTANCE IN RESPECT OF THE REPUBLIC

Farming area and number of farms

In regard to total farming area, the Highveld region is the fifth largest of the seven agricultural regions in regard to the number of farms with a production of more than R600, it is the largest.

From Table 1 it is apparent that the intensity of farming in the Highveld region is higher than the average of the Republic. In the first instance the Highveld region comprises 42.5 per cent of the total area suitable for cultivation in the Republic. Furthermore, the average farm size in the Highveld region is 526 morgen as compared to 1013 morgen for the entire Republic.

The number of farms, ranging from 300 to 500 morgen in the Highveld region, carry relatively more weight than in the Republic as a whole. The reason for this is that this size group is limited to farms which practise a more intensive system of farming.

The fact that the group of farms, ranging from 10 to 99.9 morgen, are relatively unimportant in the Highveld region, indicates that very few important irrigation schemes, such as the Brits, Kakamas and other schemes, are located in the region. (A portion of the Vaalharts area is actually within the boundaries of the region, but this scheme is under the jurisdiction of the Free State region.)

TABLE 1. - Farming area, cultivated area and number of farms, according to size groups, Highveld region and the Republic, agricultural census 1959/60

Item	Republic	Highveld region	Highveld region as percentage of the Republic
			%
Total farming area	107,165,000	12,109,000	11.3
Total cultivated area	11,165,000	4,741,000	42.5
Number of farming units			
1 - 9.9 morgen	10,781	843	7.8
10 - 99.9 morgen	20,653	2,459	11.9
100 - 299.9 morgen	17,387	6,073	34.9
300 - 499.9 morgen	13,492	5,238	38.8
500 - 999.9 morgen	17,596	5,477	31.1
1,000 - 2499.9 morgen	15,619	2,552	16.3
2,500 and more	10,286	390	3.4
TOTAL	105,814	23,032	21.8
Average farm size	1,013	526	-
Percentage of total farm area cultivated	39.2%	10.4%	-

On the other hand, very few farms larger than 2,500 morgen are found in the Highveld region.

THE MOST IMPORTANT ENTERPRISES

Crop enterprises

As might be expected, dryland crop cultivation plays the most important part. The geographical distribution of crops is, however, interesting.

From Table 2(a) it is apparent that maize is not only the most important crop of the Highveld region, but that this region also produces the major part (\pm 75 per cent) of the maize produced in the Republic. It is worth mentioning that Lichtenburg and Delareyville are the most important maize producing districts in the Republic. However, in all 44 districts maize is produced on a reasonably large scale. The points of concentration of maize production are the North-eastern Transvaal, Western Transvaal and the North-western Free State.

The production of wheat, which is concentrated in the South-eastern regions, tends to fluctuate considerably in the High-

veld region; nevertheless, this region produces about one-quarter of the Republic's wheat.

In addition, this region produces by far the greater portion of the Republic's sunflower crop and is also a major producer of kaffircorn, groundnuts, other dried beans and potatoes.

The cherrie production in the Clocolan and Ficksburg areas marks the region as virtually the sole producer of cherries in the Republic.

Livestock enterprises

That the Highveld region has a relatively intensive production pattern is apparent from the importance of livestock enterprises next to crop enterprises.

According to the information contained in Table 2(b), about one-third of the Republic's cattle population and one-seventh of the sheep population is found in the Highveld region. In this region cattle is evenly spread over the area, while sheep is more concentrated in the south-eastern parts.

TABLE 2(a). - Production of the most important crops of the Highveld region in comparison with the Republic, agricultural census 1959/60

Item	Republic	Highveld region	Highveld region as percentage of the Republic
			%
Maize (200 lb. bags)	43,737,000	30,580,000	69.9
Wheat (200 lb. bags)	8,119,000	1,869,000	23.0
Kaffircorn (200 lb. bags)	2,626,000	1,194,000	45.5
Sunflower (100 lb. bags)	1,578,000	1,329,000	84.2
Groundnuts (100 lb. bags)	4,363,000	1,586,000	36.4
Dry beans (200 lb. bags)	561,000	233,000	41.5
Potatoes (37½ lb. bags)	18,794,000	5,903,000	31.4
Cherries (number of trees)	54,452	46,438	85.3

TABLE 2(b). - A comparison between livestock enterprises in the Republic and the Highveld region, 1959/60

Livestock enterprise	Republic	Highveld region	Highveld region as percentage of the Republic
			%
Cattle (total of whites)	7,518,000	2,041,000	27.1
Cows and heifers of 2 years	3,598,000	1,009,000	28.0
Sheep (total of whites)	35,116,000	5,222,000	14.9
Merino's	23,182,000	3,470,000	15.0
Goats (total of whites)	1,995,000	26,000	1.3
Pigs (total of whites)	552,000	142,000	25.7
Poultry (total of whites)	10,755,000	3,230,000	30.0

Source: Agricultural census 1959/60.

The pig and poultry populations of the Highveld region is slightly less than one-third of the Republic's total figures.

THE GROSS VALUE OF AGRICULTURAL PRODUCTION

To get a clear picture of the relative importance of the various farm enterprises, use is made of gross values.

The importance of maize in the production pattern is revealed in Table 3. The various farm enterprises are in order of importance as follows: Maize 45.2 per cent, cattle (with dairy products as the main source) 21.2 per cent, sheep (with wool as the main source) 8.8 per

cent, wheat 4.8 per cent, poultry (with eggs as the main source) 3.3 per cent, groundnuts 3.1 per cent, pigs 2.2 per cent, sunflower 1.8 per cent and potatoes 1.3 per cent of the total value of agricultural production.

Very conspicuous is the fact that fruit and vegetables make small contributions to the farm income. Factors such as untimely frost, the occurrence of hail damage and the fact that this is a summer-rainfall region, affect production of fruit and vegetables adversely. But notwithstanding these climatic obstacles, there is probably scope for the development of these farm enterprises as a source of income.

TABLE 3. - The gross values of agricultural production in the Highveld region, 1959/60

Item	Gross value of agricultural production	Gross value as percentage of total gross value of region
	R	%
Maize	94,225,000	45.2
Total summer crops	98,392,000	47.2
Wheat	10,095,000	4.8
Total winter crops	11,901,000	5.7
Groundnuts	6,399,000	3.1
Total oilseeds	10,122,000	4.9
Total grains	122,726,000	58.8
Potatoes	2,786,000	1.3
Other vegetables and onions	1,074,000	0.5
Fruit	520,000	0.2
Hay	3,503,000	1.7
Total all crops	130,916,000	62.8
Dairy products	25,533,000	12.2
Total cattle	44,142,000	21.2
Wool and mohair	11,077,000	5.3
Total sheep and goats	18,272,000	8.8
Pigs	4,621,000	2.2
Eggs	4,536,000	2.2
Total poultry	6,908,000	3.3
Total livestock	73,943,000	35.5
Other farm income	3,702,000	1.7
Total gross value	208,561,000	26.3*

*Gross value of Highveld region as percentage of the gross value of the Republic's agricultural production.

FARMING PATTERN ACCORDING TO AGRO-ECONOMIC REGIONS

General description and explanation

The tables are based on the assumption that the groups of farms in agro-economic regions are more homogeneous than those in the magisterial districts. To obtain an average farm, the totals of every region were divided by the total farms in the region. From this does not follow that every farm produces all the products that is produced on the average farm of the region.

According to Table 4, region A6 is an irrigation region. As previously stated, the Highveld region contains only a small portion of this region.

A2 and A4 regions are used mainly for dryland purposes, with patches of irrigated land. These two regions correspond largely with the B regions.

The B regions, which occupy the major portion of the Highveld region, have various characteristics in common with the above-mentioned two A regions and the C regions.

The D1 region (as the A6 region) deviates from the general farm pattern. In this region concentration is mostly on livestock enterprises, especially sheep, and in the A6 region especially groundnuts, wheat, lucerne and other crops under irrigation; whereas in the B region maize constitutes the major part of farm activities.

TABLE 4. - Average farm pattern of agro-economic regions of the Highveld Region, agricultural census 1959/60

Average per farm	A2	A4	A6	B1	B2	B3	B4	B5	B6	C4	C5	C6	D1
A. Total farm area	349	308	84	338	446	539	506	653	553	797	560	656	810
Cultivated land	88	93	27	134	163	198	254	327	227	254	114	147	136
Irrigated land	4	4	25	1	2	4	2	1	1	2	5	6	4
Plantations	6	1	0	1	2	2	2	1	1	1	0	2	21
Natural pastures	240	205	55	195	272	321	238	312	313	527	438	498	634
B. Maize (area)	38	64	1	67	106	59	211	244	109	192	42	96	36
Kaffircorn (area)	1	2	0	12	13	0	3	1	2	2	1	14	1
Wheat (area)	1	1	10	4	10	60	2	29	47	10	36	4	3
Oats, barley and rye (area)	2	1	3	7	8	21	2	10	19	7	14	1	32
Groundnuts (area)	2	1	13	0	2	0	3	17	0	10	1	9	0
Cowpeas (area)	5	3	1	5	4	7	8	7	6	7	4	4	2
Other legumes (area)	5	2	0	7	0	2	2	0	1	0	0	0	3
Sunflower (area)	2	4	0	8	5	1	14	4	2	3	0	7	1
Potatoes	2	1	0	2	0	1	0	0	1	0	0	0	1
Lucerne (area)	0	1	6	0	1	2	0	0	0	0	2	2	0
Artificial pastures (area)	2	2	0	3	1	3	2	2	3	1	1	0	5
C. Bantu land	2	1	0	2	1	1	3	0	2	0	2	8	4
D. Cattle (total of whites):	48	61	20	69	73	103	80	85	98	88	54	99	106
Sheep and goats	49	53	19	185	261	262	121	277	326	331	494	124	576
Pigs	7	8	2	5	4	4	8	10	5	6	3	5	5
Poultry	147	160	34	114	143	117	130	189	158	108	76	59	86
Turkeys, ducks and geese	10	7	4	12	9	14	9	11	14	7	7	6	11
Horses, mules and donkeys	1	2	1	1	1	3	1	2	2	3	2	4	3
E. Bantu livestock: cattle	17	6	4	14	13	16	7	17	19	10	6	4	37
Sheep and goats	11	3	0	3	3	10	4	4	4	14	10	9	23
Pigs	2	1	0	1	2	2	2	5	2	3	1	1	3
Poultry	0	1	0	2	2	2	0	2	3	1	0	0	3
Horses, mules and donkeys	2	1	0	3	4	5	3	6	6	5	3	2	7
F. Farm population													
Whites: male	2	2	2	2	2	2	2	2	2	2	2	2	2
female	2	2	2	2	2	2	2	2	2	2	2	2	2
Bantu (employees): male	4	5	2	6	5	7	6	8	6	5	4	4	5
female	1	1	0	1	1	2	1	2	2	1	1	1	1

Amounts less than 0.5 are taken as 0.

In the B3 region wheat is slightly more important than maize, in terms of area planted. Wheat also plays an important part in the B5, B6 and C5 regions.

Cattle is fairly important in all regions, including the A6 region. The number of sheep per farm is subject to a greater variation than cattle. Sheep is especially important in the D1, C5, C4, B6, B5,

B2 and B3 regions. In these regions natural pastures range from 300 to 600 morgen per farm.

In the B5 region pigs and poultry occupy an important place on some farms. The average number of poultry per farm in the A4 region is somewhat misleading, because some of the largest poultry farmers in the Republic are in this region.