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*South Africa -  
Agriculture*

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**THE UNION'S FARMING RESOURCES**

BY

**HUBERT D. LEPPAN,**

**PROFESSOR OF AGRICULTURAL ECONOMICS,**

**PRETORIA UNIVERSITY**



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# THE UNION'S FARMING RESOURCES\*

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The aim of rational production is consumption; obviously, then, any appraisal of the resources of a country must involve a consideration not only of the dictates of the physical and other controls over production but also what the possibilities for the disposal of surpluses are. Consequently our intention in this survey of the Union's farming resources will be: to endeavour to shew what can be produced; to give an account of what is produced, together with the present local and external consumption of that production; and, finally, to speculate on the best manner in which our rural resources may be reclaimed, conserved and developed.

A discussion of the agricultural potentialities and disabilities of South Africa need not detain us long — they are fairly obvious and have been often described. For our purpose, however, it is necessary to bear in mind certain facts of special significance in this connection. Briefly they are:—

(1) South Africa is divided into three hyetal regions — those of summer, all-the-year-round and winter rainfalls each following enterprises in farming roughly adapted to its moisture supplies. Where a protective policy is followed, as in the Union, this differentiation of activity presents certain difficulties, for obviously the protection of the grain produced in the South-West Cape conflicts with the interests of the stock-feeder in other parts of the country who wants cheap feedstuffs for his animals.

(2) The summer and winter rainfall regions are subject to yearly droughts, lasting approximately six months, and, in all three regions intermittent droughts are common. These shortfalls of rainfall introduce risks into farming, thus raising the cost of production, and acting as well as a deterrent to constructive farming.

Restricted and erratic supplies of moisture give to South African agriculture two of its main features, namely, a small proportion of arable land and an instability in production.

(3) The country comprises arid, semi-arid, sub-humid and humid regions. Of the total land only five per cent is cultivated, and less than fifteen per cent is ever likely to be cultivated — given anything like the present standard of living of blacks and white. The remainder is too arid, rocky or mountainous to allow of ordinary cultivation.

Other significant facts are:—

(4) A wide variation in the incidence of frost is found — ranging from frost-free areas in the Sugar Belt of Natal to the Karroo where frost is liable to occur during any month of the year. In consequence a wide diversity of crops — tropical to temperate — may be grown.

(5) Good arable soils are patchy and restricted in area, a fact which (together with those already mentioned) imposes a limitation not only to the total yield from arable farming but also to any extensive mechanisation of the Union's farming.

\*Lecture delivered to the Workers' Educational Association at the Witwatersrand University. The lecture covers certain aspects of a more general study of the organisation of South African agriculture, which the author hopes to publish in the near future.

(6) The irrigable land is unlikely to exceed 2,000,000 acres in extent at any time. So that any addition, through irrigation, to the country's arable production must remain small — small when compared with a country like India where nearly 70 million acres are irrigated. The stabilising role of what irrigable land we may have, because of the assured production under irrigation, is however, of first-rate importance.

(7) Owing to its topography the Union possesses no inland waterways, a fact which explains the long delay in the exploitation of the relatively fertile interior. It need scarcely be said that, since the exports of a young country are chiefly raw materials and foodstuffs of a bulky nature, the absence of cheap inland water transport is, and must remain, a natural disability of far reaching consequence.

(8) The physical controls sketched above largely determine the biological controls which include diseases and pests. The high winter temperatures are not conducive to long hibernation periods and in consequence the control of pests and diseases is rendered more difficult.

This brief outline of the natural controls to farming in South Africa is sufficient to shew:—

(a) That the land can be best utilised in enterprises connected with animal husbandry. This is so because at least 85 per cent of the country can be employed only for pasturage, and because a properly maintained animal industry is less affected by precarious climatic conditions than field crop production. The animal can be moved, so too the required feedstuffs; growing crops cannot be moved — they suffer the full toll of drought.

(b) That, although crops may be grown in wide range the total output of these must remain relatively small, because of the restricted amount of suitable land enjoying a satisfactory rainfall for cultivation. What arable land the Union possesses will, however, become increasingly important in the future — in supplying supplementary feedstuffs for the animal industry and in meeting the needs of the growing human population.

(c) That, although amenable to modification, wide fluctuations in rural production must always be with us.

(d) That, because of the long periods during which the soil remains dry — in which state it easily becomes powdered — and because of the ordinarily high intensity of the rainfall, erosion will always be a threat to the land resources of the country. The seriousness of this threat is widely appreciated. In China, Persia and India history has recorded the disappearance of civilisations which allowed erosion to go unchecked and so failed to maintain the necessary soil moisture resources.

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But sound perspective in regard to a country's rural resources cannot be had if these are scrutinised in isolation. The fortunes of farming are inextricably bound to those of other forms of activity. Let us then consider some non-agricultural aspects of the South African situation which affect the possibilities of farming.

The role of mining in the past development of the country need not be detailed. Suffice it to say that mining, through the improved facilities it has given in communication and transportation and the internal market it has created, has vivified the internal economy of the country and changed South African agriculture definitely into modern commercial farming.

Fortunately Nature has been liberal in endowing the Union with immense underground resources. Gold abounds, and its production acts as a stabiliser

of the country's economic activity, for in times of depression its appreciation in value offsets the decrease in value of the other products of the Union. In addition the natural requirements of a metallurgical age are not so well met in any other country of comparable size. The resources of coal, iron, copper, tin, platinum, lime, manganese and others have scarcely been touched.

Belated though it be, the present policy of the Government to foster more actively the development of mining cannot be supported too strongly. Not only will this policy assist enormously in increasing the internal market for agricultural products, but it will be of incalculable assistance in the disposal of the products from manufacture. It is folly to resort to the protection of manufactured goods unless these can be sold. But properly fostered, mining will add to the country's internal purchasing power, and so will assist manufacturing by increasing effective demand.

The resources of manufacturing are impressive. The basic raw materials from mining can be produced in abundance, and from farming in wide range; and labour, demanding low wages, is plentiful. The obstacles to be overcome, particularly in the sale of goods beyond the country's borders, are those inherent in a late start and a small internal market.

But in a sense, the resources of the country can only be regarded as assets if the people are capable of utilising them wisely — which calls for some comment on the South African population.

By virtue of their origins and the circumstances governing their selection when coming to South Africa, the genetic composition of the whites must be regarded as a rich heritage. Environmental conditioning may in cases have masked this inheritance, but it remains a latent resource as valuable as any the country may possess. Isolation, disequilibria in the economic development of the country, and the past instability and uncertainty of the South African situation have given results which have led many to a contrary and erroneous opinion.

In addition the population comprises about six million natives, the full capabilities of whom under their confined opportunities for development it is hard to assess. Sufficient evidence has accumulated to show that, given correct guidance, their role in South African progress should be far greater than hitherto — we shall return later to this point.

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The population's adjustment or maladjustment in relation to its rural environment requires to be sketched next.

Given the prevailing methods of farming, it may be rightly maintained that the Union's land is carrying the full complement of animals so far as number is concerned. Some districts, e.g. the Cape Midland are definitely overstocked and through over-grazing (and consequent erosion) the carrying capacity is decreasing. A few districts in the Transvaal Lowveld are possibly understocked.

In the husbandry of animals, progress has been shown most outstandingly by the sheep farmer. The quantity of wool produced per sheep has been doubled, the quality is immeasurably better than it was a few decades ago, and a highly specialised demand is met by adequate marketing machinery.

For various reasons the position of the cattle industry is far from satisfactory. Half are owned by natives who regard their cattle as tokens of wealth rather than as productive agents. In consequence native cattle are comprised almost entirely of scrub animals. Unfortunately, too, the majority

of those owned by Europeans fall far below the standard demanded by the world's large meat markets. Dairying is experiencing difficulty in establishing itself and, mainly because of the poor quality produced under conditions of high temperatures, surpluses are hard to dispose of.

High temperatures, too, restrict the local consumption of pig products and the industry maintains at best a struggling existence.

Ostriches and Angora goats are rapidly declining in importance, following on the decline in demand for feathers and mohair.

The poultry industry has made remarkable strides during the last thirty years; the marketing organisation is good, but the keen competition abroad is having its effect on the export of poultry products.

Taken as a whole the country's husbandry of animals is far from satisfactory. In the main this is not due to lack of enterprise on the part of our farmers to secure expensive pedigreed animals. Bulls and rams, at times costing several thousand each, have repeatedly been imported. The chief drawback is to be found in poor nutrition and management. Nearly half a million cattle, and about four million sheep and goats die annually from starvation and disease.

Herein lies the chief maladjustment in South African farming. In a country in which farming enterprises must centre on animals these losses still occur. Nor is the mortality rate indicative of the full loss, for production is also decreased by the under-nutrition of many of the surviving animals. It is estimated that to maintain the animal population satisfactorily fully six times the average export of maize would be required as supplementary feed. Obviously the necessary co-ordination between the animal and cropping industries has not been accomplished. The faulty management of the natural pasturage, too, has resulted in irrecoverable losses of valuable soil through erosion.

We come next to the production from cultivation.

Maize, wheat, sugar, cane, kaffir corn and the various fruits are the principal crops grown — apart from wattle and forest plantations.

The average yields per acre of the cereals are among the lowest to be found anywhere, and the total production of maize and wheat is a little more than 1 per cent of the amount produced in the United States. Because of the liberal State assistance given to these two crops the production of each meets the local effective demand, and in the case of maize roughly a sixth is exported. Sugar, which is highly protected also produces surpluses for export.

The low and fluctuating yields from cropping are attributable to several causes: unsatisfactory rainfall, poor soils inadequately fertilised, faulty cultural methods, and, attempts to grow grain in areas where only fodder crops should be grown, are the chief of these.

The wisdom of the fiscal policy of protecting maize, wheat and sugar cane, is questionable. The inflated prices resulting in the case of maize and wheat raise the cost of animal production and so retard the development of the animal industry — an industry which in South Africa has comparative advantage. And it might reasonably be asked whether the country can afford the large sum required to bolster up the sugar industry which utilises what must be looked upon as potentially some of the best pasture land in the Union. The employer might well ask, too, why his employees should have to pay double the Liverpool price for wheat.

An explanation for the over-emphasis placed on wheat and maize production is called for. The depleted animal population following the Anglo-Boer war compelled the farmer — while waiting for his animals to increase sufficiently — to resort to the sale of his crops for a livelihood. To assist in the disposal

of the grain an expensive elevator system was built. Unfortunately the practice of growing grain for sale became habitual and those politically interested became firmly entrenched. Unquestionably, the population has shown a maladjustment to environment with regard to the present production of maize, wheat and sugar.

A number of other field crops, tobacco, peanuts, oats, barley and so forth are also grown, but for our present purpose the position of each of these need not be detailed here. The yields are usually low and the output fluctuating.

The history of the Union's fruit production makes brighter reading. Both in production and marketing, the citrus, wine and deciduous fruit industries have made remarkable progress. Enterprises connected with these are usually undertaken only under assured conditions of moisture rainfall or irrigation — and so assist in stabilising the Union's output from the land. In addition, the marketing of South African fruit has the advantage of opposition of season to that of industrialised Europe.

Forestry has developed unobtrusively and promises in the near future to meet the local requirements for ordinary timber.

In a country where the fullest use of available moisture supplies is all-important, it is no wonder that irrigation should receive the attention it does. The history of irrigation in South Africa and what land settlement has been connected with it, is not consoling. We have no Nile. In the Union water conservation by reservoirs is far more costly than in Egypt, India or California.

Unfortunately, in the Union irrigated land has hitherto been employed largely for the production of grain for sale, the cost of producing which is prohibitive. Argentina, Russia, the United States and Canada — where land is seldom irrigated for this purpose — can produce wheat at a fraction of the cost involved for irrigated wheat in the Union. It is not surprising then, that irrigation has given such disappointing results in the Union.

And yet, if properly directed, irrigation should play an important part in our farming. It is important as a stabiliser to the country's animal industry. The assured production of foodstuffs from irrigated land is invaluable in regions where precarious conditions of rainfall give uncertain pasturage. Irrigated land, then, should be used in the main to foster the production from animals.

In adjusting themselves to their environment the necessity for investigational work to remove obstacles has not been lost sight of by the population. The spectacular researches of Sir Arnold Theiler and his associates are a case in point. In devising remedial and preventive measures for animal diseases they have made farming possible in parts where farming was previously impossible. Numerous other investigators, inside and outside of the Department of Agriculture, have added their quota in assisting the production from the Union's land. If the research workers in agriculture are to be adversely criticised, it is that although they have given an invaluable lead to production they have failed, relatively speaking, to give necessary guidance in what to produce and the proper disposal of what is produced.

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But the future promises sufficient adventure to be stimulating and the mind is filled with questions as to the best future utilisation of our agricultural resources. What is our goal and how are we to attain that goal?

Production aims at the profitable disposal of products. It is necessary, then, to examine the effective and potential demand, both locally and abroad, for our farming produce.



The trend of world affairs during the last decade or two gives little hope for any rapid cessation of the emotionalism underlying the development of national economic self-sufficiency. Any adjustment to the world situation would have to take into account a continuance, for an appreciable period, of the restricting influence of national economic self-sufficiency on international exchange. Willy nilly, each national unit is being compelled to develop internal exchange — which demands of course, diversity in internal economic activities. Attempts to establish equilibrium on an internal basis alone are the order of the day — whatever the material loss to humanity as a whole! These attempts to obtain national security in this way have fallen heavily upon the primary producers of exporting countries — particularly those exporting grain.

The lack of confidence in the bona fides of other peoples has resulted also in the drying up of international loans, thus adding to the restrictions on world trade.

Another trend, for populations in many European countries to become stationary and then to decline, must be reckoned with. It is safe to assume that concomitant with this change will be an increase in the per capita purchasing power of the peoples of Western Europe, that is, when the present maladjustments in the world's exchange machinery are rectified. This means that our oversea markets for foodstuffs and raw materials will contract, and that greater discrimination with regard to quality will be shewn.

These features of the situation developing abroad point to the difficulties that will be encountered in marketing our surpluses overseas. Although a contraction in the market abroad for the volume of our farming products is likely to take place, nevertheless the meeting of some needs there will continue and must remain an important focal point in any agrarian policy which may be formulated for South Africa. Any internal development must allow for a gearing into the probable future trends abroad. What are these trends?

Price indices shew a far greater decline in the prices of the cereals than has taken place in respect of animal and horticultural products. And the reasons are not far to seek.

The urge for national self-sufficiency, engendered by fears arising out of the War, turned man instinctively to the source of his food supplies — the soil. To the ordinary citizen of Western countries, bread (wheat) is synonymous with food. In consequence policies favouring State aid for wheat production have been adopted. And so a host of States — France, England, South Africa, Germany and others — have fostered unduly the cultivation of wheat. Further, with the rapid mechanisation of agriculture during the last decade, draught animals have been replaced by the tractor, and, in consequence, a large quantity of cereals which would have been fed to these animals is now thrown on the market. The surplus has probably been accentuated by the change in human dietary — following medical teaching regarding the requirements for minerals, protein and vitamin contents, as well as the value of fresh animal and vegetable foodstuffs — away from farinaceous foodstuffs to those coming from animals, fruit and vegetables; by the vogue for slim figures; and, by the change from manual to sedentary occupations — where less fuel is required for the human organism — brought about by labour-saving machinery.

Two aspects of the general situation support the contention that the present emphasis on cereal production will not be in conformity with the needs of the world market in the near future.

One hundred million unemployed and their dependents in Western countries are at present consuming (thanks to unemployment relief) all they require of starchy foodstuffs. When exchange again moves smoothly and the demand for labour increases, the purchasing power of the present unemployed will improve, which will result in their utilising less farinaceous foodstuffs but more of the refined products i.e. foodstuffs from animals (meat, eggs, cheese, butter, milk, cream, etc.), also fruit and vegetables.

The other aspect is to be seen in the recent strides made by the Russians in the vernalisation of wheat. This not only makes the cultivation of wheat under precarious conditions more assured, but, because of the shortened growing period required, extends the northern edge of the wheat belts of Canada and Russia. The slightest improvement in the prices of cereals will immediately bring sub-marginal land into cultivation, and, of course, the increased supply will bring prices down again.

So far as the future overseas markets are concerned the following conclusions seem warranted: that their requirements measured in calories, will contract; that a greater insistence on quality will be apparent; and, that the disposal of surpluses will be increasingly difficult except in respect of animal products, fruit and vegetables.

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We come now to a consideration of local requirements — which, for obvious reasons, cannot ignore the necessity for some adjustment to the position just sketched. By a happy coincidence our efforts to adjust ourselves to the trends abroad are also in conformity with those which our natural and other controls require for local adjustment — for those enterprises in South African farming enjoying comparative advantage are also those whose surplus output is most likely to be in demand abroad — namely, animal and horticultural products.

Our proper rural development will entail the taking of measures to engender stability in production; to conserve, and at times to reclaim, some of our resources; and to procure a satisfactory internal market.

By following a policy stressing animal and fruit production we automatically stabilise production, for the cultivation of fruit is usually undertaken under conditions of assured moisture supplies, and animals properly catered for suffer less loss from drought than is found in the cultivation of ordinary crops. Many areas in which grain growing is a hazardous undertaking are suitable for fodder production, which, if used to supplement the poor pasturage afforded by the indigenous vegetation, will tend to mitigate losses in animals and so stabilise pastoral enterprises. Further, a properly maintained and well organised animal industry will absorb the assured production of feedstuffs grown under irrigation. Again, the surpluses in maize, peanuts, cotton-seed meal and other crop products, which are finding an outlet abroad with increasing difficulty, would be utilised locally. Obviously, then, a properly conducted animal industry must form the keystone to the country's farming arch, and so must add to the security of the Union's economic structure. If production, apart from fruits, is focussed on catering for the needs of a well-maintained animal industry, an interlocking of rural enterprises is brought about which must result in securing a more stabilised future.

The chief obstacle facing the development of pastoral farming is to be found in unsatisfactory pastures and the faulty utilisation of what pastures we have. In any country the nature of the pastures is the chief determinant in animal farming and they are basic to a balanced and advanced agriculture. Good pasture gives a cheap and high nutritional plane, based on which concentrates can be

profitably fed. Fortunately, research workers in the Union are now fully alive to the necessity for proper veld management and the economic establishment of artificial pastures — and what work has already been done, although only a beginning, is full of promise.

Erosion has already caused serious losses to the Union's resources. The damage has been caused principally by over-stocking — a practice which in recent years farmers in desperation have felt themselves compelled to follow. If intensive methods are followed on land where extensive methods should be practised, losses through erosion are bound to occur. Fortunately, here again those concerned are fully alive to the situation and active steps are being taken to provide methods for reclamation and conservation. It might be noted in this connection that a properly maintained animal industry will assist not only in reclamation but in conservation, through the additions to the soil in the quality and quantity of the manure derived from well fed animals.

While the technique commonly employed in the Union's farming leaves room for improvement, nevertheless a marked improvement is already apparent. Fertilisers are being more generally used, so that soil exhaustion should be arrested and the fertility improved.

We turn now to the Union's internal market.

For various reasons the internal market is very important in a country of youthful industries — manufacturing must have a preliminary canter to gain experience in large scale operations before it can effect the economies necessary for competition in external markets. But in the Union, manufacturing as well as farming is hampered by a small internal demand. How can the South African demand be made more effective? It is almost unnecessary to tell a Johannesburg audience that the development of mining must have this effect. Unquestionably if equitably taxed and with reasonable assurances as to future treatment no action could add more quickly to the country's purchasing power than would a fuller exploitation of our underground resources.

More slow but of more permanent importance would be any improvement in the purchasing power of the six million natives. To satisfy their demand would give employment to both whites and blacks, and would furnish a market for factory and farm products.

As previously stated, in the agricultural export trade the demand will be for only the best qualities of commodities. But to produce quality in quantity requires time, experience and skill. It is estimated that it will take from 20 to 30 years before the Union's meat industry can be worked up to the point of being a material consideration on oversea's markets. And so with many other products time, experience and skill are required. But in the transition stage given the purchasing power, the less exacting native should be able to consume those qualities which have not reached the desired standard for export. The present bugbear of the sheep industry is the difficulty connected with the disposal of unprofitable old ewes; and yet if each native could afford to eat a sheep a year — a fraction of each European's meat consumption — the sheep industry would be put on its feet again. Similarly with the lower grades of citrus, butter and so forth.

But how is the native to obtain a higher purchasing power?

He can do so only if his productive ability is improved sufficiently to warrant higher wages. And this can be brought about only by suitable education, through which he would be taught efficiency in production and rational consumption. Any improvement in his productive ability should increase the national income, add to the country's purchasing power, create a larger internal market, and so benefit the country as a whole. It is obviously folly to allow six million natives to remain relatively inefficient.

Not only will the judicious development of mining and manufacturing promote internal exchange, but it will also add to the employed, many of whom would be natives, and so enlarge the number of consumers of farm products. The South African farmer should be made to realise that it is often in his own interest to support (politically and otherwise) industries other than his own. Indeed the careful and co-ordinated development of mining, manufacturing and commerce, by creating markets for his produce, might well relieve the farmer of his burdens more effectively than many measures of direct relief. In addition, such a policy would give employment to some of his own sons, who for various reasons cannot be retained on the land.

In the development of our agricultural resources a number of maladjustments require to be rectified: the pastoral industry has not been properly interlocked with that of cropping; protective and relief measures have encouraged the production of quantity rather than quality and have bolstered up land values; misspent relief is undermining the character of the rural population; the development of the internal market by fostering non-agricultural activity has too often been neglected; nearly £300,000 is spent annually on agricultural research and advice — a fraction of this amount of State aid is given to mining and manufacturing for similar work; and, a host of other points might be mentioned.

Obviously, our legislative machinery is inadequate to give a co-ordinated development to the country's economic activities. The necessity for an Economic Advisory Council which would formulate a general policy as a guide to the best utilisation of South African resources is all too apparent. Our present parliamentary system, assisted by a statutory Advisory Council appointed on a functional basis, would help to remedy the situation. The duty of the Council would be not only to prepare and revise policies but also to give general co-ordination to the necessary research, e.g. the economic classification of South African land. The required prestige, something like that of the judiciary, of such a body could only be assured by the appointment of men in whom the public has absolute confidence regarding their capability and integrity of purpose.

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