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Articles in the field of agricultural economics, suitable for publication in the journal, will be welcomed.

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A Review of South Africa's Farming Industry *

by

F.J. VAN BILJON,

Imperial Cold Storage and Supply Co. Ltd.,
Pretoria

STRUCTURE AND GROWTH

It is common knowledge that South African farmers produce literally hundreds of products but it is probably not so commonly known that only seven farming activities account for no less than 70 per cent of the total output value, currently running at around R1 300 million a year. First and foremost is the beef and dairy industry whose products account for no less than 25 per cent of that total. Maize comes next, with 17 per cent of the total output value on average, but in such a good crop year as the present, the maize crop will net at least R350 million, rather more than beef and milk combined. The small-stock industry is third, its wool, mutton and pelts presently yielding 12 per cent of the total value of farm output. Wheat ranks fourth with 7 per cent; sugar-cane fifth with 6 per cent; and the poultry industry sixth. The two conglomerates - deciduous fruit inclusive of wine grapes and vegetables inclusive of potatoes - approach the sugar-cane crop in value, but the third, citrus fruit together with tropical fruit, ranks well after the poultry industry.

Since price inflation can obscure the real trend of output, volume indexes of output are also constructed, the tonnages of the different commodities being weighted by their price relatives. And to trace post-war growth, the early 1950's are usually taken as base, by when the wartime devastation and shortages of the means of production had been overcome. From 1956 to 1967, that is over 11 seasons, the world volume of farm output rose by 40 per cent. In the same period, the volume of farm output in South Africa increased by no less than 60 per cent.

In this process of rapid growth, the structure of the industry was altered materially because of differential expansion. The largest increase, over 100 per cent, occurred in the output volume of fruit and vegetables. The next biggest increase took place in field crops, while the output of the livestock industry expanded the least - by 50 per cent. In result, the production of the cattle, sheep and pig industries, which previously accounted for half the total value of our farm output, now shares the first place with field crops, each with 41 to 42 per cent of total output. The horticultural industry advanced its overall share of output from 15 to 17 per cent.

Measured over the full 20 years from 1947 to 1967, South African farming output has increased volumetrically by just over 4 per cent per annum. This exceeded the annual population growth rate of $2\frac{1}{3}$ per cent by a fair margin, so that besides feeding the nation, the farming industry also produced a mounting export surplus. During the decade of the sixties, the exports of raw and processed farm products equalled 21 to 23 per cent of South Africa's total exports, gold included. In this way the farming industry made a notable contribution to the large foreign usage of the secondary and transport industries, which rely heavily on imported plant and some raw materials, but cater chiefly for the local market.

By no means all branches of farming contributed to this export performance. For one, the major cattle industry made virtually no contribution at all, other than by exporting hides and sporadically butter and cheese. It was the lesser small-stock industry which provided no less than 35 per cent of total farm product exports; wool having held the position of South Africa's premier farm export ever since the 18th century - an amazing record. Since World War II fruit has become our second most important farm export, and in its various forms now accounts for no less than 25 per cent of total farm exports. Maize and sugar are the next most important export products and respectively contributed $12\frac{1}{2}$ and 8 per cent of total agricultural exports during the period 1962 to 1967. Unfortunately both wool and fruit exports now appear to be faced with a decline.

PRODUCTIVITY

One of the sources of trouble of the wool industry is that the wool yield per merino sheep has remained completely static for the past 20 years. In viticulture the yield per vine also appears to have remained constant. In both instances an increased output had to be achieved through horizontal expansion, by increasing the number of sheep and planting more vines. But in virtually all other branches of farming, output was increased not through horizontal expansion alone but through significantly improved yields as well. For that matter, while cattle numbers actually remained constant over the past 20 years, the same national herd is now yielding 50 per cent more beef. In the case of our main field crops, the yield of maize per hectare planted and the yield of sugarcane per acre under cane likewise improved by 50 per cent over the period, but wheat yields by only half that figure.

Despite these improvements, our yields are nevertheless considerably lower than those of the

*Opening address at the 45th Annual Congress of the S.A. Sugar Technologists' Association on 7 June 1971.

leading developed countries. Whereas in the United States nearly 90 metric tons of beef are produced each year per 1 000 cattle, in South Africa the output is 45 metric tons. Our average maize yield of $1\frac{1}{7}$ metric tons per hectare compares with a yield of 5 metric tons in the United States - and $2\frac{1}{2}$ in allegedly inefficient Communist Russia.

To what is this due, seeing that all the developed farm economies used the same means to enhance output - better seed and animal feed, more fertilizers and mechanisation. Perhaps we did not go as far as them, more especially in the direction of enlarging the size of the farming enterprises better to suit the needs of mechanisation and specialisation. Uneconomic farming units in fact constitute such a problem in our country that an enquiry committee into the matter had only just reported. It has advised that redundant farmers be pensioned off, and laid stress on the unviability of the 70 000 agricultural small-holdings around our cities. While they cannot really affect yields in commercial farming, the emphasis placed on them appears to cast doubt on the validity of the fundamental basis on which Bantu farming is being reorganised, namely, with 5 and 10 morgen arable units. Perhaps that is the basic cause why the Bantu contribution to total farm output signifies only in sorghum production and cattle ownership and why there has been no noticeable increase in Bantu farm output since the war. So much so that the Minister of Bantu Administration and Development in a recent article in the 'Transvaler' even has to mention sugar-cane as a newly important Bantu farm crop when it is common cause is sugar circles that on a small-holding basis it has been a virtual failure.

Another reason for the lower yields in South African farming than in the leading agricultural countries, undoubtedly is the fact that in the 15 per cent of our physical area with a rainfall sufficient for crop production, the precipitation is so erratic and the evaporation so high that cropping is unstable and average yields low. For the same reason the supply of fodder for the cattle and sheep herds also fluctuates. In addition the livestock industry is exposed to a multitude of serious animal diseases. The hackneyed saying that South Africa is not a good farming country is, therefore, valid.

It nevertheless has certain decided advantages. It has proved to be exceptionally well-suited to fruit production which furthermore enjoyed the advantage of opposite seasons to the populous markets of the Northern Hemisphere - an advantage that is, however, fast being eroded by the growing preference for citrus juice over whole oranges and by the fact that juice, like apples and grapes, can be safely carried forward into the off-season under refrigeration. Another signal advantage, but possibly also a passing one, is the availability of a plentiful supply of unsophisticated farm labour in most farming areas - fortunately I do not need to specify them. And because of the subcontinent's varied climate, South African farming has the permanent advantage of versatility, in that it can produce virtually any farm product and in quantity. It certainly is also not irrelevant that a growing proportion of our farmers are both qualified and keen to apply the improved methods of farming that are constantly emerging from the research pipeline. Especially in the field of plant and animal breeding the vista of progress is breath-taking.

For example, while hybrid maize seed has been in fairly general use in South Africa for over a dozen years, emphasis is now being placed on developing a higher protein content. It is one of the break-throughs that by the use of nuclear techniques, induced mutations are being brought about in grains and legumes to create varieties which contain more protein and the essential amino acids. In that way the ecological origin of protein malnutrition, arising from the fact that the staples grown in different ecological regions were low in protein, is being combated at its very source. And while the new high-yielding, fertilizer-responsive varieties of wheat have not yet found widespread application in South Africa, partly because they are subject to physical constraints, the chief of which is the availability of irrigation water - a scarce commodity in South Africa - it is clear that with water conservation they can make South Africa full self-supplying with bread wheat.

In animal husbandry, special attention is being given to raising the percentage of multiple births in ruminants, and the Department of Agricultural Technical Services is, for instance, experimenting with recently imported Finnish Landrace sheep, which have a litter of 4 to 5 lambs at a time and an associated high milk yield, but a small carcase, which it is the purpose of the experiments to make heavier. In the cattle industry, the emphasis has shifted entirely from selecting for subjective show standards - such as the sweep of the horns and other outwardly attractive manifestations of masculinity but which have nothing to do directly with the ability to convert feed into beef and which growth rate is transmitted to the offspring. Breeding and cross-breeding are now purposely aimed at high growth and feed conversion rates, the attainment of which by the broiler and pig industries was the cause of the more rapid increase in the production of chicken and pigmeat than of beef and mutton.

The avenues for increasing our farm output, undoubtedly do exist, but the extent to which it materialises, will depend on the available local and export markets. It appears that in both the future trend in the demand for food will be determined more by population growth than by income growth. In developing countries, as in our Bantustans, population is growing rapidly, and while in both the elasticity of demand for food may be as high as 0,5 (a 10 per cent increase in income leading to a 5 per cent increase in expenditure on food), it is in fact proving very difficult to raise the income level per head at all. In the developed countries, as amongst our Whites and Coloureds, where incomes are rising faster, they are already high enough for the food intake to have attained virtual saturation. However, as and when the income levels of developing peoples do improve, they tend to eat less of the staple foods - grains, pulses and starchy roots - and more fats, sugar and refined staples, even to the extent of disturbing their nutritional balance. And when incomes reach high levels, demand tends to shift away from the food staples to animal products, fruit and vegetables, with sugar and oil usage stabilising at high levels.

These consumption patterns and the food production trends which have been established in South Africa and the world at large during the past 20 years, have respectively been projected forward

to 1980-90 by the Department of Agricultural Economics and Marketing and to 1975-85 by the United Nations Food and Agricultural Organisation. The South African projection showed that by 1980-90 our farming industry will still have sizeable surpluses of maize, sugar, citrus and deciduous fruit; that the deficits in wheat and beef which already occur will have become much larger; that a substantial deficiency of dairy products will have developed as well; and that mutton, pigmeat and potato supply and demand will continue to be in balance. The international forward projection of the world demand and supply of the various farm products indicated that in the developed countries of North America and Europe there will be a continuation of the tendency for food production as a whole to run ahead of the growth of domestic demand. But it also indicated that in Europe, Japan and even the centrally planned economies of Eastern Europe, a strong import demand will be manifest for beef as well as mutton; in fact, their own rising domestic meat production will concurrently involve a sharp rise in their use and importation of feed grains.

It accordingly appears that, during the 70's and 80's, beef and maize will be the two 'growth' products in world trade. The FAO projection for sugar is that the pressure of supplies on the residual 'free' market is likely to continue, and that production will have to be tailored to modest export expectations. The projection for wool is that it will continue to be consumed predominantly in the high-income countries but that the entire group of agricultural raw materials - wool, cotton, jute, rubber, leather and wattle bark but excluding timber - will experience replacement in smaller or larger measure by cheaper synthetic substitutes.

As far as food exports to Europe are concerned, a new dimension has been brought into the picture by the agricultural policy of the European Common Market countries to indicate high target prices for domestic production each year, and to maintain them by forcing the open market price to that level by imposing varying import levies, the proceeds of which are to be used to subsidise exports and also to finance a measure of restructuring and pensioning of superfluous farmers. The effect of the variable import levies is that food exports to these countries are made very uncertain, while the entire system strengthens the autarchic tendency and retards imports into the Common Market countries. An additional problem is that South African food exports to Europe have ever since the 1932 Ottawa Imperial Conference enjoyed substantial duty preferences in the United Kingdom, especially on the products of its fruit industry; in result Britain buys 43 per cent of our fresh deciduous and citrus exports and 72 per cent of the canned exports. If Britain enters the E.E.C., our fruit exports will not only lose these duty preferences, but will have to pay the E.E.C. duties, which are as high as 40 per cent on canned fruit. Having to bear increasing refrigerated freight charges to boot, there is little doubt that our citrus and deciduous fruit production and exports will have to contract. Moreover, in view of the 40 per cent drop in the price of wool during the past two seasons, a decline in sheep numbers and in wool output is imminent as well.

To summarise: Our two major farm exports, wool and fruit, are in serious jeopardy - with dire consequences, not only for the Cape Province and its Coloured farm workers, but for the South African economy as a whole. And while favourable export opportunities for maize and beef are on the horizon, and which the maize industry is exploiting, our leading cattle industry is not producing enough to be able to profit from the favourable prospects for beef exports; we in fact rely on beef imports from adjoining territories for one-fifth of our requirements. Mounting deficits of dairy products and wheat are moreover in the offing, although the basic capacity to produce enough already existed in the recent past or can be created. The situation in our farming industry therefore is that no assurance exists either that enough will be produced to meet local demand or to take advantage of changing world supply and demand conditions. This situation will continue as long as the industry remains entirely unplanned and devoid of productive targets, with the producers of the different commodities being guided solely by price, the decisions on which are furthermore made separately by the different commodity marketing boards and approved of by a minister, who of necessity is not immune to political pressure.

In order to attain the basic objectives of feeding the nation and of maximising exports at the best export terms of trade, that is to say, to produce what the local market is in need of, to produce more for export of what the world markets want most and to produce less of what is not in such good demand, it seems imperative that production targets be established for each major farm product by the component industry organisations on the basis of projected domestic and foreign demand. Price and marketing policy can then be adapted to achieve those targets while research programmes and public investment in facilities must likewise be attuned thereto.

Should the objectives as stated, and the proposed means to achieve them, prove acceptable, it is yet to be doubted whether the existing agricultural marketing boards are correctly constituted to pursue the appropriate strategy. They are part-time, meet only 2 or 3 times a year, and while use is made of committees, they cannot possibly develop a fundamental understanding of their industries. Because of their statutory producer majorities, they also tend to be sectional in outlook. None moreover possess, or wish to accept, responsibility for research into their industries. For a rational production policy to be formulated and implemented, a first step will, therefore, be for the marketing boards themselves to be reorganised.

It appears to me that in order to effect the needed reorientation, the organisational model of the sugar industry could well be adopted. It is based on the sound principle of equality of representation, not on sectional domination. It vests ultimate responsibility for <u>all</u> policy facets of the industry in <u>one</u> central council, possessing the necessary subsidiary bodies. And, although part-time, a sufficient number of council members devote enough of their time to the sugar industry's affairs to ensure that they are competently attended to and properly co-ordinated.