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FOREWORD

Since 2002, when exchange rate depreciation resulted in rising prices for most agricultural commodities and inputs, as well as retail food prices, there has been growing interest in the behaviour of agricultural prices. This has led, for example, to the establishment of a Food Price Monitoring Initiative by the National Agricultural Marketing Council (NAMC), and the publication of quarterly reports on changes in food prices. The importance of monitoring and disseminating information on changes in agricultural input costs was also realised, however. In August 2006, a workshop was convened with stakeholders in the agricultural sector, at which it emerged that input cost monitoring would be a welcome addition to ongoing research on changes in agricultural-related prices. At this workshop, the NAMC was mandated to co-ordinate input cost monitoring on behalf of the agricultural industry – an activity in which the NAMC has since engaged in collaboration with various branches of the agricultural industry. Input cost monitoring, together with food price monitoring, now forms part of two of the NAMC's key research themes, namely **agro-food chain analysis** and **market information systems**.

By monitoring input costs, the NAMC aims to publish regular updates on trends in farm input costs. This report reflects the broad trends in input costs for meat and wool, more specifically in the wool and mutton sheep industry and the beef cattle industry.

In this report, the following issues are considered: (i) broad trends in input cost movements for the meat and wool industries; (ii) the contribution of different variable input costs to the total variable input cost of wool and mutton sheep and beef cattle; and (iii) trends in individual input cost items.

A comparison of price indices for meat and wool (price movements of outputs and inputs)

Figure 1 shows the trends for different input and output price indices from 1990 to 2011. It is noticeable that the producer price indices of all the products show much the same movement as the total farming

requisite price index (FRPI Total), with the exception of the producer price index for wool (PPI Wool), which shows more variability and increased faster in recent years. The variability of the wool price to farmers is mainly determined by international markets, since 90 % of the wool clip is exported.

PPI Cattle Slaughtered, PPI Sheep Slaughtered and PPI Wool increased by 509.4 %, 696.6 % and 430.8 % respectively from 1990 to 2011, whilst PPI Animal Products and PPI Total increased by 392.4 % and 400.8 % respectively.

During the same period, FRPI Total increased by 603.7 %.



Figure 1: Comparison of various price indices, 1990 to 2011² Source: DAFF (2012)

It is noteworthy that most of the inputs included in the FRPI Total increased substantially in late 2007 and early 2008. This is highlighted later in the report.

Figure 2 shows the trends in PPI Cattle Slaughtered, PPI Sheep Slaughtered and PPI Wool versus selected intermediate inputs between 1990 and 2011 (note that intermediate inputs are part of the overall FRPI Total). The intermediate inputs in this case are fertiliser, fuel, farm feed, and animal health and crop protection.

¹ This input cost monitor was produced in collaboration with the National Wool Growers Association (NWGA).

² See Appendix A for definitions of different price indices.

All the indices show an increasing trend over the period in question. During 2011, all of the depicted prices, with the exception of fertiliser, reached or surpassed the levels seen during the 2008 peak.

During 2011, the world production of grains decreased by 2.6 % while world demand increased by 0.9 %,

leading to lower closing stocks and higher commodity prices; with these higher grain prices in turn leading to higher farm feed prices.

Global financial concerns continue to make for uncertain trading conditions. The world demand for oil continues to grow faster than world supply of oil, while the crude oil price has seen significant increases, also leading to higher fertiliser prices.

From Figure 2 it is evident that the increase in input prices exceeds the increase in output prices, thus putting pressure on producers' profit margins.





Source: DAFF (2012)

intermediate inputs

Figure 3 shows the average percentage contribution of individual variable cost items to the total variable input costs of wool-sheep farming in all participating areas of South Africa. It is clear that animal feed is the highest cost factor for wool-sheep producers, with more than 50 % of total variable costs allocated to feed each year. Animal health products constitute about 18 % of the total variable costs for wool-sheep farming.

Transport costs are determined by fuel prices and whether the producer pays directly for transport or such costs are deducted from the price of the livestock or product being transported. The variation is evident in Figure 3, with transport costs constituting 4 %, 7 % and 3 % from 2008/09 to 2010/11. Annual marketing and shearing costs range between 6 % and 7 %. Other costs, including casual labour, packing material, seed, fertilizer, herbicides and miscellaneous costs, contributed 8 % in 2008/09, 9.5 % in 2009/10 and 12 % in 2010/11.



Figure 3: Average percentage contribution of individual variable cost items to the total variable input costs for wool-sheep production

³ The information used for this input cost monitor of livestock production was sourced from livestock producers in various production areas of South Africa and supplied by the NWGA.

Figure 4 illustrates the variable costs in terms of Rand per Small Stock Unit (R/SSU). It is clear that wool-

sheep producers spent most of their income on animal feed, ranging from R43/SSU in 2008/09 to R59.96/SSU in 2010/11. It is important to note that most areas experienced a drought in 2010/11. leading to increased expenditure on feed for wool-sheep production. Animal health costs also R5.46/SSU. increased bv from R14.40/SSU in 2008/09 and 2009/10 to R19.86/SSU in 2010/11, due to the need for Rift Valley fever inoculations in 2010/11. The total variable cost for wool-sheep production in 2010/11 was R109.77/SSU, with feed and animal health products contributing 72.7 % to this figure.

In livestock farming it is important to follow a three-year moving average due to production changes, especially in cases of two shearings or two lambing seasons in one year. Such variations will have an effect on both income and costs. According to Figure 5, which shows the three-year moving average for wool-sheep production, 53 % or R47.63/SSU of the total variable cost was spent on animal feed and 18 % or R16.24/SSU on animal health products. The three-year average total variable cost amounts to R89.12/SSU.

70 Feed Animal Health 60 Transport Marketing 50 Shearing cost Other costs 40 R/SSU 30 20 10 0 2008/09 2009/10 2010/11

Figure 4: Average total variable cost per small stock unit (SSU) for wool-sheep production



Figure 5: Three-year average percentage of total variable cost for wool-sheep production

Figure 6 depicts the average percentage contribution of individual variable cost items to the total variable input costs for specific wool-sheep production areas in South Africa for the 2010/11 financial year. From this, it is evident that feed costs again contributed the most to the total variable cost. Feed costs were the lowest in Dewetsdorp at 45.6 % and highest in Victoria West at 61.6%, followed closely by Calvinia at 61.1 %. The amount spent on animal health depends on the production area; e.g. there is a much lower incidence of animal diseases in areas that are more extensive and which experience less rainfall and hence the animal health costs in such areas are much lower. This is clearly evident when comparing animal health costs in Calvinia (12 %), Loxton (17 %) and Victoria West (14 %) with such costs in higher rainfall areas such as Barkly East (34 %), Dewetsdorp (25 %) and Edenburg (20 %). Shearing costs ranged between 3 % and 6.6 % depending on the number of shearings per year.



Figure 6: Average percentage contribution of individual variable cost items to the total variable input cost for specific wool-sheep production areas, 2010/2011

Table 1 illustrates the massive effect of the 2010/11 drought, especially in the more extensive areas of the Northern Cape. Calvinia's average feed cost in 2009/10 was R32.91/SSU (29.6 %), rising by R92.03/SSU to R124.94/SSU (61.1 %) in 2010/11, while in Victoria West the average feed cost increased from R29.24/SSU to R60.25/SSU during that same period.

Table 1:	Feed cost (R/SSU) and percentage (%) of the total variable cost for wool-sheep production
	in Calvinia and Victoria West

	Calv	vinia	Victoria West			
	2009/10	2010/11	2009/10	2010/11		
Feed %	29.61 %	61.10 %	40.66 %	61.66 %		
Feed (R/SSU)	R 32.91	R 124.94	R 29.24	R 60.25		

In the case of the total variable cost per small stock unit in the different production areas during 2010/11, feed and animal health continued to dominate as the highest contributors (Figure 7). Calvinia recorded the highest feed cost at R124.94/SSU, which can be explained by the fact that the participant producers in this area experienced a very high reproduction figure (130 % lambing) which, together with the drought conditions, led to them spending a great deal of money on feed for their sheep. In contrast, producers in the other areas spent only between R56/SSU and R70/SSU on feed. Animal health costs in the drier production areas ranged between R14/SSU (Victoria West) and R25/SSU (Calvinia), while in the higher rainfall areas such costs ranged between R25/SSU (Edenburg) and R38/SSU (Barkly East).



Figure 7: Contribution of individual variable cost items per small stock unit (R/SSU) for specific wool-sheep production areas, 2010/2011



Figure 8 shows the total variable cost per SSU from 2008/09 to 2010/11 for the different production areas.

Figure 8: Total variable cost per small stock unit (R/SSU), 2008/09-2010/11

Contribution of variable cost items to the total variable input cost of mutton-sheep production – All participating areas

The average percentage contribution of variable input cost items to the total variable cost for mutton-sheep production is depicted in Figure 9. It is important to note that these areas are located in the more extensive areas of the Northern Cape and Western Cape provinces. The average percentage contribution of animal feed to the total variable input cost was 38.7 %, 50.7 % and 80.43 % in the 2008/09, 2009/10 and 2010/11 financial years respectively. The steep increase in the cost of animal feed testifies to the drought

conditions experienced during 2010/11. The cost of animal health products contributed 21 %, 22 % and 14 % respectively to the total variable cost during the periods concerned. The steep increase in feed costs in 2010/11 had a definite effect on the percentage composition of the different variable cost items, which is clearly evident when comparing the other cost contributions in 2010/11. As shown in Figure 10, it is not necessarily a case of less money having been spent on these particular inputs.



Figure 9: Average percentage contribution of various variable cost items to the total variable cost of mutton-sheep production

Figure 10 shows the total variable cost items per small stock unit. The total average variable cost per SSU for mutton-sheep production in 2010/11 was R77.94/SSU compared to R34.00/SSU and R36.47/SSU in

2008/09 and 2009/10 respectively. The cost of animal feed increased significantly by R44.20/SSU between 2009/10 and 2010/11 as a result of drought conditions in the participating areas. The R2.69/SSU increase in the cost of animal health products in 2010/11 resulted from the need for Rift Valley fever inoculations, which had not been the case in previous years. Transport, marketing and other costs (casual labour, miscellaneous) in the three years concerned amounted to an average of 5 %, 7 % and 6 % respectively, as depicted in Figure 11.



Figure 10: Average variable cost per small stock unit (SSU) for mutton-sheep production



Figure 11: Three-year average percentages of variable costs for mutton-sheep production

Contribution of variable cost items to the total variable input cost of beef-cattle production – All participating areas

The average percentage contribution of variable input cost items to the total variable cost of beef-cattle production is depicted in Figure 12. On average, beef-cattle producers spent between 75 % and 85 % of their costs on feed and animal health products alone. The cost of feed contributed 56.6 % to the total variable cost in 2008/09 and 64.0 % in 2010/11. Animal health products contributed between 19 % and 20 % to the total variable cost during the three periods depicted.

In the 2008/09 season, other costs included a substantial percentage contribution from seed (8 %) and casual labour (6 %). This came about when, in an attempt to improve their marketing prospects, producers in some areas fattened up their cattle by putting them out to pasture. This is not necessarily the norm for beef cattle. However, as can be seen from Figure 12, which shows that in 2009/10 and 2010/11. other costs made а substantially lower contribution to the total variable cost (only 6 % and 5 % respectively).



Figure 12: Average percentage contribution of different variable cost items to the total variable cost of beef-cattle production

The variable cost of beef-cattle production, expressed in cost per large stock unit (R/LSU), is shown in Figure 13. Animal feed and animal health products remained the prominent input cost factors in beef-cattle production in South Africa during the years in question. Feed costs showed a consistently increasing trend, amounting to R131.97/LSU in 2008/09, R146.55/LSU in 2009/10 and R170.68/LSU in 2010/11. These

increases highlight the effect of the 2010/11 drought on beef-cattle production in the areas concerned. The cost of animal health products also increased from R43.46/LSU in 2009/10 to R53.91/LSU in 2010/11. The cost of fattening beef cattle on pastures, which occurred in 2008/09, included a substantial contribution from other costs such as seed and casual labour. The total variable cost of beef-cattle production ranged from R233.13/LSU in 2008/09 to R266.60/LSU in 2010/11.



Figure 13: Average variable cost per large stock unit (LSU) for beef-cattle production

The three-year moving average for beef-cattle production depicts feed at 62 % and animal health products at 20 % of the total variable cost, as shown in Figure 14. The remaining 18 % was made up by transport, marketing and other costs, including seed, fertilizer, herbicides and miscellaneous items.



Figure 14: Three-year average percentage of total variable cost of beef-cattle production

Figure 15 shows the percentage contribution of variable cost items to the total variable cost in the different

production regions during the 2010/11 Feed contributed between season. 57 % (Dewetsdorp) and 70 % (Barkly East) to the total variable cost of beefcattle production, whereas animal health products contributed between 15 % (Edenburg) and 28 % (Dewetsdorp). The contribution of transport and marketing costs depends on whether such costs are deducted from the producer's income or if the producer must pay such costs additionally. explaining thus the variance between the production areas.



Figure 15: Average percentage contribution of variable cost items to the total variable cost of beef-cattle production in the various production areas, 2010/11

Figure 16 shows the total variable cost items for beef-cattle production, depicted as cost per large stock

unit (R/LSU), during the 2010/11 season. The total variable cost per LSU varies between production areas, R149/LSU from ranging in R233/LSU Dewetsdorp to in Edenburg. The cost of animal health products was lowest in Edenburg at R55.11/LSU and highest in Barkly East at R86.41/LSU. Edenburg experienced the highest average transport cost at R57.57/LSU.





Figure 17 shows the total variable cost per large stock unit for beef-cattle production from 2008/09 to 2010/11. Producers in Barkly East increased their costs in 2009/10 to improve their beef-cattle production, whereas producers in Dewetsdorp and Edenburg maintained more stable cost levels over the three years.



Figure 17: Total variable cost per LSU for beef cattle in different production areas, 2008-2010

Contribution of other not directly allocated costs (NDAC) to a specific livestock enterprise – All participating areas

The not directly allocated costs (NDAC) in livestock production are those costs that cannot be allocated to only one specific enterprise, as all enterprises use these particular resources to different extents, depending on the composition of enterprises on the farm. These costs do not include the costs of cash crops, if a cash crop enterprise is present on the farm.

Figure 18 shows the three-year moving average for NDAC items of the participating livestock enterprises. Permanent labour contributed 23.1 %, followed by fuel, oil and lubricants at 18.8 %, mechanisation at 14.8 % and fixed improvements at 10.6 %. Total insurance (short- and long-term) and electricity contributed 12.5 % and 6.9 % respectively to the NDAC. Other costs include bookkeeping fees, bank charges, telephone and water costs, land tax. vermin control and miscellaneous costs, amounting to 13.3 % of the NDAC.



Figure 18: Three-year moving average of NDAC items for livestock farming in all participating areas

Figure 19 depicts the NDAC items in rand per small stock unit (R/SSU). The total NDAC cost amounted to R172.29/SSU in 2010/11, which was only R4.13/SSU higher than in 2008/09. The cost of permanent labour increased year-on-year from R35.13/SSU in 2008/09 to R41.77/SSU in 2010/11. The cost of fuel, oils and lubricants and the cost of mechanisation decreased from R34.33/SSU and R33.74/SSU respectively in 2008/09 to R29.43/SSU and R20.10/SSU respectively in 2010/11, while fixed improvements

varied between R13.00/SSU and R19.80/SSU. The NDAC item that showed the most significant increase during the three-year period was electricity, rising from R7.93/SSU in 2008/09 to R13.79/SSU in 2010/11.



Figure 19: Contribution of fixed-cost items per small stock unit for livestock production in all participating areas

The animal feed market

According to the 2012 Alltech Global Feed Survey⁴, world feed production is estimated at 873 million tons of which 44 % is for the poultry industry, followed by ruminant feed and pig feed at 26 % and 23 % respectively. Of the 132 countries included in the survey, China emerged as the largest producer of feed with 175.4 million tons followed by the USA and Brazil with 164.9 and 59.6 million tons respectively. According to this survey, South Africa is number nine in the world with 10.1 million tons of animal feed produced.

The South African animal feed industry is comprised of both the formal sector, consisting of members of the Animal Feed Manufacturers' Association (AFMA), and the informal sector⁵. Currently, AFMA members account for approximately 59 % of South Africa's national feed production, with the remainder being produced by the informal sector, which includes feedlots, home mixers and smaller feed mills that are not associated with AFMA.

Figure 20 depicts national feed sales, AFMA members' feed sales, and sales of feed derived from concentrates over the two most recent reporting periods. According to the 2010/11 AFMA chairman's report, organised animal feed manufacturers produced 6.29 million tons during that year, whilst informal or on-farm producers (including feedlots) produced 4.36 million tons. National feed sales declined by 1.3 % from 2009/10 to 2010/11, while AFMA members' sales increased by 8.2 %, resulting in an increase in the AFMA members' contribution to national feed sales from 53.9 % to 59.1 %.

⁴ Source: http://www.ifif.org/pages/t/Global+feed+production

⁵ Source: AFMA chairman's report for 2010/11 (2012)



Figure 20: National animal feed production during 2009/10 and 2010/11 Source: Based on AFMA chairman's report for 2009/10 and 2010/11 (2012)

Table 2 indicates the top seven raw material usage and inclusion rates from 2006/2007 to 2010/2011. According to the AFMA chairman's report, the average inclusion rates for the various raw materials are indicated as a percentage of the total feed sales and will normally reconcile to a level higher than 95 %, allowing for milling loss. It must be noted, however, that not all raw materials are being used in all compound feeds. The inclusion rates of different raw materials differ from formulation to formulation, as well as between different species.

The top seven raw materials represent on average 84 % of the total raw material used. Maize tops the list in terms of usage, followed by soy oilcake and then wheaten bran and flour.

Raw	2006/07		2007/08		2008/09		2009/10		2010/11	
material	tons	%								
Maize	2267008	50.81	2464189	55.23	2649320	59.37	2685688	60.19	2810058	62.98
Soy oilcake	653463	14.64	752073	16.85	716142	16.05	701055	15.71	815958	18.29
Wheaten bran & flour	248362	5.57	273774	6.14	282284	6.33	312162	7.00	332061	7.44
Sunflower seed & oilcake	169172	3.79	167856	3.76	248884	5.58	313964	7.04	256860	5.76
Molasses	158459	3.55	181536	4.07	178689	4.00	194879	4.37	200370	4.49
Full-fat soy	183047	4.10	130609	2.93	92474	2.07	164840	3.69	142758	3.20
Hominy chop	90408	2.03	87358	1.96	101287	2.27	116649	2.61	118735	2.66
Other	727520		843407		780621		824740		854782	
Total raw material used	4497439	95.95	4900802	95.67	5049701	94.95	5313977	96.65	5531582	96.70

Table 2: Raw material usage (April 2006 to March 2011) – AFMA members (tons)

Source: Based on AFMA chairman's report 2010/11 (2012)

Figure 21 shows the SAFEX spot prices of yellow maize, wheat, sunflower and soybeans from June 2005 to June 2012. With the current outlook of lower crop yields and consequently lower stock levels on the local and international markets, the increasing trend in prices is expected to continue.

Price increases for the items depicted were as follows between **June 2005** and **June 2012**:

- Wheat: 85.1 % increase
- Sunflower: 182.2 % increase
- Soybeans: 198.1 % increase
- Yellow maize: 230.8 % increase

From **June 2011 to June 2012**, the following price changes occurred:

- Wheat: 2 % increase
- Sunflower: 16.3 % increase
- Soybeans: 37.1 % increase
- Yellow maize: 15.1 % increase



Figure 21: SAFEX spot prices of yellow maize, wheat, sunflower and soybeans from June 2005 to June 2012 Source: SAFEX (2012)

Changes in fuel prices

Figure 22 shows the prices of petrol 95 ULP Gauteng, petrol 95 ULP Coast and crude oil from June 2006 to June 2012.

Price increases for the items depicted were as follows between **June 2006 and June 2012**:

- Petrol 95 ULP Gauteng: 80.1 % increase
- Petrol 95 ULP Coast: 81.4 % increase
- Crude oil: 59.3 % increase

From **June 2011 to June 2012**, the following price changes occurred:

- Petrol 95 ULP Gauteng: 14.1 % increase
- Petrol 95 ULP Coast: 14.0 % increase
- Crude oil: 2.8 % decrease



Source: SAPIA (2012)

Figure 23 shows the prices of diesel 0.05% S. Gauteng, diesel 0.05% S. Coast and crude oil from June 2006 to June 2012.

Price increases for the items depicted were as follows between **June 2006** and **June 2012**:

- Diesel 0.05% S. Gauteng: 78.9 % increase
- Diesel 0.05% S. Coast: 78.8 % increase
- Crude oil: 59.3 % increase

From **June 2011 to June 2012**, the following price changes occurred:

- Diesel 0.05% S. Gauteng: 15.9 % increase
- Diesel 0.05% S. Coast: 15.8 % increase
- Crude oil: 2.8 % decrease



Figure 23: Diesel and crude oil prices Source: SAPIA (2012)

The fuel price in South Africa is linked to the international price of crude oil and is quoted in US dollars (US\$) per barrel. Crude oil prices and the rand/dollar exchange rate therefore have a major impact on fuel prices (Department of Minerals and Energy, 2008). The fuel pump price is made up of certain international and domestic price elements. The international element, or Basic Fuel Price (BFP), is based on the import parity principal (the cost incurred by a South African importer of fuel to purchase the fuel from an international refinery, transport the product from that refinery, insure the product against losses at sea, and land the product on South African shores). To arrive at the final pump price in the different pricing zones (magisterial district zones), certain domestic transport costs, government imposts (or taxes and levies) and retail and wholesale margins need to be added to the international price. The government regulates the petrol retail price, with the Central Energy Fund (CEF) being responsible for the price calculation (on behalf of the Department of Minerals and Energy). Changes in margins and the transport element are based on actual costs incurred by the South African industry and are calculated according to a formula approved by the Minister of Minerals and Energy (iFleet, 2007).

During June 2012, the wholesale price of Diesel 0.005 % S was 1 073.55 cents per litre, while the BFP amounted to 684.63 cents per litre. Figure 24 shows the breakdown of the other 385.02 cents per litre. The wholesale price of diesel is regulated, but the retail price is not. Farmers qualify for a fuel rebate of 158 cents per litre (April 2012) on 80 % of their consumption, which is calculated as follows: Road Accident Fund (RAF) levy (88 cents per litre) plus 40 % of fuel tax (70 cents per litre).



sulphur content) – price (c/l); percentage (%) of total price

Source: Department of Minerals and Energy (2012)

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Appendix A: Definitions of different price indices

FRPI Total includes price indices for machinery and implements, materials for fixed improvements, and intermediate goods. The latter includes fertiliser, fuel, farm feed, animal health and crop protection products, packing material, and maintenance and repairs.

PPI Total includes indices of producer prices of field crops, horticulture and animal production.

PPI Animal Products include indices of producer prices for pastoral products, stock slaughtered, dairy products, and poultry and poultry products.

PPI Cattle Slaughtered is the price index of producer prices for cattle slaughtered.

PPI Sheep Slaughtered is the price index of producer prices for sheep slaughtered.

PPI Wool is the price index of producer prices for wool.