CAN MAIZE BE GROWN PROFITABLY?

BY

DR PHILIP THEUNISSEN
COMPUTUS MANAGEMENT BUREAU

The 2004/2005 season has not been a happy one for SA maize farmers. In spite of a huge harvest of 12,1 million tons, the maize price was cut almost in halve between planting and harvesting. As a result, producers suffered losses and will be saddled with carry-over debt going into the next season. Dr Philip Theuniss of Computus Management Bureau looks for light at the end of the maize tunnel.

At the end of the 2004 maize season it was estimated that the carry-over stock to 2005 would be approximately three million tons after the internal demand of 7,8 million tons has been satisfied. But 2005's bumper crop of 12,1 million tons - 4,3 million tons more than SA's consumption - threw a spanner in the works. On paper, we now have a carry-over stock of 7,3 million tons, almost enough to satisfy the internal demand over the next year even if not a single maize pip is planted.

Of course, there is the possibility that maize may be exported, which will lower the surplus. When the maize price suddenly picked up in the middle of September, a mild upswing in exports immediately followed.

Prices

The past season started well for maize producers with a farm price of R950 per ton, but dry conditions prevented farmer from planting at the usual time. Farmers didn't want to bind themselves contractually without having planted.

When the rains came at the end of November, farmers did plant, but prices then started falling and just kept on falling, and only stabilised at the low level of R450 a ton (farm price). In all, the past season has offered very little opportunity to market maize profitably.

With the very recent upward trend in maize prices, it's perhaps not far-fetched to expect a sustained farm price of R700 in the coming season. But will that be sufficient to enable farmers to grow maize profitably?

Expenses

Table 1 contains the income and expenses for cultivating dryland and irrigation maize at different yield targets. If a yield of 3,5 tons per hectare is achieved, the production cost on dryland will be R3,120 per hectare. A maize price of R700 a ton will then lead to a loss of R670 per hectare. The break-even price, where income equals cost, will be R891 a ton.

If the same calculation is done for the different yield targets in Table 1, one gets a break-even price of R1 283 a ton corresponding to a yield of two tons per hectare, a price of R1,113 for a yield of 2.5 tons, R980 for three tons, and R816 for four tons.

Maize under irrigation needs a breakeven price of R759 a ton when the yield is seven tons per hectare. It's clear that not one of the mentioned scenarios will show a profit when the farm price is R700 a ton. Farmers rather need a price of at least R900 to have a chance of making a profit from maize.

Sensitivity

Tables 2 and 3 show the calculations for the sensitivities of dryland and irrigation maize at different yield and price levels, presuming that dryland costs will be R3,120 per hectare and cultivation under irrigation will cost R5,314. The shaded areas indicate losses, while the figures against a lighter backdrop indicate profits.

If a producer receives R700 for a ton of maize, he will on dryland only start showing a profit if he can achieve a yield of 4.8 tons per hectare, and under irrigation he will have to harvest 7.75 tons per hectare.

The average yields of 3.5 tons per hectare on dryland and seven tons under irrigation will require prices of R900 and R800 respectively before a significant profit can be realised. Conclusion: at current price levels, a farmer cannot make a profit from growing maize. I would advise farmers to use the figures in Tables 2 and 3 when projecting forward to July 2006 don't blindly plant maize, but first consider if the future price will make it worthwhile to have a crop on the land.

Finance

The reality is that many farmers will plant maize in spite of the writing on the wall. Farmers have in the past often proved to be optimists, hoping that prices would improve between planting and harvesting to bring a profit to their back pockets. Even the best market analysts can't predict what prices will do over the next six months, but nevertheless, there is a chance that farmers' optimism will be rewarded. Unfortunately, the commercial banks and agribusinesses do calculations before providing credit to farmers, and their figures look more or less like those in Table 1.

Even if a farmer firmly believes that the maize price will sharply rise in the coming season, he will not be able to obtain the capital to back up his belief - he will have to finance himself if he wants to plant. The lack of money will see an enforced downscaling in maize plantings, in spite of the urge farmers feel to plant in the hope that they'll wag a tongue at everyone when prices rise to R900 a ton or more by July next year.

At the risk of undermining farmers' confidence, I want to caution them that the current price of R700 a ton does not make it an economically viable proposition to plant in the coming season.

Bethlehem
October 2005

TABLE 1: PRODUCTION COST OF MAIZE (2005/06)

Kriteria		DRY LAND					IRRIGATION
Kg Stikstof		20 N	32 N	45 N	60 N	70 N	180 N
Yield: (Tons/ha)		2.0	2.5	3.0	3.5	4	7.0
Price/ton in Rand		700	700	700	700	700	700
Rand per year per:		**Hectare**	**Hectare**	**Hectare**	**Hectare**	**Hectare**	**Hectare**
INCOME							
Produce sales		1,400	1,750	2,100	2,450	2,800	4,900
GROSS PRODUCTION VALUE		**R 1,400**	**R 1,750**	**R 2,100**	**R 2,450**	**R 2,800**	**R 4,900**
DIRECT EXPENSES							
Seed		360	360	360	360	360	1,100
Fertilizer		272	451	571	714	821	1,265
Wead control		186	186	186	186	186	185
Pest control		319	319	319	319	319	233
Crop spraying		0	0	0	0	0	0
Harvest cost		247	247	247	247	247	525
Irrigation cost (Electricity & repairs)		0	0	0	0	0	395
DIRECT EXPENSES		**R 1,385**	**R 1,563**	**R 1,684**	**R 1,826**	**R 1,934**	**R 3,703**
VARIABLE COST							
Crop insurance	**% van Omset**	50	63	76	88	101	176
- Hail	3.6%	50	63	76	88	101	176
- Frost	0.0%	0	0	0	0	0	0
- Excessive rain	0.0%	0	0	0	0	0	0
Vervoerkoste		69	87	104	121	139	242
VARIABLE COST		**R 120**	**R 150**	**R 179**	**R 209**	**R 239**	**R 419**
ALLOCATED EXPENSES							
Machinery cost		988	988	988	988	988	988
- Fuel		222	222	222	222	222	222
- Depreciation & Repairs		691	691	691	691	691	691
- Operater cost		76	76	76	76	76	76
Interest		73	82	88	96	102	204
ALLOCATED EXPENSES		**R 1,061**	**R 1,070**	**R 1,077**	**R 1,084**	**R 1,090**	**R 1,192**
TOTAL EXPENDITURE		**R 2,565**	**R 2,783**	**R 2,940**	**R 3,120**	**R 3,263**	**R 5,314**
ENTERPRISE MARGIN		**-R 1,165**	**-R 1,033**	**-R 840**	**-R 670**	**-R 463**	**-R 414**
BREAK-EVEN PRICE (Price/ton)		**R 1,283**	**R 1,113**	**R 980**	**R 891**	**R 816**	**R 759**
BREAK-EVEN YIELD (Ton/ha)		**3.7**	**4.0**	**4.2**	**4.5**	**4.7**	**7.6**

Source: Computus Management Information (Pty) Ltd

TABLE 2: SENSITIVITY OF MAIZE (Dry land) PER HA

Yield	***Price/ton***						
(ton/ha)	***400***	***500***	***600***	***700***	***800***	***900***	***1000***
2.00	*-2325*	*-2125*	*-1925*	*-1725*	*-1525*	*-1325*	*-1125*
2.40	*-2165*	*-1925*	*-1685*	*-1445*	*-1205*	*-965*	*-725*
2.80	*-2005*	*-1725*	*-1445*	*-1165*	*-885*	*-605*	*-325*
3.20	*-1845*	*-1525*	*-1205*	*-885*	*-565*	*-245*	*75*
3.60	*-1685*	*-1325*	*-965*	*-605*	*-245*	*115*	*475*
4.00	*-1525*	*-1125*	*-725*	*-325*	*75*	*475*	*875*
4.40	*-1365*	*-925*	*-485*	*-45*	*395*	*835*	*1275*
4.80	*-1205*	*-725*	*-245*	*235*	*715*	*1195*	*1675*
5.20	*-1045*	*-525*	*-5*	*515*	*1035*	*1555*	*2075*
Total expenditure							***3120***

Source: Computus Management Information (Pty) Ltd

TABLE 3: SENSITIVITY OF MAIZE (Irrigation) PER HA

Yield	***Price/ton***						
(ton/ha)	***400***	***500***	***600***	***700***	***800***	***900***	***1000***
6.00	*-2914*	*-2314*	*-1714*	*-1114*	*-514*	*86*	*686*
6.25	*-2814*	*-2189*	*-1564*	*-939*	*-314*	*311*	*936*
6.50	*-2714*	*-2064*	*-1414*	*-764*	*-114*	*536*	*1186*
6.75	*-2614*	*-1939*	*-1264*	*-589*	*86*	*761*	*1436*
7.00	*-2514*	*-1814*	*-1114*	*-414*	*286*	*986*	*1686*
7.25	*-2414*	*-1689*	*-964*	*-239*	*486*	*1211*	*1936*
7.50	*-2314*	*-1564*	*-814*	*-64*	*686*	*1436*	*2186*
7.75	*-2214*	*-1439*	*-664*	*111*	*886*	*1661*	*2436*
8.00	*-2114*	*-1314*	*-514*	*286*	*1086*	*1886*	*2686*
Total expenditure							***5314***

Source: Computus Management Information (Pty) Ltd