

Kenya Upper Western Fertilizer Use Optimizer: paper version, (Urea) Feb. 2018

The below assumes:

- Calibration measurement is with : i) a 3.14 ml of soda bottle with lining that holds about 3.5 g DAP, 2.2 g Urea and 3.5 g MOP ii) a 100 g blue band tin (BB) has approx. 124 ml to hold 136 g DAP; 86.8 g Urea and 136.4 g MOP. It is assumed maize, Irish potatoes, sweet potatoes and climbing beans are planted with 75 cm, beans 50 cm, rice 25 cm row and wheat 22.5 cm row spacing.
- Grain values per kg (Ksh): 25 maize, 30 Irish potatoes, 30 sweet potatoes, 50 rice, 60 beans 30 wheat.
- Cost of using 50 kg fertilizer (Ksh): 2850 urea; 3600 DAP; 3600 MOP.
- Application rates are in kg/acre. Any fertilizer rate application that is less than 10 kg/acre is not economical and should be converted to another fertilizer. WAP –weeks after planting; WAE- Weeks after emergence.

Level 1 financial ability (KSh <2400 per acre available)

- For maize: Side dress 10 kg Urea (1 top for 5 plants) at 6 WAP.
- **Banana:** At the start of the rainy season, apply 81 kg 17-17-17 (1 BB for 2 holes).
- For Irish potato: at planting, band 46 kg DAP (1 top for 0.4 m) and 19 kg MOP (1 top for 1 m). Side dress by banding 22 kg Urea (1 top for 0.5 m) 4 WAE.
- For sweet potato: at planting, band 39 kg DAP (1 top for 0.5 m).
- For lowland rice: at planting, broadcast 13 kg DAP (1 BB bottle for 21 m @ 2m wide) and 13 kg MOP (1 BB bottle for 21 m @ 2m wide). Side dress by broadcasting 29 kg urea (1 BB bottle for 6 m @ 2 m wide) at panicle initiation.
- For maize-bean intercropping: at planting, band 19 kg DAP (1 top for 1 m). Side dress 15 kg urea (1 top for 3 plants) at 6 WAP.
- For climbing beans: at planting, band 19 kg DAP (1 top for 0.8 m).

Level 2 financial ability (KSh 2400 to 4800 per acre available; some at Level 1 and some at Level 2)

For maize: at planting, band 36 kg DAP (1 top for 0.5 m). Side dress 26 kg urea (1 top for 2 plants) at 6 WAP.

- For Irish potato: at planting, band 61 kg DAP (1 top for 0.3 m) and 27 kg MOP (1 top for 0.8 m). Side dress by banding 41 kg Urea (1 top for 0.3 m) 4 WAE.
- **Banana:** At the start of the rainy season, apply 81 kg 17-17-17 (1 BB for 2 holes).
- For sweet potato: at planting, band 59 kg DAP (1 top for 0.3 m).
- For lowland rice: at planting, broadcast 25 kg DAP (1 BB for 11 m @ 2m wide) and 20 kg MOP (1 BB for 13 m @ 2m wide). Side dress by broadcasting 51 kg urea (1 BB for 3.4 m @ 2m wide) at panicle initiation.
- For maize-bean intercropping: at planting, band 34 kg DAP (1 top for 0.5 m). Side dress 35 kg urea (2 tops for 3 plants) at 6 WAP.
- For climbing beans: at planting, band 48 kg DAP (1 top for 0.4 m).
- For wheat: at planting, band 19 kg DAP (1 top for 3.3 m). Side dress by banding 14 kg urea (1 top for 2.1 m) at panicle initiation.

Level 3 financial ability (maximize profit per acre). (KSh 4800 to 7200 per acre available; some at Level 2 and some at Level 3; KSh > 7200 per acre, all at Level 3)

- For maize: at planting, band 61 kg DAP (1 top for 0.3 m). Side dress 52 kg urea (1 top for 1 plant) at 6 WAP.
- For Irish potato: at planting, band 61 kg DAP (1 top for 0.3 m) and 37 kg MOP (1 top for 0.5 m). Side dress by banding 71 kg Urea (1 top for 0.2 m) 4 WAE.
- **Banana:** At planting and annually, apply 81 kg 17-17-17 (1 BB for 1 hole), 23 kg Urea (1 BB for 2 holes) at the start of the rainy season.
- For sweet potato: at planting, band 61 kg DAP (1 top for 0.3 m).
- For lowland rice: at planting, broadcast 45 kg DAP (1 BB for 6.1 m @ 2 m wide) and 28 kg MOP (1 BB for 9.9 m @ 2 m wide). Side dress by broadcasting 61kg urea (1 BB for 2.9 m @ 2m wide) at panicle initiation.
- For maize-bean intercropping: at planting, band 53 kg DAP (1 top for 0.4 m). Side dress 58 kg urea at 6 WAP (1 top for 1 plant).
- For climbing beans: at planting, band 61 kg DAP (1 top for 0.3m) and 14kg urea at 6WAP (1 top for 0.8m).
- For wheat: at planting, band 54 kg DAP (1 top for 1.2 m). Side dress by banding 37 kg urea (1 top for 1.1 m) at panicle initiation.