

Kenya Lower Western Fertilizer Use Optimizer: paper version, Feb 2018

The below assumes:

- Calibration measurement is with a 3.14 ml of soda bottle with lining that holds about 3.5 g DAP, NPK (17-17-17) and 2.2 g Urea (ii) Blue band (100g) tin (BB) holding 110g, NPK (17-17-17) and DAP, 70g Urea.
- It is assumed maize and sorghum are planted at 75 by 25 cm, banana at 3 m by 3 m; beans and ground nuts at 50 cm row spacing.
- It is assumed grain prices per kg (Ksh): 25 maize, 20 sorghum, 50 beans, 60 Banana and 50 Paddy rice. 50 kg of fertilizer used costs (Ksh): 2300 NPK; 3600 DAP; 2800 Urea.
- Application rates are in kg/ac. If any fertilizer rate application is less than 10 kg/acre it is not economical and should be converted to another fertilizer. WAP- weeks after planting. DAE- days after emergence.

Level 1 financial ability (< 1500 per acre available)

- Banana:** At the start of the rainy season, apply 81 kg 17-17-17 (1 BB for 2 holes).
- For **rice:** at transplanting broadcast 18 kg DAP (1 BB for 10 m @ 3 m wide). Side dress by broadcasting and 34 kg Urea (1 BB for 3.5 m @ 3 m wide) at panicle initiation ((45-50 DAE)
- For **maize:** Side dress 11 kg Urea (2 tops for 9 plants) at 6 WAP.
- For **maize-bean intercrop:** at planting, apply 18 kg DAP (1 top for 4 holes). Side dress with 11 kg urea (2 tops for 9 plants) at 6 WAP.

Level 2 financial ability

(If 1500- 3000 available some applied at level 1 some level 2)

- Banana:** At the start of the rainy season, apply 81 kg 17-17-17 (1 BB for 2 holes).
- For **maize:** at planting, apply 35 kg DAP (1 top for 2 holes). Side dress 18 kg Urea (2 tops for 5 plants) at 6 WAP.
- For **sorghum:** at planting, band 16 kg DAP (1 top for 1.2 m).
- For **rice:** at transplanting broadcast 32 kg DAP (1 BB for 6 m @ 3 m wide). Side dress by broadcasting 28 kg Urea at (7-14 DAE) (1 BB for 4 m @ 3 m wide) and 28 kg Urea (1 BB for 4 m @ 3 m wide) at panicle initiation (45-50 DAE)
- For **bean:** at planting, band 11 kg DAP (1 top for 2.5 m),
- For **ground nuts:** at planting, band 11 kg DAP (1 top for 2.5 m).
- For **maize-bean intercrop:** at planting, apply 34 kg DAP (1 top for 1 hole). Side dress with 22 kg urea (2 tops for 7 plants) at 6 WAP.

Level 3 financial ability (maximize profit per acre)

(Ksh3000 – 4500 some at level 3 and some level 2 but if above 4500 apply all at level 3)

- 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 **maize:** at planting, apply 65 kg DAP (1 top for 1 hole). Side dress with 25 kg urea (1 top for 2 plants) at 6 WAP.
- For **sorghum:** at planting, band 23 kg DAP (5 tops for 4 m). Side dress by banding 12 kg Urea (1 top for 1 m) at panicle initiation.
- For **rice:** at transplanting broadcast 36 kg DAP (1 BB for 4 m @ 3 m wide). Side dress by broadcasting 39 kg Urea at 14 DAE (1 BB for 3 m @ 3 m wide) and 39 kg Urea (1 BB for 3 m @ 3 m wide) at panicle initiation (45-50 DAE)
- For **beans:** at planting, band 22 kg DAP (1 top for 1.3 m), and 12 kg Urea (1 top for 1.5 m).
- For **ground nuts:** at planting, band 30 kg DAP (1 top for 1 m) at flower initiation.
- For **maize-bean intercrop:** at planting, apply 65 kg DAP (2 top for 3 holes). Side dress with 33 kg urea (2 tops for 3 plants) at 6 WAP.