

# Kenya Eastern Upper Fertilizer Use Optimizer: paper version, (Urea) Nov. 2016

## 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 (25 cm within row) and is planted with 75 cm row spacing, banana (3 m within row) and 3 m row spacing, rice 25 cm row spacing, Irish potatoes 75 cm row spacing and beans 50 cm row spacing .
- It is assumed grain prices per kg (Ksh): 25 maize; 30 bananas; 50 rice, 60 beans and 30 Irish potato.
- It is assumed 50 kg of fertilizer costs (Ksh): 2850 urea; 3600 DAP and 3600 MOP.
- 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; WAE – Weeks after emergence.

## Level 1 financial ability

- Banana: At the start of the rainy season, apply 17 kg DAP (1 BB for 4 holes), 19 kg Urea (1 BB for 2 holes) and 27 kg MOP (1 BB for 2 holes) at planting.
- Irish potato: At planting, apply 40 kg DAP (1 top for 1.2 m) and 14 kg MOP (1 top for 1.2 m) by banding. Side dress with 15 kg Urea (1 top for 0.8 m) at 4 WAE.
- Lowland rice: At planting, broadcast 38 kg DAP (1 BB for 7 m @ 2 m wide) and 14 kg MOP (1 BB for 19 m) at planting.

## Level 2 financial ability

- Banana: At the start of the rainy season, apply 32 kg DAP, 21 kg Urea (1 BB for 2 holes) and 36 kg MOP (1 BB for 1 hole for each fertilizer) at planting.
- Irish potato: At planting, apply 59 kg DAP (1 top for 0.3 m) and 23 kg MOP by banding (1 top for 0.8 m).
- Maize HP >4t: At planting, apply 29 kg DAP (1 top for 0.6 m) by banding. Side dress with 20 kg Urea (1 top for 0.7 m) at 6 WAP.
- Maize LP <4t: At planting, apply 10 kg DAP (1 top for 1.9 m) by banding.
- For maize-bean intercropping: At planting, apply 22 kg DAP (1 top for 0.8 m) by banding.
- Lowland rice: At planting, broadcast 91 kg DAP (1 BB for 3 m @ 2m wide) and 15 kg MOP (1 top for 0.8 m).
- Bean. At planting, apply 10 kg DAP by banding at planting (1 top for 3 m).

## Level 3 financial ability (maximize profit per acre).

- Banana: At planting, apply 49 kg DAP (1 BB for 1 hole), 23 kg Urea (1 BB for 1.7 holes) and 40 kg MOP (2 BB for 3 holes) at the start of the rainy season.
- Irish potato: At planting, apply 81 kg DAP (1 top for 0.2 m) and 33 kg MOP by banding (1 top for 0.6 m). Side dress with 37 kg Urea (1 top for 0.3 m) at 4 weeks after emergence.
- Maize HP >4t: At planting, apply 68 kg DAP (1 top for 0.3 m) by banding. Side dress with 34 kg Urea (1 top for 0.3 m) at 6 WAP.
- Maize LP <4t: At planting, apply 48 kg DAP (1 top for 0.4 m) by banding.
- For maize-bean intercropping: At planting, apply 42 kg DAP (1 top for 0.4 m) by banding.
- Lowland rice: At planting, broadcast 101 kg DAP (1 BB for 2.7 m @ 2 m wide) and 22 kg MOP (1 BB for 12 m @ 2 m wide).
- Beans. Apply 25 kg DAP by banding at planting (1 top for 1.1 m).