

# Kenya Coastal Fertilizer Use Optimizer: paper version, 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 is planted with 90 cm row spacing (30 cm within row), cassava (1 m within row) 1 m row spacing, rice 25 cm row spacing, sorghum 90 cm, finger millet 30 cm and cowpeas 50 cm row spacing.
- It is assumed grain prices per kg (Ksh): 25 maize, 30 cassava, 50 rice, 30 sorghum, 50 finger millet, 50 cowpea.
- 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

## Level 1 financial ability

- Cassava: At planting, apply 44 kg DAP (3 tops for 1 hole) and 22 kg MOP (2 tops for 1 hole). Side dress with 63 kg urea (1 BB for 6 holes) at start of the rainy season.
- Lowland rice: At planting, broadcast 19 kg DAP (1 BB for 15 m @ 2 m wide). Side dress by broadcast 61 kg urea (1 BB for 3 m @ 2 m wide) at panicle initiation.
- Sorghum: At planting, apply 20 kg DAP (1 top for 1.2 m) by banding.
- Finger millet: Side dress 18 kg urea (1 top for 2 m) at panicle initiation.
- Cowpeas: At planting, apply 16 kg DAP (1 top for 2 m) by banding.

## Level 2 financial ability

- Cassava: At planting, apply 81 kg DAP (1 BB for 6 holes) and 28 kg MOP (1 BB for 1.4 holes). Side dress with 58 kg urea (1.5 BB for 0.5 hole) at start of the rainy season.
- Maize HP >4t: At planting, apply 29 kg DAP (1 top for 2 m) by banding. Side dress with 31 kg urea (1 top for 1 m) at 6 WAP.
- Maize LP >4t: At planting, apply 26 kg MOP (1 top for 2 m) by banding.
- Lowland rice: At planting, broadcast 33 kg MOP (1 BB for 8.4 m @ 2m wide). Side dress with 61 kg urea (1 BB for 2.9 m @ 2m wide) at panicle initiation.
- Sorghum: At planting, apply 31kg MOP (1 top for 0.6 m) by banding. Side dress with 26 kg urea (1 top for 0.5 m) at panicle initiation.
- Finger millet: At planting, apply 11 kg MOP (1 top for 4 m) by banding. Side dress with 34 kg urea (1 top for 0.9 m) at panicle initiation.
- Cowpeas: At planting, apply 32 kg DAP (1 top for 0.6 m) by banding.

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

- Cassava: At planting, apply 61 kg DAP (1 BB for 9 holes) and 34 kg MOP (1 BB for 16 holes). Side dress with 81 kg urea (1 BB for 4 holes) at the start of the rainy season.
- Maize HP >4t: At planting, apply 52 kg DAP (1 top for 1 m) by banding. Side dress 74 kg urea (1 top for 0.4 m) at 6 WAP.
- Maize LP >4t: At planting, apply 52 kg DAP (1 top for 1 m) by banding.
- Lowland rice: At planting, apply broadcast 61 kg DAP (1 BB for 4.5 m @ 2m wide). Side dress 61 kg urea (1 BB for 1.6 m @ 2.9 m wide) at panicle initiation.
- Sorghum: At planting, apply 49 kg DAP (1 top for 0.4 m) by banding. Side dress with 55 kg urea (1 top for 0.2 m) at panicle initiation.
- Finger millet: At planting, apply 21 kg DAP (1 top for 2.2 m) by banding. Side dress with 36 kg urea (1 top for 0.8 m) at panicle initiation.
- Cowpeas: At planting, apply 52 kg DAP (1 top for 0.5 m) and 11 kg MOP (1 top for 2.5 m) by banding.