**Kenya Upper Western Fertilizer Use Optimizer: paper version, (CAN-DAP) 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 and CAN and 3.5 g MOP ii) a 100 g blue band tin (BB) has approx. 124 ml to hold 136 g DAP and CAN 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): 2600 CAN; 3600 DAP; 3600 MOP.
* Application rates are in kg/ac. 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

**Level 1 financial ability**

* For Irish potato: at planting, band 55 kg DAP (1 top for 0.3 m) and 21 kg MOP (1 top for 0.9 m). Side dress by banding 15 kg CAN (1 top for 1.2 m) 4 WAE.
* For sweet potato: at planting, band 43 kg DAP (1 top for 0.4 m).
* For lowland rice: at planting, broadcast 19 kg DAP (1 BB bottle for 15 m @ 2 m wide) and 14 kg MOP (1 BB bottle for 20 m @ 2m wide). Side dress by broadcasting 28 kg CAN (1 BB bottle for 10 m @ 2 m wide) at panicle initiation.
* For maize-bean intercropping: at planting, band 27 kg DAP (1 top for 0.7 m).
* For climbing beans: at planting, band 29 kg DAP (1 top for 0.6 m).

**Level 2 financial ability**

* For maize: at planting, band 54 kg DAP (1 top for 0.3 m).
* For Irish potato: at planting, band 61 kg DAP (1 top for 0.3 m) and 28 kg MOP (1 top for 0.7 m). Side dress by banding 50 kg CAN (1 top for 0.4 m) 4 WAE.
* For sweet potato: at planting, band 61 kg DAP (1 top for 0.3 m).
* For lowland rice: at planting, broadcast 30 kg DAP (1 BB for 9 m @ 2 m wide) and 20 kg MOP (1 BB for 14 m @ 2 m wide). Side dress by broadcasting 63 kg CAN (1 BB for 4.4 m @ 2 m wide) at panicle initiation.
* For maize-bean intercropping: at planting, band 40 kg DAP (1 top for 0.5 m). Side dress 34 kg CAN (1 top for 2 plants) at 6 WAP.
* For climbing beans: at planting, band 55 kg DAP (1 top for 0.3 m).
* For wheat: at planting, band 26 kg DAP (1 top for 2.6 m).

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

* For maize: at planting, band 61 kg DAP (1 top for 0.3 m). Side dress 64 kg CAN (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 81 kg CAN (1 top for 0.2 m) 4 WAE.
* For sweet potato: at planting, band 61 kg DAP (1 top for 0.3 m).
* For lowland rice: at planting, broadcast 54 kg DAP (1 BB for 5 m @ 2 m wide) and 28 kg MOP (1 BB for 10 m @ 2 m wide). Side dress by broadcasting 81 kg CAN (1 BB for 3.4 m @ 2 m wide) at panicle initiation.
* For maize-bean intercropping: at planting, band 58 kg DAP (1 top for 0.3 m). Side dress 74 kg CAN at 6 WAP (1 top for 1 plant).
* For climbing beans: at planting, band 61 kg DAP (1 top for 0.3 m) and 15 kg CAN at 6 WAP (1 top for 1.2 m).
* For wheat: at planting, band 61 kg DAP (1 top for 1 m). Side dress by banding 31 kg CAN (1 top for 2 m) at panicle initiation.