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**NIGERIA NORTHERN GUINEA SAVANNA AEZ**

**Fertilizer Use Optimizer**

**The below assumes:**

**Calibration measurement** is with: a FARO water bottle lid (FARO) that holds about 6.3 g urea, 10 g SSP and KCl, 9g NPK 15:15:15, 11g NPK 20:10:10, and 14g ZnSO4; and with a GINO tomato can (GINO) of 70 ml to hold 49 urea, 77 g SSP and KCl; 165g ZnSO4, 70 g NPK 15:15:15, and 84 g NPK 20:10:10.

**Planting:** Maize, sorghum and pulses are planted at 75 cm x 25 cm; pearl millet 1 x 1 m; cassava 1 x 1 m.

**Crop values:** Naira/kg 50 maize; 60 Sorghum; 67 Rice; 56 pearl millet; 120 unshelled groundnut; 165 cowpea, 120 soybean, and 20 cassava.

**Fertilizer use costs for Naira for 50 kg:** 5500 Urea; 4500 SSP; 7000 MOP, 6000 for NPK 15-15-15 and 20-10-10; and 2000/kg for ZnSO4.

**Broadcast width:** 2.5 m; **WAP** = weeks after planting, **WAT** = weeks after transplanting. Application rate is kg/ha.

**Level 1 financial ability**

**Maize LP <3 t:** Point apply 50 kg Urea (1 FARO for 6.5 plants) at 3WAP.

**Maize HP>3t:** Point apply 75 kg Urea (1 FARO for 4 plants) at 3WA**P.**

**Cowpea:** Point apply 125 kg SSP at 3 WAP planting (1 FARO for 4 plants).

**Groundnut:** Point apply 50 kg NPK 15:15:15 (1 FARO 10 plants) at 2 WAP.

**Lowland rice:** Mix 100kg NPK 15:15:15 with 50kg SSP and broadcast at 1 WAT (1 GINO for 1.8 m) and broadcast 50 kg Urea at 5 WAT (1 GINO for 3.5 m).

**Upland rice:** Broadcast 30 kg of Urea at 3 WAP (1 GINO for 6 m).

**Sorghum:** Point apply 40 kg of Urea (1 FARO for 8 plants) at 4 WAP.

**Soybean:** Point apply 50 kg NPK 15:15:15 (1 FARO for 10 plants) at 2 WAP.

**Level 2 financial ability.**

**Maize LP <3 t:** Point apply 71 kg Urea (1 FARO for 4.5 plants) at 3WAP.

**Maize HP>3t:** Point apply 75 kg Urea (1 FARO for 4 plants) at 3WAP.

**Cowpea:** Point apply 125 kg SSP at 3 WAP planting (1 FARO for 4 plants).

**Groundnut:** Point apply 100 kg NPK 15:15:15 (1 FARO 5 plants) at 2 WAP.

**Lowland rice:** Mix 100 kg NPK 15:15:15 with 50 kg SSP and broadcast at 1 WAT (1 GINO for 1.8 m) and broadcast 50kg Urea at 5 WAT (1 GINO for 3.5 m ).

**Upland rice:** Broadcast 50kg of NPK 15: 15:15 at 2 WAP (1 GINO for 6 m) and broadcast 100 kg Urea at 6 WAP (1 GINO for 2 m).

**Sorghum:** Point apply 50 kg of Urea (1 FARO for 6.5 plants) at 4WAP.

**Soybean:** Point apply 100 kg NPK 15:15:15 (1 FARO for 5 plants) at 2 WAP.

**Level 3financial ability (maximizes profit per hectare).**

**Maize LP <3 t:** Point apply 200 kg NPK 15:15:15 (1 FARO for 3 plants) at 3WAP. Point apply 100 kg Urea at 6WAP (1 FARO for 3 plants).

**Maize HP >3 t:** Point apply 150 kg NPK 15:15:15 (1 FARO for 3 plants) at 3WAP. Point apply 150 kg Urea at 6 WAP (1 FARO for 2 plants).

**Cowpea:** Point apply 125 kg SSP at 3 WAP planting (1 FARO for 4.5 plants).

**Groundnut:** Mix 100 kg SSP with 50kg NPK 15:15:15 and Point apply (1 FARO for 11 plants) at 1.4 WAP.

**Lowland rice:** Mix 100kg NPK 15:15:15 with 50kg SSP and broadcast at 1 WAT (1 GINO for 4 m) and broadcast 50kg Urea at 5 WAT (1 GINO for 3.5 m).

**Upland rice:** Mix 200 kg of NPK 15:15:15 with 50 kg SSP and broadcast at 2 WAP (1 GINO for 1 m) and broadcast 150 kg Urea at 6 WAP (1 GINO for 1 m).

**Sorghum:** Point apply 77 kg of Urea (1 FARO for 4 plants) at 4WAP.

**Soybean:** Point apply 100 kg NPK 15:15:15 (1 FARO for 5 plants) at 2 WAP.