



GHANA SOUTH GUINEA AEZ FERTILIZER USE OPTIMIZER: Paper Version: March 2016



The below assumes:

Calibration measurement is with a: Voltic water bottle cap (cap) of 8 ml, 5.6 g urea, 8.8 g DAP, TSP, or KCl, or 8 g NPK; and with a Gino tomato can (Gino) of 70 ml to hold 49 g urea and 77 g DAP, TSP, or KCl and 70 g NPK.

Plant spacing: maize and sorghum, 75 x 40 cm; pearl millet, 100 x 40 cm; cowpea, groundnut and soybean, 40 x 20 cm and rice, 20 x 20 cm.

Grain values per kg (GH₵): Pearl millet 3; sorghum 1.52; maize 0.75; rice 1.22; groundnut unshelled 2.71; cowpea 2.43; soybean 1.77.

50 kg of fertilizer costs in GH₵: urea 100; TSP 150; KCl 150; NPK (15-15-15) 120.

Broadcast width: 2.0 m; WAP = Weeks After Planting, WAT = Weeks After Transplanting. Application rate is kg/ha.

Point apply at least 5 cm from plants.

Level 1 financial ability

Maize: point apply and cover 33 kg/ha TSP (cap for 9 hills) at 2 WAP; point apply and cover 60 kg/ha urea at 6 WAP (cap for 3.1 hills).

Lowland rice: broadcast 50 kg/ha urea at panicle initiation (Gino for 4.6 m).

Cowpea: 82 kg/ha TSP 2 WAP point apply and cover (cap for 13 hills).

Sorghum: 45 kg/ha TSP (cap for 7 hills) at 2 WAP.

Soybean: 29 kg/ha TSP at 2 WAP point apply and cover (cap for 38 hills).

Groundnut: 31 kg/ha TSP (cap for 36 hills).

Level 2 financial ability

Maize: point apply and cover 65 kg/ha urea (cap for 3 hills) and 9 kg/ha ZnSO₄ (cap for 50 hills) at 2 WAP; point apply and cover 65 kg/ha urea at 6 WAP (cap for 3 hills). Or mix 5 Gino urea and 1 Gino ZnSO₄ (a cap of mix for 4.5 hills).

Lowland rice: broadcast 39 kg/ha urea at 2 WAT and 39 kg/ha urea at panicle initiation (Gino for 6 m each time).

Upland rice: broadcast 38 kg/ha urea at panicle initiation (Gino for 1.2 m). Broadcast 28 kg/ha KCl at 2 WAT (cap for 1.6 m).

Cowpea: point apply and cover 110 kg/ha TSP at 2 WAP (cap for 10 hills).

Sorghum: point apply and cover 45 kg/ha urea (cap for 4 hills) and 73 kg/ha TSP (cap for 4.5 hills) at 2 WAP; point apply 45 kg/ha urea at panicle initiation (cap for 4 hills).

Soybean: point apply and cover 83 kg/ha TSP at 2 WAP (cap for 13 hills).

Groundnut: apply 43 TSP kg/ha at 2 WAP (cap for 26 hills).

Level 3 financial ability

Maize: point apply and cover 75 kg/ha urea (cap for 2.5 hills) and 30 kg/ha TSP (cap for 10 hills) and 15 kg/ha ZnSO₄ (1 cap for 32 hills) at 2 WAP; point apply and cover 75 kg/ha urea at 6 WAP (cap for 25 hills). Or mix 6 Gino TSP and 5 Gino ZnSO₄ (a cap for 6 hills)

Lowland rice: broadcast 50 kg/ha urea at 2 WAT (Gino for 94.6 m). Broadcast 50 kg/ha urea at panicle initiation (Gino for 3.2 m).

Upland rice: broadcast 64 kg/ha urea at panicle initiation (Gino for 3.5 m). Broadcast 106 kg/ha TSP (cap for 0.4 m) and 33 kg/ha KCl at 2 WAT (a cap for 1.3 m).

Groundnut: point apply and cover 53 kg/ha TSP at 2 WAP (cap for 21 hills).

Cowpea: point apply and cover 133 kg/ha TSP at 2 WAP (cap for 8 hills).

Sorghum: point apply and cover 93 kg/ha TSP (cap for 3.5 hills) at 2 WAP.

Soybean: point apply and cover 121 kg/ha TSP (cap for 9 hills) and 9 kg/ha ZnSO₄ at 2 WAP (cap for 200 hills). Or mix 8 Gino TSP and 1 Gino ZnSO₄ (a cap for 7.3 m).



GHANA NORTH GUINEA AEZ FERTILIZER USE OPTIMIZER: Paper Version: March 2016



The below assumes:

Calibration measurement is with a: Voltic water bottle cap (cap) of 8 ml, 5.6 g urea, 8.8 g DAP, TSP, or KCl, or 8 g NPK; and with a Gino tomato can (Gino) of 70 ml to hold 49 g urea and 77 g DAP, TSP, or KCl and 70 g NPK.

Plant spacing: maize and sorghum, 75 x 40 cm; pearl millet, 100 x 40 cm; cowpea, groundnut and soybean, 40 x 20 cm and rice, 20 x 20 cm.

Grain values per kg (GHC): Pearl millet 3; sorghum 1.52; maize 0.75; rice 1.22; groundnut unshelled 2.71; cowpea 2.43; soybean 1.77.

50 kg of fertilizer costs in GHC: urea 100; TSP 150; KCl 150; NPK (15-15-15) 120.

Broadcast width: 2.0 m; WAP = Weeks After Planting, WAT = Weeks After Transplanting. Application rate is kg/ha.

Point apply at least 5 cm from plants.

Level 1 financial ability

Maize LP: point apply and cover 60 kg/ha urea at 6 WAP (cap for 3 hills).

Maize HP: point apply and cover 60 kg/ha urea at 6 WAP (cap for 3 hills).

Upland rice: broadcast 45 kg/ha urea (Gino for 5 m), 34 kg/ha KCl 2 WAT (a cap 1.3 m) and 28 kg/ha TSP at 2 WAT (a cap for 1.6 m). Broadcast 45 kg/ha urea at panicle initiation (Gino for 5 m).

Sorghum: point apply and cover 60 kg/ha urea at 6 WAP (cap for 3 hills).

Groundnut: 30 kg/ha TSP at 2 WAP (cap for 37 hills)

Level 2 financial ability

Maize LP: point apply and cover 54 kg/ha urea (cap for 3.5 hills) at 2 WAP; point apply and cover 54 kg/ha urea at 6 WAP (cap for 3.5 hills).

Maize HP: point apply and cover 66 kg/ha urea (cap for 4 hills) at 2 WAP; point apply and cover 66 kg/ha urea at 6 WAP (cap for 4 hills).

Upland rice: broadcast 100 kg/ha urea 2 WAT and at panicle initiation (Gino for 2.3 m each time); 34 kg/ha KCl 2 WAT (a cap 1.3 m) and 60 kg/ha TSP (a cap for 0.7 m) at 2 WAT.

Sorghum: point apply and cover 33 kg/ha urea (cap for 5.5 hills) at 2 WAP; point apply and cover 40 kg/ha urea at panicle initiation (cap for 4.5 hills).

Groundnut: 40 kg/ha TSP at 2 WAP (cap for 27 hills)

Level 3 financial ability

Maize LP: point apply and cover 79 kg/ha urea (cap for 2.5 hills) and 126 kg/ha TSP (cap for 2.5 hills) at 2 WAP; point apply and cover 79 kg/ha urea at 6 WAP (cap for 2.5 hills).

Maize HP: point apply and cover 100 kg/ha urea (cap for 2 hills) and 120 kg/ha TSP (cap for 2.6 hills) at 2 WAP; point apply and cover 100 kg/ha urea at 6 WAP (cap for 2 hills).

Lowland rice: broadcast 47 kg/ha urea at panicle initiation (Gino for 5 m). Broadcast 98 kg/ha TSP 2 WAT (a cap for 0.5 m).

Upland rice: broadcast 100 kg/ha urea 2 WAT and 100 kg/ha urea at panicle initiation (Gino for 2.3 m each time). Broadcast 93 kg/ha TSP 2 WAT (Gino for 0.6 m). Broadcast 44 kg/ha KCl at 2 WAT (a cap for 1 m).

Sorghum: point apply and cover 44 kg/ha urea (cap for 4.5 hills) and 71 kg/ha TSP (cap for 4.5 hills) at 2 WAP; point apply and cover 44 kg/ha urea at panicle initiation (cap for 4.5 hills).

Groundnut: 53 kg/ha TSP (cap for 21 hills) and 8 kg/ha ZnSO₄ (cap for 220 hills). Or mix 4 Gino and 1 Gino ZnSO₄ (a cap for 17 hills).



GHANA DERIVED TRANSITIONAL AEZ FERTILIZER USE OPTIMIZER: Paper Version: March 2016



The below assumes:

Calibration measurement is with a: Voltic water bottle cap (cap) of 8 ml, 5.6 g urea, 8.8 g DAP, TSP, or KCl, or 8 g NPK; and with a Gino tomato can (Gino) of 70 ml to hold 49 g urea and 77 g DAP, TSP, or KCl and 70 g NPK.

Plant spacing: maize, 75 x 40 cm; pearl millet, cassava 100 x 100 m; 100 x 40 cm; cowpea, groundnut and soybean, 40 x 20 cm and rice, 20 x 20 cm.

Grain values per kg (GHC): Pearl millet 3; sorghum 1.52; maize 0.75; rice 1.22; groundnut unshelled 2.71; cowpea 2.43; soybean 1.77; cassava, fresh 0.20.

50 kg of fertilizer costs in GHC: urea 100; TSP 150; KCl 150; NPK (15-15-15) 120.

Broadcast width: 2.0 m; WAP = Weeks After Planting, WAT = Weeks After Transplanting. Application rate is kg/ha.

Point apply at least 5 cm from plants.

Level 1 financial ability

Maize HP: point apply and cover 59 kg/ha urea at 6 WAP (cap for 3 hills).

Lowland rice: broadcast 41 kg/ha urea at panicle initiation (Gino for 5.5 m).

Upland rice: broadcast 53 kg/ha urea 2 WAT and 53 kg/ha urea at panicle initiation (Gino for 4.5 m each time). Broadcast 16 kg/ha KCl 2 WAT (a cap for 2.8 m).

Cassava: point apply 84 kg/ha NPK (2 cap per plant) at 4 WAP and 92 kg/ha urea at 12 WAP (2 cap per plant)

Soybean: 50 kg/ha TSP at 2 WAP point apply and cover (cap for 22 hills) at 2 WAP.

Groundnut: 27 kg/ha TSP (cap for 41 hills) at 2 WAP.

Level 2 financial ability

Maize LP: point apply and cover 39 kg/ha urea (cap for 5 hills) and 8 kg/ha ZnSO4 (cap for 60 hills) at 2 WAP; point apply and cover 39 kg/ha urea at 6 WAP (cap for 5 hills). Or mix 5 Gino urea and 1 Gino ZnSO4 (a cap for 8.5 hills)

Maize HP: point apply and cover 58 kg/ha urea (cap for 3.2 hills); 31 kg/ha TSP and 8 kg/ha ZnSO4 at 2 WAP; point apply and cover 58 kg/ha urea at 6 WAP (cap for 3.2 hills). Mix 6 Gino TSP and 1 Gino ZnSO4 (1 cap for 6.3 hills)

Lowland rice: broadcast 68 kg/ha urea at panicle initiation (Gino for 3.5 m).

Upland rice: broadcast 75 kg/ha urea 2 WAT and 75 kg/ha urea at panicle initiation (Gino for 3 m each time). Broadcast 25 kg/ha KCl at 2 WAT (a cap for 1.7 m).

Cassava: point apply 126 kg/ha NPK (1.7 caps per plant) at 6 WAP and 150 kg/ha urea at 12 WAP (3 caps per plant)

Soybean: 38 kg/ha TSP (cap for 29 hills) at 2 WAP.

Groundnut: 38 kg/ha TSP (cap for 31 hills).

Level 3 financial ability

Maize LP: point apply and cover 75 kg/ha urea (cap for 2.5 hills), 27 kg/ha KCl and 14 kg/ha ZnSO4 at 2 WAP (mix 4 Gino KCl and 1 Gino ZnSO4 (1 cap for 13 hills); point apply and cover 75 kg/ha urea at 6 WAP (cap for 2.5 hills).

Maize HP: point apply and cover 96 kg/ha urea (cap for 2 hills), 56 kg/ha TSP (cap for 5.5 hills), and 14 kg/ha ZnSO4 (cap for 36 hills) at 2 WAP; point apply and cover 96 kg/ha urea at 6 WAP (cap for 2 hills). Or mix 13 Gino TSP and 2 Gino ZnSO4 (1 cap for 7 hills)

Lowland rice: broadcast 51 kg/ha urea at 2 WAT and at panicle initiation (Gino for 4.5 m each time) and 33 kg/ha KCL (cap for 1.3 m) at 2 WAT.

Upland rice: broadcast 75 kg/ha urea 2 WAT and 75 kg/ha urea at panicle initiation (Gino for 0.8 m).

Cassava: point apply 146 kg/ha NPK (2.0 caps per plant) at 6 WAP and 150 kg/ha urea at 12 WAP (3 caps per plant)

Soybean: 83 kg/ha TSP and 10 kg/ha ZnSO4 at 2 WAP. Mix 13 Gino TSP and 1 Gino ZnSO4 (cap of mix for 11 hills).

Groundnut: 53 kg/ha TSP (cap for 21 hills) and 29 kg/ha KCl (cap for 38 hills) at 2 WAP. Or mix 2 Gino TSP and 1 Gino KCl (a cap of mix for 15 hills).



GHANA SOUTH SUDAN AEZ FERTILIZER USE OPTIMIZER: Paper Version: March 2016



The below assumes:

Calibration measurement is with a: Voltic water bottle cap (cap) of 8 ml, 5.6 g urea, 8.8 g DAP, TSP, or KCl, or 8 g NPK; and with a Gino tomato can (Gino) of 70 ml to hold 49 g urea and 77 g DAP, TSP, or KCl and 70 g NPK.

Plant spacing: maize and sorghum, 75 x 40 cm; pearl millet, 100 x 40 cm; cowpea, groundnut and soybean, 40 x 20 cm and rice, 20 x 20 cm.

Grain values per kg (GHC): Pearl millet 3; sorghum 1.52; maize 0.75; rice 1.22; groundnut unshelled 2.71; cowpea 2.43; soybean 1.77.

50 kg of fertilizer costs in GHC: urea 100; TSP 150; KCl 150; NPK (15-15-15) 120.

Broadcast width: 2.0 m; WAP = Weeks After Planting, WAT = Weeks After Transplanting. Application rate is kg/ha.

Point apply at least 5 cm from plants.

Level 1 financial ability

Maize: point apply and cover 47 kg/ha urea at 6 WAP (cap for 4 hills).

Upland rice: broadcast 80 kg/ha TSP (cap for 4.7 hills) at 2 WAT; 54 kg/ha urea at panicle initiation (Gino for 4.3 m).

Sorghum: point apply and cover 50 kg/ha TSP (cap for 6.5 hills) at 2 WAP; point apply and cover 41 kg/ha urea at panicle initiation (cap for 4.5 hills).

Level 2 financial ability

Maize: point apply and cover 43 kg/ha urea (cap for 4.5 hills) and 5 kg/ha ZnSO4 (cap for 100 hills) at 2 WAP; point apply and cover 43 kg/ha urea at 6 WAP (cap for 4.5 hills).

Upland rice: broadcast 75 kg/ha urea at 2 WAT and at panicle initiation (Gino for 3.1 m each time); 100 kg/ha TSP 2 WAT (Gino for 4 m) at 2 WAT.

Sorghum: point apply and cover 50 kg/ha TSP (cap for 6.5 hills) at 2 WAP; point apply and cover 49 kg/ha urea at panicle initiation (cap for 3.8 hills).

Soybean: point apply 33 kg/ha TSP (cap for 33 hills) and 7 kg/ha ZnSO4 at 2 WAP (cap for 28 hills). Or mix 8 Gino TSP and 1 Gino ZnSO4 (a cap of mix for 25 hills).

Level 3 financial ability

Maize: point apply and cover 75 kg/ha urea (cap for 2.5 hills), 80 kg/ha TPS (cap for 4 hills) and 10 kg/ha ZnSO4 (cap for 1 hills) at 2 WAP; point apply and cover 75 kg/ha urea at 6 WAP (cap for 2.5 hills).

Lowland rice: broadcast 46 kg/ha urea 2 WAT and 46 kg/ha urea at panicle initiation (Gino for 5 m each time).

Upland rice: broadcast 75 kg/ha urea at 2 WAT and at panicle initiation (Gino for 3.1 m each time). 100 kg/ha TSP (Gino for 3.9 m) and 33 KCl (cap for 2.6 m) at 2 WAT.

Sorghum: point apply and cover 50 kg/ha TSP (cap for 6.5 hills) at 2 WAP, and 50 kg/ha urea at 6 WAP (cap for 3.7 hills).

Pearl millet: point apply and cover 73 kg/ha TSP (cap for 3 hills) at 2 WAP and 34 kg/ha urea (cap for 4 hills) at panicle initiation.

Soybean: point apply and cover 65 kg/ha TSP (cap for 17 hills) and 16 kg/ha ZnSO4 (cap for 110 hills) at 2 WAP. Or mix 6.5 Gino of TSP and 1 Gino ZnSO4 KCl (a cap of mix for 12 hills).