Mango phenological phases and their nutrition requirements

The following plan is suggested to achieve the mentioned requirements, for a mango orchard, e.g. cv. "Tommy Atkins", with an expected yield of 20-25 MT/ha, by drippers fertigation, growing on slightly acidic soil, with appreciable (>20%) share of textural clay. Application rates are expressed as g/tree, and in case of foliar feeding– in terms of g/100L water sprayed. Adjustments can be made considering leaf analysis.

Potassium nitrate (predominantly Ultrasol®) should be used as the primary source of potassium, and a partial source of nitrogen. The balance of nitrogen should be sourced from calcium nitrate (e.g. Ultrasol® Calcium) and ammonium sulphate. Phosphorus recommended source is Ultrasol® Magnum P44, and Soil-Qrop® MAP. Mg– from Soil-Ultrasol® Magsul, which can serve also for S application, along with Soil-Qrop ® SOP.

Growth stage	Fertilizer	Application rates (g/tree)		
		Tree height 1-2,5 m	Tree height 2,6-3,5 m	Tree height 3,6-6 m
Post-harvest	Ammonium nitrate	100	200	300
	Soil-Qrop® Calcium	320	650	960
	Soil-Qrop® MAP	150	300	450
One month prior to flowering	Soil-Qrop® SOP	375	750	1130
	Qrop® Boronate 32	30	50	70
	Soil-Ultrasol® Magsul	100	200	300
During flowering	Spray-Speedfol®: Amino Flower & Fruit SC 2 applications: I at first anthesis; II at full bloom	300ml / 100L	300ml / 100L	300ml / 100L
	Spray Ultrasol® MKP 2 applications: I at first anthesis; II at full bloom	1kg / 100L	1kg / 100L	1kg / 100L
	Spray Ultrasol® K 2 applications: I at first anthesis; II at full bloom	2kg / 100L	2kg / 100L	2kg / 100L
Early fruit growth & development	Soil-Calcium sulphate	300g	500g	800g

The following SQM products are recommended for the aforementioned applications:

- Fe: Ultrasol® Micro Rexene FeQ 48
- B: Speedofol® B SP
- Mn: Ultrasol® Micro Rexene Mn 15
- Zn: Ultrasol® Micro Rexene Zn 15
- Cu: Ultrasol® Micro Rexene Cu 15
- Mo: Speedofol® Mo

Growth stage	Duration (days)	Macro-, and Secondary nutrients uptake dynamics throughout physiological events	N : P_2O_5 : K_2O : CaO : MgO : S
0	7	Maximum P/N uptake takes place immediately after fruit-set, due to the intensive P requirement for producing the seed embryo. This uptake experiences a marked nosedive in the upcoming 3 weeks.	N 1 P_2O_5 1,01 K_2O 1,17 CaO 0,32 MgO 0,18 S 0,11
1	7		N 1 P_2O_5 0,82 K_2O 1,11 CaO 0,28 MgO 0,17 S 0,10
2	7		N 1 P_2O_5 0,57 K_2O 1,10 CaO 0,24 MgO 0,15 S 0,09
3	7		N 1 P_2O_5 0,46 K_2O 1,23 CaO 0,22 MgO 0,15 S 0,09
4	7	The uptake pattern of all nutrients shows a clear upsurge in the forthcoming weeks, climaxing on the 7th week. K uptake shows highest and steepest increase in this respect. All nutrients show an "S" shaped uptake pattern, which is very common for the development of most fruits.	N 1 P_2O_5 0,44 K_2O 1,51 CaO 0,25 MgO 0,18 S 0,11
5	7		N 1 P_2O_5 0,46 K_2O 1,89 CaO 0,29 MgO 0,22 S 0,13
6	7		N 1 P_2O_5 0,50 K_2O 2,20 CaO 0,34 MgO 0,25 S 0,15
7	7		N 1 P_2O_5 0,50 K_2O 2,28 CaO 0,34 MgO 0,27 S 0,15
8	7		N 1 P_2O_5 0,46 K_2O 2,12 CaO 0,27 MgO 0,25 S 0,14
9	7		N 1 P_2O_5 0,44 K_2O 1,90 CaO 0,24 MgO 0,22 S 0,13
10	7	Ca, Mg and S demonstrate a similar dynamics pattern throughout all fruit development stages, which justifies calling them "secondary" nutrients, with respect to their quantity only, of course	N 1 P_2O_5 0,41 K_2O 1,76 CaO 0,24 MgO 0,20 S 0,12
11	7		N 1 P_2O_5 0,41 K_2O 1,71 CaO 0,24 MgO 0,20 S 0,11
12	7		N 1 P_2O_5 0,46 K_2O 1,77 CaO 0,24 MgO 0,22 S 0,12
13	7		N 1 P_2O_5 0,50 K_2O 1,89 CaO 0,25 MgO 0,23 S 0,12
Total	98	MEAN (relative to N)	N 1 P_2O_5 0,53 K_2O 1,69 CaO 0,27 MgO 0,20 S 0,12
		TOTAL (kg/ha)	N 25 P_2O_5 13,3 K_2O 42,3 CaO 6,75 MgO 5,0 S 3,0

Growth stage	Duration (days)	Micro-nutrients uptake dynamics
0	7	Similar to the pattern exhibited above for P/N ratio, maximum Fe, B and Mn uptake takes place immediately after fruit-set, due to their intensive requirements for producing the seed embryo, and increase leaves functionality. This uptake experiences a marked nosedive in the upcoming 3 weeks.
1	7	
2	7	
3	7	
4	7	The uptake of all nutrients shows a clear upsurge in the forthcoming weeks, climaxing on 7th week. Fe uptake shows highest and steepest increase in this respect. All nutrients show an "S" shaped uptake pattern, which is very common for the development of most fruits.
5	7	
6	7	
7	7	
8	7	Zn and Cu are required at a rather low rate, compared to the other micro-nutrients. And similar to most plant species, Mo is required at two orders of magnitude lower than the other micro-nutrients.
9	7	
10	7	
11	7	
12	7	
13	7	

MANGO

Bud break	Inflorecence dev. & flowering	Fruit set	Fruit development	Maturation & harvest