Tea Research Institute of Sri Lanka

Technologically Improved Compound Fertilizers for Mature Tea Fertilization

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Tea-growing soils in many parts of the country have become severely degraded due to both natural processes and human activities. As a result, the nutrient retention capacity of the soil has been severely depleted, leading to increased nutrient losses from applied fertilizers. As a result, fertilizer use efficiency is affected, thereby reducing tea crop productivity. The application of integrated nutrient management techniques helps increased nutrient retention in the soil. In particular, the addition of organic matter enhances the formation of clay–humus complexes, enabling the soil to retain more positively charged nutrients.

Despite the adoption of good agricultural practices to improve soil health and nutrient retention, nutrient losses are inevitable due to climate change, soil erosion, and the continuous application of agrochemicals over centuries. In particular, second-generation fertilizers such as urea and muriate of potash, which release nutrients rapidly into the soil after application, tend to result in greater nutrient losses.

Compound fertilizers are a type of fertilizer manufactured through a chemical process where multiple primary plant nutrients, such as nitrogen (N), phosphorus (P), and potassium (K), are chemically combined into each granule or particle, maintaining a specific nutrient ratio. Technologically improved compound fertilizers show multiple benefits;

1. Release of nutrients slowly to the soil, thereby reducing leaching and volatilization losses of nutrients.
2. Balanced nutrient distribution, as a single granule contains all the nutrients at the required ratio.
3. Accurate spreading in the field due to the even size distribution.
4. Confirms uniform nutrient distribution when broadcasting into the field.

New Compound fertilizer for mature tea fertilization

Tea Yara[1] is a technologically improved dense compound ground fertilizer in the form of a pearl (prilled) that can be recommended for mature tea. It is a free-flowing fertilizer, with 87% of its grains having a diameter of 2-4 mm, an even size distribution for accurate spreading, even over long distances. Tea Yara is a fertilizer with high hygroscopic properties that ensure fast dissolution in the soil even in conditions of morning dew. Studies have proven that the recommended nitrogen content could be reduced by 25% with the application of the Tea Yara compound fertilizer while achieving a yield increase of 15%.

[1] Manufactured by YARA International, ASA, Norway, and distributed by CIC Holdings PLC.

Composition of Tea Yara

	Percentage (%)
Nitrogen (as ammonium nitrate)	23 (NH_4-N, NO_3-N)
Phosphorus (as poly phosphate)	07 (Poly-PO_4)
Potassium (as MOP)	10 (KCl)

Dosage and frequency of application of Tea Yara fertilizer

Frequency and dosage of application of the Tea Yara fertilizer for Vegetatively propagated (VP) tea fields in the corporate estate

Potential yield (kg made tea/ha/year)	Recommended N rate (kg/ ha/year)	Recommended N rate as Tea Yara (kg/ ha/year) (75% of the recommended N)	**Fertilizer Tea Yara (kg/ha/yr)**
1700-1900	200	150	**3 x 220**
1900-2000	220	165	**4 x 180**
2000-2500	270	203	**4 x 220**
2500-3000	320	240	**4 x 260**
3000-3500	360	270	**4 x 295**
Above 3500	400	300	**4 x 325**

Frequency and dosage of application of Tea Yara fertilizer for VP tea fields in the smallholdings sector

Average yield (green leaf kg/ac/month)	Recommended N rate (kg/ ha/year)	Recommended N rate as Tea Yara (kg/ ha/year) (75% of the recommended N)	**Fertilizer Tea Yara (kg/ac/yr)**
<130	90	67.5	**2 x 60**
130-249	180	135	**3 x 80**
250-374	240	180	**4 x 80**
375-524	360	270	**4 x 120**
>525	420	315	**4 x 140**

Amelioration of soil pH, foliar and other ground fertilizer application should be done according to the TRI Advisory Circular SP 3.

Tea Research Institute of Sri Lanka
Talawakelle

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