



Designer micronutrient formulations for enhanced yield in major spices

ICAR-Indian Institute of Spices Research
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Licensing and Commercialization

Licensing fee:
Micronutrients for ginger and turmeric: Rs. 2.0 lakhs each
Micronutrients for black pepper and cardamom: Rs. 2.5 lakhs each
Licensing period : 10 years with a royalty of 3.0% per annum

Our licensees :

Micronutrient composition for black pepper

M/s. Shrey Agritech, Hubli, Karnataka

M/s. Rainbow Agri Life, Kadapa, Andhra Pradesh

M/s. Hi-7 Agro Bio Solutions, Bengaluru, Karnataka

M/s. Linga Chemicals, Madurai, Tamilnadu

Micronutrient composition for turmeric

(for soils with pH below 7)

M/s Rainbow Agri Life, Kadapa, Andhra Pradesh

Micronutrient composition for turmeric

(for soils with pH above 7)

M/s. Natura Nursery & Agro Products, Kozhikode Kerala

Micronutrient composition for ginger

(for soils with pH below 7)

M/s. Rainbow Agri Life, Kadapa, Andhra Pradesh

M/s. Hi-7 Agro Bio Solutions, Bengaluru, Karnataka

Micronutrient composition for ginger

(for soils with pH above 7)

M/s. Hi-7 Agro Bio Solutions, Bengaluru, Karnataka

M/s. Natura Nursery & Agro Products, Kozhikode, Kerala

Micronutrient composition for cardamom

M/s. Hi-7 Agro Bio Solutions, Bengaluru, Karnataka

M/s. Linga Chemicals, Madurai, Tamilnadu

M/s. Raja G Enterprises, Salem, Tamilnadu

M/s. A & N Traders, Idukki, Kerala



Micronutrients are those essential elements like copper, manganese, zinc, iron, boron, molybdenum sulfur etc which are required by plants in very small amounts. Besides promoting plant metabolic activities and growth of the plants, they play a major role in improving quality, size, earliness, input use efficiency of NPK fertilizers, disease resistance etc.

About 48.1% of Indian soils are deficient in available zinc, 11.2% in iron, 7% in available copper and 5.1% in available manganese. Besides, deficiencies of boron and molybdenum are also becoming yield limiting and soils with multi-micronutrient deficiencies are also reported. Hence, simple fertilizers will not be enough to fully exploit the potential of crops and cropping systems.

ICAR-IISR, Kozhikode, Kerala has developed crop specific, soil pH based micronutrient mixtures for foliar application in black pepper, cardamom, ginger and turmeric crops which guarantees 15 to 25% increase in yield, besides enhancing quality. An innate advantage of these mixtures is that they can also be used in organic agriculture and therefore are benign and environment friendly.



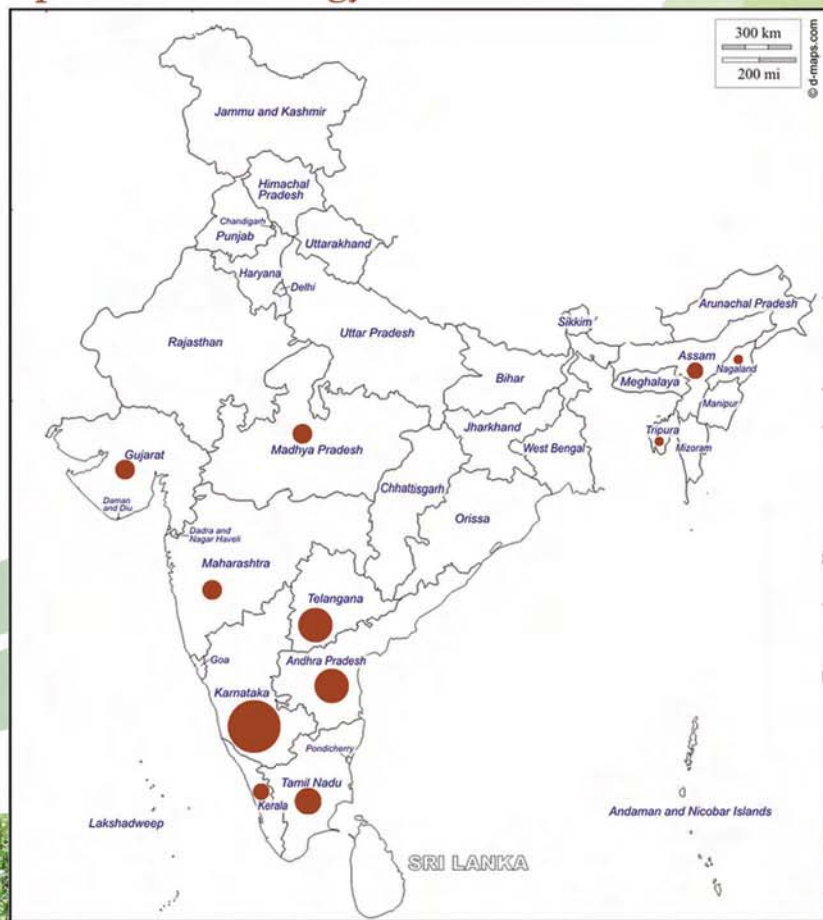
Method of application

- Black pepper:** Foliar spray at 5 g per liter of water should during spike initiation with the onset of monsoon and after monthly intervals
- Ginger:** Foliar spray at 5g per liter of water once during 60 days after planting and another 90 days after planting.
- Turmeric:** Foliar spray at 5g per liter of water once during 60 days after planting and another 90 days after planting.
- Cardamom:** Foliar spray at 5g per liter of water should be given once during panicle initiation and after monthly intervals.





Spread of technology



Patents filed:

- Patent Application No. 4745/CHE/2013 dated 21-10-2013 Title: "A Micronutrient Composition for Black Pepper and a process for its preparation"
- Patent Application No. 4754/CHE/2013 dated 22-10-2013 Title- "A Micronutrient Composition for Turmeric and a process for its preparation"
- Patent Application No. 3794/CHE/2013 dated 27-08-2013 Title: "A Micronutrient composition for ginger and a process for its preparation"
- Patent Application No. 4708/CHE/2013 dated 18-10-2013 Title: "A Micronutrient Composition for Ginger and a process for its preparation"
- Patent Application No. 1681/CHE/2015 dated 31.04.2015 titled "A Micronutrient composition for cardamom and a process for its preparation"

Advantages

- Soil pH based
- Crop specific
- Increases yield by 15-25%
- Enhances quality of the crop produce
- Low cost
- Easy application
- Can be used in organic agriculture



Entrepreneurship opportunities

The products are in the process of patent protection and commercialization. Entrepreneurs who want to produce and market these mixtures on a commercial scale can approach the institute for non-exclusive licenses. The Institute Technology Management and Business Planning and Development Unit (ITM-BPD Unit) at IISR will help to prepare business plans for establishing manufacturing units and also provide consultancy services for commercial production.

