

Rainfed vegetable cultivation

M. PRABHU*, R. JAGADEESAN, V. BALASUBRAMANIAN¹ AND A. RAMESH KUMAR

Department of Spices and Plantation Crops, Horticultural College and Research Institute, Tamil Nadu Agricultural University, COIMBATORE (T.N.) INDIA

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The water scarcity situation is being exacerbated by climate change, especially in the driest areas of the world, which are home to more than 2 billion people and to half of all poor people. To tackle water scarcity even as the demand for food increases, we must support initiatives to produce more food with proportionally less water. Per capita consumption of vegetable is also very less compare to WHO recommendations. There is no way to increasing the cultivable area for vegetable production under irrigated situations, rainfed vegetable production is one way for increased the production to fulfill the needs of consumers. Selection of varieties, tillage operations, seed treatment techniques, application of growth regulators and anti-transpirants are important factors which are influencing rainfed vegetable cultivation. By using above technologies, tomato, brinjal, chilli, bhendi, cucurbits and leguminous vegetables can be cultivated under rainfed situations.

Rain is the only source of water for dry land crops. Dry lands account 67 per cent of the total arable land covering 12 per cent population of the country. In India total cultivable area under rainfed conditions is 92.6m.ha. Per capita consumption of vegetable is very less compare to WHO recommendations. There is no way to increasing the cultivable area for vegetable production, rainfed vegetable production is one way for increasing the production to fulfill the needs of consumers.

Uneven intensity and distribution of rainfall, late onset and early withdrawal of monsoon, prolonged dry spells are the major constraints in rainfed vegetable cultivation. Drought resistance, tolerance and escapisms are the mechanisms to manage the drought under rainfed conditions. The vegetables grown under rainfed ecosystems should have shorter duration to escape drought, faster growth to withstand harsh environments, deep root system and response to fertilizers and high yield potential. Optimum plant density and balanced nutrition are the essential factors for yield increase in vegetables grown under rainfed conditions.

Tillage operations:

Tillage operations like off season fallow tillage, deep tillage (Once in 2-3 years), shallow inter-cultivation, fallowing, mulching, formation of broad beds and furrows, compartmental bunds, dead furrows, small pits on soil surface and providing subsoil barriers (applying the barriers viz., bentonite clay, gel polymers at 60-80 cm depth) are essential for conserving moisture under rainfed vegetable cultivation.

Seed treatment:

In general, the germination of seed is highly influenced by moisture status of the substrate (Datta and Dayal, 1988). In order to get establishment under very low and very high moisture status, film coating technology with fungicides and halogens will be highly useful. Seed coating technology has developed rapidly during the past two decades and provides an economical approach to seed enhancement. An advantage of seed coating is that the seed enhancement material (fungicide, insecticide or micronutrient) is placed directly on the seed without obscuring the seed shape. Film coating is the process of applying a colored polymer film material on the seed surface that completely covers the seed and it has been applied to commercial seeds as an effective delivery system for agrochemicals. In addition to that, the polymers are hydrophilic in nature and they are considered to be prolonging the moisture supply under stress condition. These polymers are having the capacity to absorb water about 100 to 1000 times of their weight from the surrounding rhizosphere. Film coated seed has the benefit of providing uniform and precise pesticide placement, and is dust free and no loss of fungicide during handling, safe to handle, can be highly visible in the soil, has increased flow ability of the seed, bright colour and nice appearance. Thus the use of polymer as a device for seed treatment can control the timing of germination and use of proper coating material favors better conservation of seed quality in storage as well as improves the stand establishment in

* Author for correspondence.

¹ Soil Survey and Land Use Organization, Lawley Road, COIMBATORE (T.N.) INDIA