MIDST the green sky-touching hills of Jaintia, Garo and Khasi in Meghalaya, the tribal people have developed an ingenious technique to irrigate their crops using naturally available material. This material is bamboo which is employed to irrigate seasonal crops without wasting a drop, reaching water directly to the plants. Dating back to more than 200 years, this technique is popularly known as Bamboo Drip Irrigation.

The topology of the area consists mainly of hard rocks with steep slopes, which have very low water retention capacity making use of groundwater through channels nearly impossible. The Bamboo drip irrigation system is a set-up of bamboo shoots in a zig-zag pattern down the slope, which involves tapping the water from springs and streams and diverting it to the terraced farmlands to grow paddy, betel leaves and black pepper crops.

This timeless technology harnesses the force of gravity and uses inexpensive natural and locally available material. Bamboo pipes are used to divert perennial springs on the hilltops to the lower reaches.

Farmers of small villages in this hilly state rely on terrace agriculture. The Bamboo irrigation system is used during the winters for crops that need
relatively less water. Anyone can use the water from perennial streams, natural springs, or collection ponds without any restriction. This technique, beyond being eco-friendly and easily accessible, also has other advantages: it makes optimal use of water without any leakage and wastage, yielding higher productivity with less water and no advanced and costly high-tech scientific technology is required.

The materials required for the construction are bamboo strands of various sizes, forked branches, smaller bamboo shoots used for the channel diversions and a small axe. To make the set up, a nearby available water source is located at a higher level and a sloped land is selected. Bamboo shoots and forked branches are sliced. Wider shoots are set in the first section and smaller pipes in the last. Equally spaced holes are punctured in the shoots. The structure is reinforced by tying the pipes and forked branches together with the help of fibre-rich twine. Smaller bamboo shoots are used at diversion points to redirect the water.

The bamboos are arranged in a zig-zag pattern in four to five stages from the water source to the point of application. It is done so precisely that about 18-20 litre of water entering the bamboo pipe system per minute gets transported over several hundred metres and finally gets reduced to 20-80 drops per minute at the site of the plant. Intake pipe positions can be manipulated so as to control the flow of water into the lateral pipes.

Materials installed are durable for around three years. Maintenance is easy – cleaning and reinforcement are required after seasonal monsoons. A. Singh, in his book Bamboo Drip Irrigation System, says that two workers can construct a system covering one hectare of land in 15 days. So the labour cost is also limited as farmers can do it themselves.

The hills of Meghalaya are estimated to be covered approximately 3108 sq km by bamboo forests and about 38 species of this grass are harvested and managed by the local authorities. The Jaintia, Khasi, and Garo hill tribes have long been endowed with a tremendous gift of bamboos which they use as a means to fulfilling domestic, agricultural, and customary needs. So, as the rains continue to fall and bamboos continue to grow, this tribal wealth remains unspoiled.