ABSTRACT

Field investigations were carried out during the year 2001-2003 at the Experimental Garden for Plantation Crops, Assam Agricultural University, Jorhat to study the effects of different tipping treatments and exogenous application of plant growth regulators (PGR) on the productivity of the tea bushes. Tipping treatments comprised of retention of different number of leaves on the primary (tipping height) viz., 2 leaves, 3 leaves and 5 leaves and removal of different amount of growth at tipping (tipping-in-material) viz., 1+bud, 2+bud and 3+bud shoots. The tipping treatments were imposed on pruned and deep skiffed bushes either alone Or in combination with PGR (viz., triacontanol at 1 ppm and 2 ppm; sea weed extract i.e. plantozyme at 0.1% and 0.2% and thiourea at 250 ppm and 500 ppm). Retention of axillary buds of varying maturity on the primary was achieved by allowing some growth to expand on the primary before tipping. The secondary or lateral growth initiated from the axillary buds of different maturity and its overall impact on the productivity of the bush was studied.

It was observed that the primordial composition of the axillary buds on freely growing primaries varied significantly from leaf to leaf and the top most axillary bud near the apex contained the minimum number of leaf primordia in both TV18 and TV9 clones. The number of leaf primordia in the bud gradually increased as the distances from the apex increased, however, not in a uniform way in both the clones.

The maturity of the axillary buds that were retained on the primary at tipping played a significant role in the rate of shoot production in the tea bushes. The rate of regeneration of pluckable shoots was the quickest when lateral shoot growth initiated from a very mature axillary bud and the growth rate was sustained in the higher order of lateral shoots throughout the growing period which indicated the sustained effects of a mature bud on shoot productivity. The rate of regeneration of pluckable shoots declined with the reduction in maturity of the axillary bud. The net effect of shoot growth initiated from a mature bud either alone or in combination with PGR, specially
triacontanol at 2 ppm, resulted in the production of more number of primaries, production of more number of shoots per primary, more shoot growth from the axils of lower leaves, more weight of plucked shoots and pruning litters, higher plucking point density, more LAI, thicker primaries and significantly less number of banjhi shoots in the plucking table. Higher green leaf yield along with favourable growth partition in the top hamper of the bush was also obtained.

Further, the mature buds treated with PGR, specially triacontanol at 2 ppm, influenced the physiology of the tea bush by way of improving certain attributes like chlorophyll content, nitrogen content, crude protein content in shoots and water regime of the bush indicating favourable growth conditions within the bush, which culminated to higher productivity. With all these manipulations, there was a positive shift towards the factors that contributed to the bush productivity apart from augmenting the health and vigour of the bushes.