4.2. Effect of Aspect

Our result showed the growth and yield parameters observed on Northern aspect was greater than North-West and Western aspect (Fig. 2). Similar result was obtained by Nevo *et al.* (1999). They found that plant cover may reach 150 % on the Northern aspect. Nevo *et al.*(2000) further confirmed that species inhabit on different aspect display genetic, morphologic, physiological and behavioral adaptive complexes in relation to each of the aspect. So the maximum growth and yield of Basil on Northern aspect is attributed to lower intensity of light during forenoon, when the temperature is more favourable and leaves are turgid, resulting in increased rate of photosynthesis. On the other hand, Western aspect receiving higher intensity of light in afternoon, when the temperature is less favourable and leaves are less turgid, limiting photosynthetic efficiency of the crop on this aspect. Nevo (1997) proved that microclimatic conditions on the aspects vary dramatically, affecting the biology of organisms at all levels.

4.3. Effect of Tillage

In our study, plant growth and yield parameter in deep tillage was recorded more than medium and minimum tillage (Table 3 and 4). Higher values of growth and yield in deep tillage were due to better soil permeability, soil aeration, root penetration and weed control. These results are in agreement with the findings of Singh *et al.* (2012b). Similarly observing the effect of ploughing depth, on the development of root system significantly higher yield was found in deep tillage. This was attributed to the favorable effect on plant height, number of branches per plant and shoot and biomass yield. Thus the greater value of growth parameter and yield in deep tillage is attributed to the higher infiltration and increased soil depth for moisture storage (Moreno *et. al*, 1997), while the lower yield under minimum tillage is attributed to less favorable condition for shoot and root growth, and less moisture storage and poor soil aeration. Lampurlanes *et al.* (2002) also reported the reduced shoot growth in compact soil because of the poor root development. The other reason for lower value of growth parameters and yield attributes, are because of poor control on weed growth and less nutrient availability under minimum tillage. Unger and Baumhardt (1999) also reported the reduction in the yield under no tillage as compared to conventional tillage, occurred due to lack of control over the weed population.

5. CONCLUSIONS

Basil showed its potential in below canopy conditions of Chir pine that full fills its requirement of commercial exploitation and conservation. The findings indicate its successful introduction under Chir pine as the profuse regeneration has been observed after its post harvesting during the last growing season. The introduction of Basil can be a viable option, in below canopy of Chir pine which usually remains unutilized to grow any crop, even without adding any fertilizer and irrigation practices, thus such introduction will also prevent competition with food crops for want of land for cultivation. This practice is also likely to reduce the fire hazards because such kind of activity will not allow the flammable needles to accumulate in bulk in the under storey.

AUTHORS' CONTRIBUTIONS

Chandra Shekher Sanwal conducted research work, while Raj Kumar and SnehaDobhal involved in Data analysis and writing manuscript, respectively

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