

Winter production of Basil (*Ocimum basilicum*) for fresh market and essential oil production

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Essential oils produced from basil are used for culinary applications, aromatherapy, and as a holistic medicine. Our research focuses on growing basil for fresh markets and using unsaleable product for essential oil production. All experiments are conducted during the winter months in a low cost double polyethylene greenhouse.

Seeds of eight cultivars were sown in October 2014 and allowed to germinate and grow for five weeks. Multiple plants were then transplanted into 6-inch pots filled with soilless mix. Each pot received one of the 3 fertilizer treatments; either 100 ppm N from 20N-4.4P-16.6K water soluble fertilizer; 100 ppm N from 20N-4.4P-16.6K plus 6 g of 12N-3.1P-14.9K slow release fertilizer or 100 ppm N from 20N-4.4P-16.6K plus 9 g of 12N-3.1P-14.9K slow release fertilizer. At eight weeks after sowing, plants were pricked out to only **3** per pot and then some were pinched at 15 weeks. Nineteen weeks after sowing, one plant from each pot was harvested, plant parts separated (leaf, stems, and flowering tops), dried, weighed and set aside for essential oil analysis. This procedure was repeated at 24 weeks after sowing. The 100-ppm N from 20N-4.4P-16.6K plus 9 g of 12N-3.1P-14.9K slow release fertilizer treatments produced the plants with the greatest dry mass. Dry plant material was crushed by hand to increase the surface area and then distilled using a 2 L steam distillation apparatus. The 100-ppm N from 20N-4.4P-16.6K water-soluble fertilizers produced the plants with the least dry matter. Stems did not produce any oil. The leaves and flowering tops did produce oil, with the leaves producing higher dry matter to oil ratios. Data will be presented for both harvests as well by treatment. The relationship between oil-bearing anatomical structures and quantity of oil produced will also be presented.

Nebraska Department of Agriculture Specialty Block Grant Program, NIFA Multistate NE1335, Fleming Foundation Grant and the Agricultural Research Division of the Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln.