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Projects are underway to explore functional and cost-effective controlled environment and greenhouse crop production systems specifically designed for Alaska's diverse and challenging northern conditions and ecosystems. Initial focus was on controlled environments while recent projects concentrate more on traditional greenhouse and temporary high plastic tunnel systems. Growing facilities are in the process of being prepared and equipped to allow research on various greenhouse and controlled environment adapted crops. Currently bedding plants, transplants, hanging basket, specialty and minor crops are produced in local greenhouses and marketed seasonally to lengthen and complement regional field grown production. Combinations of controlled environment, greenhouse, high tunnel and field production techniques provide opportunities to extend the season or substitute for brought in produce from outside the state with high quality fresh crops. Inventory of the existing greenhouse industry will point to viable selections for local production while demand and market analyses are expected to determine the most economic suitable crops. The development of reliable, fast and efficient protocols is progressing for selected vegetable, berry, transplant, ornamental and vegetative crops in support of local greenhouse production. Several, both traditional and non-traditional, horticultural crops are promising for local production and marketing. For instance, opportunities exist to produce quality fresh raspberries locally for marketing to restaurants, supermarkets and directly to the consumer. Raspberries easily bruise during handling and do not withstand shipping. The long distance from production areas outside of Alaska results in poor qualities and limited year round availability. While field culture of raspberries and many other crops is well understood, the intense management of controlled environment systems requires more detailed understanding of the growth, development, flowering and fruiting physiology to optimize the climatic and environmental resources. Raspberry plants of summer and fall bearing types are studied for production, growing techniques and management in traditional greenhouse and high plastic tunnel environments. Adequate, correctly managed and designed facilities are fundamental to successful greenhouse and controlled environment production. Development of directions on how to properly establish, direct and maintain production units is therefore important components of these studies and projects.

#### Publications

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