

College of Agriculture & Life Sciences
Department of Horticultural Science

CULTIVATION OF RAMPS (*Allium tricoccum* and *A. burdickii*)

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INTRODUCTION

Ramps, *Allium tricoccum* or *Allium tricoccum*, var. *burdickii*, also known as wild leeks, are native to the eastern North American mountains. They can be found growing in patches in rich, moist, deciduous forests and bottoms from as far north as Canada, west to Missouri and Minnesota, and south to North Carolina and Tennessee. In early spring, ramps send up smooth, broad, lily-of-the-valley-like leaves that disappear by summer before the white flowers appear. The bulbs have the pleasant taste of sweet spring onions with a strong garlic-like aroma.

As one of the first plants to emerge in the spring, ramps were traditionally consumed as the season's first "greens". They were considered a tonic because they provided necessary vitamins and minerals following long winter months without any fresh vegetables. Traditions evolved around the annual gathering and preparation of this pungent plant. Throughout the mountains of the eastern U.S., including many western North Carolina counties, annual spring ramps festivals are held. These festivals have become major tourist attractions and are actively promoted by the communities in which they are held. The tremendous volume of ramps consumed at these festivals are gathered from the forests. In many areas, the annual intensive harvesting is seriously damaging the wild populations of ramps. Studies in Canada and Ohio demonstrated that ramps

are very sensitive to how they are harvested. Years ago, gatherers would only take a small number of bulbs from a population. Now the demand for ramps is so great, the entire population is often harvested.

In recent years, white-table cloth restaurants have also begun serving ramps, increasing the demand for large, consistent supplies of the wild forest plant. Thus, in an effort to conserve native populations and meet rising demand, cultivation of ramps is strongly encouraged. Harvesting ramps from easily accessible, concentrated plantings would not only benefit festival participants, chefs, and consumers, but also create a new marketable product for the commercial grower. Native populations would be allowed to regenerate and multiply as ramps gain recognition and popularity among consumers.

Since almost all ramps consumed are harvested from wild populations, information on growing ramps is very limited. Research is in progress at N.C. State University to develop efficient, practical, and sustainable production practices for ramps. While research is ongoing, the practices described in this publication are based on our experiences and those of the few existing ramp growers in North Carolina and West Virginia.

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PLANT GROWTH CYCLE

In the Southeastern U.S., ramps begin growing rapidly in March and early April in cool, shady areas with damp soil and an abundance of decomposed leaf litter or other organic matter. The plants produce new leaves in March to April, which die back as the days lengthen and temperatures rise. In June, after the leaves die back, a flower stalk emerges. The flower blooms in early summer and the seeds develop in late summer. The seeds mature atop a leafless stalk and eventually fall to the ground to germinate near the mother plant. The timing of these events is usually delayed at high elevations and locations north of North Carolina and Tennessee.

CULTIVATION:

SITE SELECTION

Ramps grow naturally under a forest canopy of beech, birch, sugar maple, and/or poplar. Other forest trees under which ramps will grow include buckeye, linden (basswood), hickory, and oak. A forested area with any of these trees present provides an ideal location for planting a ramp crop. Areas that host trillium, toothwort, nettle, black cohosh, ginseng, bloodroot, trout lily, bellwort, and mayapple should be suitable for growing ramps. If there is not a wooded area available to grow ramps, a shade structure can be erected over the planting site.

Choose a well-drained site with rich, moist soil high in organic matter. Soil moisture appears to be an important environmental variable influencing seed germination, seedling emergence rate, survival, and growth rate of the plant. Thus, adequate moisture must be maintained throughout all seasons, not just the active growing season.

Keep in mind that the growth period for ramps is limited to only a few weeks in the spring, during which time the plant is dependent on having adequate light, moisture, and nutrients for survival.

DIRECT SEEDING

Although ramp seeds can be sown anytime the soil is not frozen, late summer to early fall is usually considered the best time for seeding ramps. Fresh ramp seeds have a dormant, under-developed embryo. The seed requires a warm, moist period to break root dormancy and a subsequent cold period to break shoot dormancy. Some years there is enough warm weather after sowing in late summer or early

fall to break root dormancy. The following winter cold breaks shoot dormancy and the plants emerge in spring. If there is not an adequate warm period after sowing, the seed will not germinate until the second spring. Thus, ramp seeds can take 6 to 18 months to germinate. Case in point, in Fletcher, N.C., ramp seeds sown in fall 1999 and spring 2000 all germinated in April 2001. Being able to provide adequate soil moisture and protection from wildlife are other key factors in determining where and when to sow seeds. Production from sowing seeds to root harvest can take 5 to 7 years.

To plant under a forested canopy, rake back the leaves on the forest floor, removing any unwanted weeds, tree sprouts, or roots. If the soil is not naturally high in organic matter, incorporate organic materials such as composted leaves and other decaying plant material from the forest. Loosen the soil and rake to prepare a fine seed bed. Sow seeds thinly on top of the ground pressing them gently into the soil. Cover seeds with several inches of leaves to retain moisture in the soil and to protect the seeds from wildlife. In a field site under artificial shade, add organic matter if needed, till the soil, sow the seeds, and cover with composted leaves or other similar natural materials.

TRANSPLANTING

Many growers prefer planting bulbs or young plants instead of sowing seeds. Since germination of the seed can take up to 18 months, transplants and bulbs can be a good alternative for the beginning ramp grower. Planting large bulbs ($\geq 1/2$ " diameter) can provide harvestable ramps within 2 to 3 years. Bulbs can be purchased in February and March or dug for transplanting between September and March, with February to mid March being the best time. March is the best time for transplanting young plants. If bulbs are to be dug for transplanting, once the ground has thawed gently dig the ramps, taking great care not to damage the roots or bulbs. In a prepared planting bed (see direct seeding), transplant the bulbs approximately 3 inches deep, and 4 to 6 inches apart, allowing all the roots to be buried and keeping just the very tip of the bulb above the surface. Planting bulbs at the proper depth is important for survival. Transplant leafed-out plants at the same depth they had been growing and space 4 to 6 inches apart. If space is limited, clumps of 4 or 5 plants can be grouped together. Mulch the planting bed with at least 2 to 3 inches of leaf litter.

MULCHING

Hardwood leaves provide the best mulch for ramps. Poor results have been obtained with pine bark and commercial mulches and they should be avoided until further research is done. The effects of mulching are numerous: decaying organic matter provides essential elements like nitrogen, much needed moisture is retained within the mulched area, and the mulch acts as an insulator to protect the plants in sub-zero temperatures. In addition, mulching helps to suppress weeds as well as protect newly sown seeds and seedlings from wildlife.

HARVESTING

In native populations, ramps usually form extensive colonies or clumps. Often the bulbs are so densely spaced that other vegetation can hardly penetrate the stands. Methods for harvest include digging the whole patch, harvesting a portion of a patch, or thinning out and harvesting just the largest plants. Do not harvest plants until they have filled the site, have large bulbs, and have flowered. If whole plots are harvested at one time, it is recommended to have enough plots to allow for a 5 to 7 year rotation. That is, to have continuous harvest year after year, harvest only one-fifth or one-seventh of your production area each year. When harvesting a portion of a plot, no more than 15% of the ramps should be removed. If the thinning method is used, great care should be taken not to damage plants that are not harvested. Based on research done on wild populations; harvests should be limited to 5 to 10% of the plants in each plot.

Tools for harvesting ramps vary with the person using them. A ramp "digger" tool can be purchased or made. This hand tool is the size of a hammer, with a long, narrow head similar to a mattock. Other suitable tools include a garden hoe, pick, and soil knife. For commercial operations, having a tool that can be used comfortably all day is essential.

Digging methods are the same as those described under TRANSPLANTING. Again, great care should be taken not to damage the bulbs. While harvesting, keep the dug ramps cool and moist. When harvesting is complete, wash ramps thoroughly, and trim off the rootlets. Pack in waxed cardboard produce boxes and store in a cool place, preferably a walk-in cooler. Do not store in airtight containers.

PESTS

Currently, very little information is available on disease or insect pressures on ramps. In North Carolina and Tennessee, Septoria leaf spot has been observed in wild and cultivated ramps. Although the spot was unsightly on the foliage, it did not appear to adversely affect plant yields in 2001. The long-term effects of the disease are unknown. New ramp plantings do not compete successfully with weeds thus, weeds should be controlled until the plants are well established.

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