

The Ramp (*Allium tricoccum*)

Growing Opportunities for Cultivation & Conservation in
Central Appalachia

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Description and Characteristics



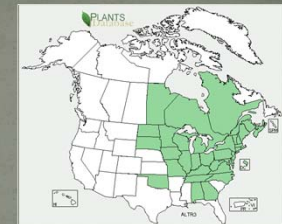
About Ramps

- Perennial herb
- Deciduous forests of eastern U.S. and Canada
- Liliacea family
- Allium species
 - Flavor of garlic and onions
- Two varieties
 - *Allium tricoccum*
 - *Allium burdickii* (narrow-leaf ramp)
- Long history of harvest & use
- One of the first plants to emerge in Spring
 - Tolerates frost & snow



Range and Distribution

- Appalachian Region and Midwest
 - *Allium tricoccum*
 - Wide spread
 - *Allium burdickii*
 - Mostly upper midwest
- Mixed distribution within range
- Overharvested in many areas
 - 5 plants per person in Canada
- Can be cultivated outside native range
 - Except in deep South and Deserts
- Relatives in England, Japan, Wales, Switzerland



Physical Characteristics

- *Leaves*
 - Broad & Flat
 - 2-3 per plant
 - 7-12" long, 2" wide
- *Stalk*
 - 2"-3" long
 - Purple or white in color
- *Bulb*
 - 1"-2" long, ½" -1" wide
 - 5 concentric rings + heart
- *Flower Stalk*
 - 6" - 10" tall
 - Grows from heart of bulb
 - Cluster of white flowers
- *Seeds*
 - Hard, black, and BB sized
 - 18 month stratification



This Is Not A Ramp



Lily-of-the-Valley is an introduced species and is poisonous
DO NOT CONSUME!

Medicinal Properties And Nutrition

- *Medicinal Properties*
 - Traditional spring tonic
 - Anti-septic
 - Diuretic
 - Laxative ??
 - Lower blood cholesterol
 - Stimulate lipoprotein production
 - Regulate hypertension
 - Prostaglandin-A₁ – fatty acid
 - Antioxidant
- *Nutrients*
 - Vitamin C
 - Vitamin A
 - Folic Acid
 - Colon cancer, spine/brain
 - Selenium
 - Thyroid function
 - Anti-oxidant
 - Magnesium

History, Culture, and Sustainability



History In Appalachia

- Tradition of ramp harvesting
 - First greens of spring
 - Income opportunity
- Ramp Festivals & Dinners
 - TN, KY, WV, NY, NC, & OH
 - Cultural/Community celebrations
 - Fundraising for services/organizations
- Most ramps sold at market or consumed at festivals are wild harvested
 - How many plants per year?



Large quantity of ramps being prepared for a "Ramp Festival"

Ramp Festivals

- "Feast of the Ramson"
 - Richwood, WV
- "Ramps and Rails Festival"
 - Elkins, WV
- "Cosby Ramp Festival"
 - Cosby, TN
 - 30,000 visitors
 - Since 1954
- "Flag Pond Ramp Festival"
 - Flag Pond, TN
- "Ramp It Up Festival"
 - Cherokee, NC
- Over 25 ramp festivals annually in West Virginia alone



Ramp eating contests are a staple of ramp festivals

Pressure On Wild Populations

- High-end restaurants featuring ramps – pay higher prices – make trade more profitable
 - 18 + in Chicago
 - Dozens in NYC
 - Seattle, D.C.
 - One business in WV selling 25,000 + lbs. of ramps annually across country
 - 2.5 Million Plants
- Ramp Festivals
 - Attended by tens of thousands of people
 - Probably 50 festivals in eastern U.S. annually
- Estimated 10 million plants harvested each year

From Wild-Collection To Cultivation

- Relatively few established growers in region
 - WV, NC, VA
- Opportunity for new growers to access markets
 - Local restaurants.
 - Planting stock
- Learning from experienced growers is key
 - Limited research on cultivation
- Wild patches can be sustainably managed
 - Max. 10%-15% harvest
 - Collect and plant seeds annually



Ecology, Growth, and Development



Habitat And Site Selection

- *Deciduous forests ideal*
 - *Can use artificial shade*
- *North to East facing slopes*
- *Well-drained bottomland forests*
- *50%-80% shade*
- *Moist – well drained soils*
 - *Key for seed germination & survival*
- *Companion Trees & Herbs:*
 - *Sugar maple, tulip poplar, beech, basswood, birch, etc.*
 - *Trillium, bloodroot, cohosh sp., trout lily, fern sp., etc.*
- *High soil calcium*
 - *2500-5000/Lb./Acre*
 - *pH 4.9-5.5*

Good Ramp Habitats



Leaf Litter

- *Leaf litter is important to health and survival*
 - *Organic matter*
 - *Nutrients from decomposition*
 - *Moisture retention*
 - *Insulation*
 - *Weed Suppression*
- *Hardwood leaves from growing site best*
 - *Poplar, Maple, Beech*
- *Commercial mulches are no good*



Things To Avoid When Selecting Sites

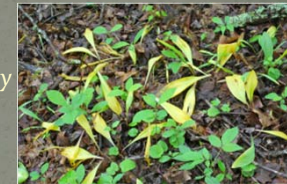
- **NEVER:**
 - Plant under evergreens
 - Plant in a wind swept location
 - Plant seeds in sun
 - Plant in a hot dry location



Inhospitable ramp habitat!

Ramp Growth and Development

- Emerges in March and grows rapidly through April
 - 1/2" per day
 - Increasing bulb size, storing energy
- Peak size and flavor by Mid-April
- Fully developed by May
 - Flower stalk emerges from bulb
 - Leaves begin die-back
 - Gone by June
- Flower stalk persists through summer, fall, winter



Flowering and Seed Production

- Flower after 6-7 years
- Blooms July to August
 - Pollinated by bees, ants, insects
 - Also self compatible
- Green seed pods develop through August
 - 3 lobed seed pod
 - Sensitive to spoilage
- Seeds ripen September - October
 - Green husk opens and exposes seeds
- 15-24 seeds per plant



Seed Biology And Dispersal

- Seeds dormant at ripening
 - 18 month stratification
- Can collect and store in cool dark place
 - Store after drying
 - Viable for 3-4 years
- High seed - seedling mortality in wild
 - Collecting and planting improves survival
- Dispersal
 - Naturally fall from the stalk
 - Collected by birds & rodents



Seeds can still be found clinging to stalks in the Spring

Seed Stratification & Germination

- Seed exposed to seasonal periods of Cold/Warm/Cold fluctuation
 - Warm Season – breaks root dormancy
 - Cold Season – breaks shoot dormancy
- Some germination first fall
 - Won't survive winter months
- Best to sow directly for natural stratification



Ramp seedlings are small and grass-like

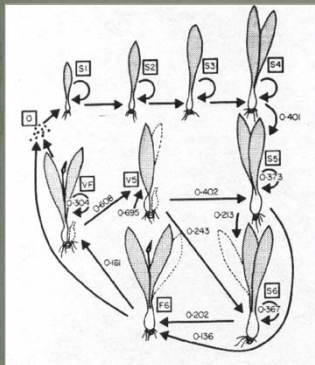
Growth During Winter Months

- Ramps transform through winter months
 - Never really dormant
- November/December
 - Sheds layers of bulb
 - Flower stalk moves to outer ring
- January
 - New stalk developing at center of bulb
 - 1/3 previous size
- February
 - 2/3 previous size
 - Ready to transplant by end of month



The seed stalk has migrated to the outer edge of the bulb

Vegetative Reproduction



Ramp life cycle

- Bulb division and seeds contribute to population growth
 - Why you find ramps growing in dense clumps



Growing Ramps For Market



Ramp Cultivation

- Great for **wild-simulated** production
- Select suitable planting site
 - Sugar Maple, Poplar, Beech
 - Woodland herbs/wildflowers
- Plant both bulbs and seeds
- Bulbs available from Ramp Farm Specialties – Richwood, WV
 - www.rampfarm.com
- Planting Tools
 - Leaf rake
 - Hard steel rake



Suitable Planting Site For Ramps



Bulbs For Planting

Planting Bulbs And Seeds

- **Bulbs**
 - Plant in early March
 - Rake back leaf litter
 - Make holes 3" deep
 - Plant bulbs so the tip is just above soil surface
 - Firm up soil around bulb after planting
 - Space 6"-8" or up to 2'-3'
 - Wide spacing allows for expansion & seed planting
 - Recover with leaves
- **Seeds**
 - Plant in spring or fall
 - Rake back leaf litter
 - Scuff soil to loosen top 1/4"
 - Broadcast 10 seeds/sq. ft.
 - Recover with leaf litter

Planting Seeds Wild-Simulated



Seeds are broadcast on top of bare soil in good habitat, and then recovered with leaves

Seeds will complete their stratification process in the forest and germinate 18 months after planting

Bulbs can be inter-planted with the seeds in these beds

Sustaining Perpetual Production

- Collect and plant seeds
!!!!
- Bulbs are a cost effective way to get seeds
 - Retail: 50 seeds for \$5.00
 - Won't flower for few years
- Don't harvest more than 10%-15% of patch



Blooms will produce 15-30 seeds

Pests, Diseases, Maintenance

- Deer and Turkey browse young leaves
 - Minimal impact
 - Turkey scratch can kill seedlings
- Septoria Leaf Spot – cosmetic blemish on leaves
- “Clump Death” – overcrowding causes stress, potential disease, mortality
 - Harvest clumps to thin
- Inspect patches regularly for signs of disease, mortality, etc.



Septoria Leaf Spot



Ramp “clump”

Human Pests - aka Poachers



About 7,000 ramps recovered from poachers

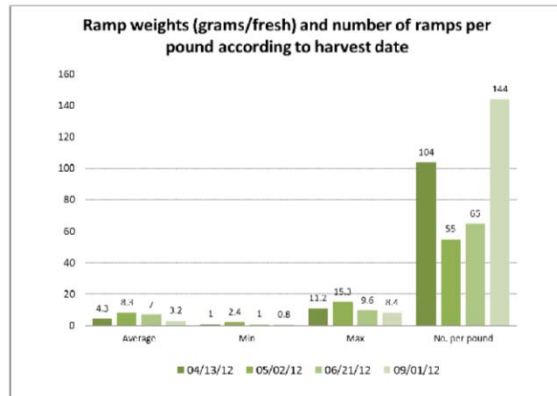
Harvesting and Marketing



Harvesting Ramps

- Peak mid-April to May
 - Bulb hardens, loses flavor after
- Target “clumps”
 - Prevent “Clump Death”
- Harvest transplants after 4-10 years growth
 - Allow seed production
- Whole plant harvested for market
- Leaves only – wait until late April
 - Personal use
 - Value-added products
- Hold stalk when harvesting to avoid bruising leaves





Average of 80 plants/lb. if harvested mid-April to May
Data courtesy of Dr. Eric Burkhart

Post Harvest Handling

- Harvest early in morning to avoid heat stress/wilt
- For Market Sales:
 - Take care not to damage leaves
 - Rinse dirt & debris
 - Trim roots but don't remove completely
- Refrigerate ASAP



Don't cut the bulb to remove roots

Marketing

- 75 plants per Lb.
- Market price \$7-\$20/Lb.
 - Farmers Markets
 - Roadside stands
 - Ramp Festivals/Dinners
 - Direct to restaurants
- Value-Added Products
 - Ramp pasta, crackers, mustard, pesto, cheeses, gravy mix, pickled ramps, dehydrated ramps, planting stock, etc.



Selling ramps at roadside stands is common in WV

Population Biology and Conservation



Population Response To Harvest

- Population growth is slow
 - High seedling mortality
- Harvest impacts debated
 - 1 year recovery from 15% harvest
 - 2-3 year recovery from only 5% harvest
 - 10 years for 10% harvest
 - 150 years for 95% harvest
- Don't harvest more than 10% of patch



Unmistakable signs of ramp poaching,
Wayne National Forest – April 2013

Population Dynamics

- Populations can get very large
 - Vegetative Reproduction
 - High Seed Production
 - Minimal predation, disease, pests
- Wayne National Forest Monitoring Project
 - 11 major sites identified
 - 9 - 100 x 100 ft. monitoring plots established
- Population Counts – per 100' x 100' plot
 - 35,000 plants
 - 57,000 plants
 - 68,000 plants
 - 147,000 plants
- Large populations could hold a million or more plants



147,000 ramps in this plot



No so many in this plot

Conserving Wild Populations

- Publicity increasing demand
 - Newspapers, magazines, blogs
 - Emeril, Martha Stewart, Julia Child
 - 18 Restaurants using ramps in Chicago area alone
- Prevailing Economic Situation
 - People looking for supplemental income
 - Increased harvest pressure
- Establish regulations for public lands
 - NC/TN – only pay \$0.25/lb. to harvest on public land
 - Allows up to 500 lbs. per person
- Population monitoring, inventory, & restoration on public lands
 - C.E.M.
 - Seed collection and planting
- Raise awareness about plant poaching among legal community
- Promote cultivation & stewardship

Resources For Growers

- Publications from North Carolina State University, available at www.ncherb.org
- Glen Facemire Jr. "Having Your Ramps And Eating Them Too." McLain Printing Co. 2008.
- Scott Persons & Jeanine Davis. "Growing & Marketing Ginseng, Goldenseal, & Other Woodland Medicinals." Bright Mountain Books.

Questions, Concerns, Assistance

- 740-677-4047
- tanner@ruralaction.org
- karam@ruralaction.org
- Rural Action Website
 - <http://ruralaction.org/programs/forestry/forest-botanicals/>
 - Numerous factsheets and resources for growing Non-Timber Forest Products
 - Video Documentaries

