University of Kentucky
College of Agriculture,
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Center for Crop Diversification Crop Profile
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Cowpea (Southernpea)

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Introduction

Southernpea (*Vigna unguiculata*), also referred to as common cowpea, crowder pea, black-eyed pea, and field pea, is a warm-season annual. The highly nutritious seed is grown for fresh, processed and dried uses. Interestingly, southernpeas are not a pea at all, but a type of bean related to the yardlong bean and marble pea. This profile will discuss only its production as a vegetable crop, but southernpea is also an excellent cover crop for suppressing weeds, fixing nitrogen, and attracting beneficial insects, though it can also attract nuisance deer to your crops. It can also be used as livestock feed.

Marketing

Southernpeas are sold fresh, dried or processed. Fresh immature seed and pods are generally eaten cooked. Fresh market options include farmers markets, consumer supported agriculture (CSA) subscriptions, produce auctions and roadside stands. Offering point-of-sale promotions, like recipes and preparation suggestions, can help increase interest among customers unfamiliar with southernpeas. Sales to locally owned retail grocery markets may be an additional option. Dried products can be sold already shelled or in the pod for consumers to shell. Value-added products include soup and bean mixes. The USDA Agricultural Marketing Service maintains grades and standards for frozen black-eyed peas.

Market Outlook

Southernpea is a popular vegetable crop in the South, including sections of Kentucky. The most common market classes include black-eyed/pink-eyed (which includes purple hull peas), crowder (seeds

are crowded into the pod), cream, and field types. Each has its own unique appearance and flavor that appeals to specific localities. It is important to be aware of these regional preferences when producing and marketing southernpea. Increasing interest in local and regional foods may strengthen consumer interest in regional favorites for vegetables like southernpea.

Production Considerations

Cultivar selection

Cultivars are generally identified according to such characteristics as pod (hull) color (green to silvery to purple), pod length, "eye" color (no color to pink to maroon to black), seed color (cream, buff, brown, red, black, spotted or speckled), and seed spacing within the pod (crowder, semi-crowder and non-crowder). Growth habit can be vining, semi-vining or bush. Select marketable cultivars that are well-adapted to local growing conditions.

Site selection and planting

Southernpeas can be successfully grown within a pH range of 5.5 to 6.5 and on

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a wide variety of soil types; however, the soil needs to be well-drained or seed rot and root diseases can develop. This crop requires a rather low to medium level of soil fertility; high fertility results in excessive vine growth and unproductive plants. While it is not necessary to inoculate the seed with nitrogen-fixing bacteria (the bacteria are present to a limited extent in the soil), using the proper inoculant [*Bradyrhizobium* sp. (Vigna)], will improve plant growth.

Southernpeas are frost-sensitive and should not be planted until after all danger of frost has passed. Seed in the spring only after soils have warmed to 65°F; cold soils will result in delayed germination and seed decay. Southernpeas typically have long taproots with many lateral roots that make them relatively drought-tolerant. Nevertheless, irrigation can significantly increase yields during periods of drought. Rainfall or supplemental watering is most critical just prior to and during bloom.

Pest management
Insects and diseases are generally not serious problems for this crop. Root rot and damping-off tend to occur in cold, wet soils. Other potential diseases include southern blight, viruses, Fusarium wilt and root knot nematode. Insect pests can include wireworms, cutworms, aphids, plant bugs and stinkbugs. Early weed control is essential, and plots should be kept weed-free for the first four to six weeks. Once established, the growth habit of southernpea is such that it will smother most weeds.

Harvest and storage
Southernpeas can either be hand-harvested or machine-harvested. Producers seeking to capture the local fresh market will need to employ a hand-harvest system, which will yield multiple harvests. Large acreages for processing can be machine-harvested just once with a conventional combine.

Seed for processing is harvested at the stage specified by the buyer. Peas destined for fresh market sales should be harvested either at an immature green stage or more commonly at the green mature stage — when pods are well filled, but before they dry. Seed at this stage is also suitable for drying. However, if seed is to be sold as a dry product, the pods can be allowed to thoroughly dry in the field prior to harvesting.

Remove field heat from fresh-picked beans soon after harvest; keeping southernpeas cool and well-ventilated will help prevent color changes and spoilage. Southernpeas will experience chilling injury if exposed to temperatures below 50 degrees F for extended periods of time (one to two days). Southernpeas are sold either unshelled or shelled depending on consumer or buyer preference. Harvested seed can be stored for four to five days under the proper temperature and relative humidity. Long-term storage is possible for beans at or below 9 percent moisture.

Labor requirements
Pre-harvest labor requirements for southernpeas are similar to those for oilseed crops. Approximately 10 to 12 hours per acre will be needed for production. Harvest and post-harvest labor times will vary between hand and mechanical harvest systems.

Beans picked using a mechanical bean/pea picker must be hand-graded. Data from Alabama estimates an additional labor time of 20 hours for mechanical picking, hand grading, and packing 1,000 pounds of southernpeas, or one hour of post-harvest labor for every 50 pounds of beans.

Hand-harvested southernpeas will also require 10 to 12 hours per acre for production. Harvest times can differ by variety and harvest system. Data from Arkansas indicate that one person can harvest and pack 12 to 20 bushels per day (1½ to 2½ bushels per hour) of purple hull peas under average yield conditions (100 bushels per acre or 2,500 pounds). For other types of southernpeas, past Alabama production budgets indicate hand harvest times of 75 hours, including packing and post-harvest handling. Using these standards, hand-harvested southernpeas for fresh local marketing will require 40 to 75 hours for harvest and packing, depending greatly on the variety, yield and the production system.

Labor needs per acre, then, are approximately 10 to 12 hours for production, 35 to 60 hours for harvest, and 10 to 20 hours for packing/grading.

Economic Considerations
Initial investments include land preparation, purchase of seed, and installation of an irrigation system. Producers must also be prepared to cool beans harvested

for fresh, local consumption. This expense can vary greatly depending on the producer's access to cooling and/or processing facilities.

Production costs (2019) for hand-harvested fresh market southernpeas were estimated at $380 per acre, with harvest and marketing costs at $950 per acre. This assumes a 15 percent charge of gross returns to the producer for cooling and marketing the beans. Total expenses per acre, including both variable and fixed, would come to approximately $1,430. Presuming yields of 1,000 pounds and gross returns of $1,000 to $2,000 per acre, returns to land, capital and management would be approximately $(550)* to $350 per acre.

Production costs (2019) for machine-harvested southernpeas were estimated at $380 per acre, with harvest and marketing costs at $200 to $750 per acre, depending on the availability and cost of harvest equipment. These costs assume a 15 percent charge of gross returns to the producer for transporting and marketing the beans. Total expenses per acre, including both variable and fixed, could range from $600 to $1,250. Presuming yields of 1,000 pounds and gross returns of $1,000 to $2,000 per acre, returns to land, capital and management would be approximately $(200)* to $750 per acre. Machine harvested southernpeas are most common in the South, where southernpeas are often grown to be frozen, and established production and harvest infrastructure result in estimated production costs.

**Parentheses indicate a negative number, i.e., a net loss*

Selected Resources

- Southernpeas (Cowpeas) in Vegetable Production Guide for Commercial Growers, ID-36 (University of Kentucky)
http://www.ca.uky.edu/agc/pubs/id/id36/id36.pdf
- Commercial Fresh Market Southern Pea Production, FSA-6057 (University of Arkansas Cooperative Extension, 2000)
http://www.purplehull.com/pdf_files/FSA-6057.pdf
- Fresh Market Southern Pea Production in South Arkansas, FSA-6102 (University of Arkansas, 2002)
http://www.uaex.edu/Other_Areas/publications/PDF/FSA-6102.pdf
- Southern Pea Production (Oklahoma State University, 2007)
http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-1389/HLA-6029web.pdf

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