

Sustainable Poultry (Range Production) Overview

Anne Fanatico, Sustainable Poultry Specialist, ATTRA, Fayetteville, Ark.

Alternative poultry production, especially pasture-based, offers opportunities for producers interested in boosting incomes, diversifying operations, and providing a specialty product for consumers. Since most available poultry information is aimed at either large-scale or backyard production, it's hard to find current information in-between – on small commercial flock production. The Appropriate Technology Transfer for Rural Areas (ATTRA) program of the National Center for Appropriate Technology (NCAT) program has a publication called *Sustainable Poultry: Production Overview* to help fill that void.

Pastured poultry production is a grassroots movement that focuses on farm-scale production and direct marketing. It has been developed from the ground up by hundreds of family farms, and is driven by consumers seeking an alternative product. This enterprise can provide supplemental income in rural areas, enabling small farmers to raise poultry in free-range or pasture-based systems that are part of a diversified farm. They generally process on-farm, and sell directly to customers at farmers' markets or from the farm. Producers buy day-old chicks, usually mail order, from independent hatcheries. They generally use the same broiler genetics developed for the conventional industry, but use a wide range of layer genetics – including many heritage breeds. Most producers raise poultry seasonally, though some larger-scale growers pursue year-round production. Some producers use commercial sources of nonmedicated feed, but most work with a local feed mill to have custom rations made from natural feed ingredients. Broilers are usually grown for eight weeks.

There are very few independent government-inspected processing plants where producers can take their birds for

processing, and large-scale integrated companies do not process for independents. Exempt, non-government-inspected processing is often practiced on-farm, in many states, exemptions in the federal Poultry Production Inspection Act allow a producer to raise and process 1,000 birds per year for direct sale to customers. The legal environment surrounding non-government-inspected meat processing presents both opportunities and limitations.

Marketing is usually direct to customers and advertising is often word-of-mouth. Farmers sell directly to customers from the farm or locales such as farmers' markets and report more demand than they can supply.

Although many producers are satisfied with farm-scale production and direct marketing, there is an industry emerging from the grassroots movement that looks beyond direct marketing. Labor intensity limits the number of birds that a producer can realistically produce and market from the farm. To earn more than supplemental income, producers need access to better processing and marketing. Some are building small government-licensed processing plants.

There are a few large-scale companies with national distribution of range and organic poultry products (Shelton's Poultry Inc. and Petaluma Poultry Processors, to name two); however, they have not evolved with the pastured-poultry movement are industrial models. Most pastured-poultry farmers – even those building processing plants – are committed to sustainability and do not seek national markets, but rather regional ones support local food systems.

For more detailed information on sustainable poultry production, see the range poultry workshop, p. 122

About Anne Fanatico

Anne Fanatico serves as Poultry Program Specialist at the National Center for Appropriate Technology (NCAT), a private nonprofit organization. NCAT's ATTRA program, a national information service on sustainable farming, provides information on sustainable poultry production. Fanatico has partnered with other nonprofits such as Heifer International and the Kerr Center to help farmers try out small batches of pastured poultry and developing an entrepreneurial toolbox for producers expanding their operations. She has led a team in France, gathering information on Label Rouge range poultry production, and is involved with a project examining the feasibility of

adapting Label Rouge features to the US, especially the use of specialty broilers for outdoor production. She has a MS in animal science and is working on a PhD in poultry science at the University of Arkansas.

For more information contact:

Anne Fanatico
National Center for Appropriate Technology (NCAT)
P.O. Box 3657
Fayetteville, AR 72702
800-346-9140
www.attra.ncat.org

Sustainable Poultry (Range) Production

Anne Fanatico, Sustainable Poultry Specialist, ATTRA, Fayetteville, Ark.
(For an overview of sustainable poultry production, see *From Pasture to Table*)

Alternative Poultry Production Systems

Range poultry production systems, like other production systems, should provide fresh air, clean feed and water; protection from predators; shelter from cold, rain, wind, and sun; and a source of heat when birds are young (brooding). Birds need to be able to grow, sleep, and lay eggs in comfort. In a good production system, birds should be free from stress and disease.

Alternative systems also emphasize enabling the birds to behave in a natural way – pasture-rearing is a cornerstone of this approach. In range systems, land should be well drained, and well covered with high-quality vegetation. Pasture rotation will reduce disease-causing pathogens, avoid buildup of excessive manure, and prevent turf damage. If done improperly, access to range becomes a problem instead of an advantage.

In general, poultry are raised in three ways:

Confinement – keeping the birds indoors. Confinement is the production model used by the conventional industry; however, there are some applications to alternative poultry production. In the conventional industry, broilers are raised on litter-covered floors, and layers are kept in cages.

Free-roaming – hens are not kept in cages but rather on the floor in buildings.

Outdoor: Contained – containing (and protecting) the foraging of the birds in some way – within a fence, field pen, or netting. Containment allows management of bird grazing where you want it.

Yarding – A common illustration is a stationary house with a fenced yard. However, the effort to avoid buildups of manure, pathogens, and worms, and to provide fresh forage, has ignited grassroots range poultry producers across the U.S. to search for ways to rotate pastures and provide multiple yards.

Field pens – Floorless pastured poultry field pens or shelters are moved daily; chicken tractor field pens are used in gardens for fertility and tilling.

Net-range or day-range (moveable) – Small portable poultry housing is used with moveable net fencing.

Net-range (stationary) – Stationary houses are also used with net fencing to make multiple yards.

Outdoor: Uncontained—you do not contain the foraging of the birds. Birds range freely during the day — usually in a pasture —and return to a portable house at night. The house is moved regularly to a fresh site.

Free-range – Houses on runners or skids; houses on wheels or "eggmobiles."

Colony – Several small roosting houses share a common nest house and feed area.

Note: ATTRA's *Sustainable Poultry: Production Overview* discusses production systems in more detail.

Choosing a production system involves the following considerations:

Type – Intensive vs. extensive.

Fertility – Heavy loads on a small piece of ground vs. light loads on a large piece of ground.

Flexibility – Getting started with a low investment and ability to switch systems.

Labor – Labor-intensive vs. automated to reduce labor.

Bird welfare – Providing fresh forage and fresh air, and permitting natural behaviors while limiting exposure to the elements, predators, and pathogens.

Site- or operation-specific needs – Handling rough terrain, keeping eggs clean, etc.

Please note that the terms classifying these systems are not legally binding terms, but rather popular-usage terms in the U.S., except for the term "free-range." However, the USDA definition of free-range livestock – free access to the out-of-doors for a significant portion of their lives – is vague.

Nuts and Bolts

Housing – There are many variations on pens and houses. Materials and construction may depend on the resources and skills of the producer. Hoophouses are popular. Many housing topics (i.e. floor vs. no floor, litter vs. no litter, access and number of popholes, etc.) are better discussed under the production system. Cross-over information from the conventional industry is useful (i.e. ventilation, insulation materials, etc.).

Lighting – Usually natural light is used, except when managing layers and pullets. Bird reproductive behavior and activity are related to the length of the photoperiod. Artificial lighting stimulates production during days of declining natural light, resulting in a more constant supply of eggs. Long light wavelengths (red, orange, and yellow light) stimulate sexual activity which can lead to aggression. Fluorescent lighting is short wavelength lighting and does not stimulate sexual activity; incandescent lighting is long wavelength lighting.

Litter – Litter is used widely in brooding and by some range poultry producers in portable houses during grow-out.

It can help provide insulation during cold periods but is troublesome to clean out from a house. It also absorbs manure and can be used later as compost for fields. There is some interest in bioprocessing litter in the house.

Net fencing – Portable electric netting is used to make multiple paddocks. It is versatile and convenient, but time is needed to master the technology.

Land Management – Land is usually managed for ruminants (perennial polyculture) but there is some interest in specialty poultry pasture. Producers have turned to old research on clover, alfalfa, and other forages. Poultry may prefer broad-leafed plants to grasses, but the use of oats holds interest. Shade can be provided with trees or shade crops.

Feeder/Waterer design – Information is readily available on automated feeding and watering for large commercial flocks in confined housing, as well as on labor-intensive, manual feeding and watering for backyard flocks.

However, it is a new frontier for systems for small commercial flocks, especially those that are portable. Five-gallon water buckets are being replaced with piped water, and bulk feeders are built to hold more feed. Some producers provide feed and water both in the house and outdoors. Producers need to be careful to provide sufficient water, especially during hot weather, and ensure it is cool enough to drink.

Brooding and transition to pasture – Although information exists for backyard and large-scale commercial brooding, producers are exploring new ways to brood small commercial flocks and even do field brooding.

Weather – Weather conditions are big variables for outdoor poultry operations. Year-round production systems can plan for climate and weather patterns. However, seasonal production systems provide less shelter and are more subject to drastic, unexpected temperature swings, storms, and winds.

Winter Production – Layers are usually over-wintered by backyard producers. However, it is a new frontier for year-round production of broilers and eggs on range. Birds need to be kept warm and water prevented from freezing or being too cold. There may be long periods when birds do not go outdoors. Eggs need to be kept from freezing.

Predators and Pests – The use of electric net fencing during the day and predator-proof housing at night can protect birds from many predators. Keeping housing away from woods, frequent moves, and guardian animals also help. However, overhead predators such as hawks are a difficult problem to solve. Producers try many options such as scarecrows, stringing shiny objects such as CDs, and keeping the housing close to a residence.

Mortality – It is usually high for beginners, but experi-

enced producers may have 5% mortality or less.

Note: ATTRA's Sustainable Poultry: Production Overview has more details on these nuts and bolts topics.

RANGE POULTRY PRODUCTION TOPICS

Health Issues for Range Poultry Production

Although many producers consider their range poultry flocks to be healthy, poultry health is affected not only by infectious disease but nutrition, genetics, trauma, toxins and stress. In dealing with infectious disease, producers need to have an understanding of immunology concepts, pathological agents (bacteria, virus, and fungi), and specific diseases that commonly affect poultry (i.e. Marek's, Newcastle, Fowl Cholera, coccidiosis, etc.). Little diagnosis is done and there is no coordinated reporting mechanism in place to know what disease problems affect range poultry. State-sponsored diagnostic labs and state poultry health Extensionists can offer diagnosis and technical support concerning vaccination programs, etc. Many producers are interested in control and prevention of coccidiosis, parasites, cannibalism, etc. rather than treatment. Or they are interested in alternative treatments such as herbal remedies, diatomaceous earth, probiotics, etc.

Are birds on range healthier than indoor flocks? When raising small outdoor flocks, disease challenge levels are low compared to industrial production because the birds are not as concentrated. Also, air quality is improved since high indoor ammonia levels cause immunosuppression. Exercise and activity help reduce disease problems related to boredom, and UV light is a good sanitizer for pathogens.

However, on-range birds are exposed to many pathogens transmitted by wildlife, cattle, earthworms, grasshoppers, pillbugs, snails, and slugs (intermediate hosts for poultry parasites). Since many of the flocks are multi-age, older birds act as reservoirs of pathogens. Multi-species flocks can also be problematic since some species serve as disease carriers for other species. Since on-range birds are kept longer, they have more opportunity to develop infections.

Feeding Chickens

As the major production cost in poultry production, feed requires close attention. Alternative poultry production focuses on natural feed, avoiding routine medication and unappealing by-products typically used in the conventional industry. Poultry feeds should contain sources of protein, energy, vitamins, and minerals. In the U.S., protein is usually provided by soybeans, energy by corn, and vitamin and mineral pre-mixes are added. Range poultry producers usually prefer roasted soybeans. Local feed mills may be able to provide a poultry vitamin and

mineral pre-mix, as well as calcium, phosphorus, and salt but many producers prefer Fertrell's Nutribalancer™. There is interest in alternative feed ingredients (kelp, sprouted grain for winter feed), and feeding flax to increase omega-3 fatty acids in eggs and meat.

Producers buy unmedicated commercial diets, work with feed mills to custom mix a diet, or make homemade diets. The range poultry movement is not well served by nutritionists, and homemade diets in particular may not be optimized. Many producers balance the rations themselves or use a trusted recipe. The number of diets a producer can realistically keep on-farm is limited, so diets may not match the birds' stage of growth. Some are interested in feeding whole grains in combination with concentrates in order to use their own grain and reduce processing costs. Feeding whole grains and concentrates may also result in more optimized diets since birds can self-select. Birds on pasture also eat forage and live protein (insects, worms, etc.)

Breeds

Range poultry producers usually use Cornish Cross for meat production – the same genetics used by the industry and developed for confinement production. Producers and their customers appreciate the meaty breast and rapid growth; however, growth may be too rapid, resulting in ascites syndrome and other health problems. In addition, the broilers are not active foragers.

Specialty broiler genetics for pasture-rearing have been developed in Europe but are not yet very accessible in the U.S. These genetics are slower growing and have been developed for gourmet taste since they are harvested at maturity.

Heritage chicken breeds in the U.S. are currently not suited for commercial production due to very slow growth and comparatively small breast. However, heritage turkey breeds such as Bourbon Red grow well, have good market conformation, and excellent taste. Breeds used for layer production in the U.S. are varied and include Leghorn (white eggs) and Rhode Island Red and New Hampshire (brown eggs). See ATTRA's *Label Rouge: Pasture-Raised Poultry in France* for more details on slow-growing commercial breeds and sources.

Processing

Small producers usually process birds on-farm. There are very few plants that will do custom processing. Birds are caught, crated, and then put in kill cones where the throat is slit. Stunning is not typically used on-farm. After bleed out, birds are scalded and feathers removed with a small mechanical picker. Evisceration is usually done on stainless steel tabletops and then birds are chilled in ice

water. Birds are usually bagged for customers and purchased the same day. Some are stored and aged in a cooler. It is important to reduce the temperature of the carcass to 40°F within four hours to prevent microbe growth and ensure food safety.

There are sources of small-scale poultry processing equipment, but they are generally expensive, and many producers buy used equipment or make their own. Mobile processing units are sometimes built on trailers to be shared by several producers.

Some producers are building processing plants that will meet government-inspection requirements. However, there is a lack of information on building and equipment requirements for low-volume poultry processing plants, as well as little how-to information on the building process itself. Air-chilling holds interest because it does not allow the 8-12% water uptake that immersion chilling in water does. Whole birds are usually sold, but cut-up is increasing in importance. (Contact ATTRA for more information on small-scale poultry processing.)

Egg processing is usually by hand, but more producers are looking at equipment for egg washing, candling, and grading.

Economics

Range poultry can provide supplemental income on a small scale. Many producers raise several thousand birds per year and report that they are easy to direct-market. Producers can get in with a low initial investment – under \$1,000 if used processing equipment is found or made by the producer. Most producers sell meat directly, netting about \$2 to \$3 per bird. When farmers start out with their first batch of birds, hourly earnings may be very low. However, as they gain experience and their efficiency increases, hourly earnings also increase. University of Wisconsin studies showed an experienced farmer can earn as much as \$10 an hour. Eggs provide a particularly good cash flow because producers have marketable produce to sell every day.

Budgets detailing expenses are available in NCAT's *Growing Your Range Poultry Business: An Entrepreneur's Toolbox*. In addition, the Toolbox can help you study the feasibility of a start-up or expanded enterprise and plan your business. It takes you through a marketing plan, production plan, and using an income statement to determine if your enterprise will be profitable, and a cash flow plan to determine if you can afford to do it. Some producers invest substantial money in their operations and need to develop a business plan.

Marketing

Pastured poultry founder Joel Salatin is an expert at

direct-marketing and teaches producers to build relationships with customers. Customers come directly to the farm or meet the farmer at a farmers' market, where they may learn about the production practices used on the farm and take advantage of the opportunity to support a local farmer. Relationship marketing cannot be replaced.

Farmers usually receive about \$2.00 per pound for the meat (whole birds) and \$1.50 to \$2.00 for a dozen eggs. Advertising is usually word-of-mouth, but some producers have web sites. A central place to advertise is www.eatwild.com where suppliers are listed by state. Although in many states, it is legal to process 1000 birds per year on-farm and sell to consumers, regulations surrounding on-farm processing are notoriously murky.

As producers move beyond direct marketing, market plans will become more important. Market research can be based on secondary sources. There is a growing body of information on the natural and organic markets. The Hartman Group in Bellevue, Wash., conducted a national study in the mid-90s and found 52 percent of consumers want to buy "green." The organic foods industry reached almost \$8 billion in total retail sales in 2000, with 20 to 25 percent annual growth from 1990 to 2000. Primary market research is do-it-yourself and involves surveys, interviews, observation, test marketing, etc.

There are many distinctions consumers make about poultry (image, quality, food safety, and local production). Data showing differences in meat or eggs is limited, although producers present a great deal of anecdotal evidence. Unfortunately, range poultry production systems in the U.S. do not have legal definitions, contributing to consumer confusion about production practices. In contrast, the European Union requires free-range poultry to have a limited density (1,000 hens per hectare– 400 per acre) and the land must be largely covered with vegetation.

Certification programs can help with consumer education and promote niche markets, such as the USDA's National Organic Program. In France, range poultry are marketed under the Label Rouge certification system and command 30 percent of poultry market share. Regular taste-testing is a part of the certification (see ATTRA's *Label Rouge: Pasture-Raised Poultry in France*). In the U.S., consumer groups like Slow Food and Chefs' Collaborative are interested in natural poultry.

Putting It All Together

Sustainable agriculture refers to agriculture that is environmentally sound, economically viable, and socially just. Main considerations include:

Environmental: The re-integration of livestock with the land base is a key concept of sustainable agriculture. When feed is produced on farm and manure recycled

back to crop fields, nutrient cycles are closed.

Economic: You should be profitable (unless you intentionally make it a hobby or intend to subsidize with other farm operations). Otherwise you will not remain in business and will not be able to positively impact your community and environment.

Social: Agriculture is increasingly more consumer-oriented as consumers make more informed choices about food and increase their knowledge about how it is raised.

Working together in cooperative groups and coordinated efforts will be key as the range poultry movement grows and provides regionally produced food.

Resources:

Publications available from ATTRA (800-346-9140):

Sustainable Poultry: Production Overview

Growing Your Range Poultry Business: An Entrepreneur's Toolbox

Feeding Chickens

Organic Livestock Feed Suppliers

Range Poultry Housing

Pastured Poultry: A Heifer Project International Case Study Booklet

Legal Issues for Small-Scale Poultry Processors (a Heifer Project International publication)

Label Rouge: Pasture-Raised Poultry in France

American Pastured Poultry Producers Association (APPPA)

PO Box 1024

Chippewa Falls, WI 54729

715-577-5966 (cell)

Contact: Jody Padgham

www.apppa.org

Grit@apppa.org

Membership is \$20 per year and includes newsletter.

Damerow, Gail. 1995. *A Guide to Raising Chickens*. Storey Communications, Pownal, VT. Order from: Storey Books, 4818 West Converter's Drive, Appleton, WI 54913

800-441-5700

\$14.95 plus \$3.95 shipping

www.apppa.org

For more information contact:

Anne Fanatico

National Center for Appropriate Technology (NCAT)

P.O. Box 3657

Fayetteville, AR 72702

800-346-9140

www.attra.ncat.org

See page 30 for more information about Anne Fanatico.

Sustainable Poultry (Range) Production

Anne Fanatico, Sustainable Poultry Specialist, ATTRA, Fayetteville, Ark.
(For an overview of sustainable poultry production, see *From Pasture to Table*)

Alternative Poultry Production Systems

Range poultry production systems, like other production systems, should provide fresh air, clean feed and water; protection from predators; shelter from cold, rain, wind, and sun; and a source of heat when birds are young (brooding). Birds need to be able to grow, sleep, and lay eggs in comfort. In a good production system, birds should be free from stress and disease.

Alternative systems also emphasize enabling the birds to behave in a natural way – pasture-rearing is a cornerstone of this approach. In range systems, land should be well drained, and well covered with high-quality vegetation. Pasture rotation will reduce disease-causing pathogens, avoid buildup of excessive manure, and prevent turf damage. If done improperly, access to range becomes a problem instead of an advantage.

In general, poultry are raised in three ways:

Confinement – keeping the birds indoors. Confinement is the production model used by the conventional industry; however, there are some applications to alternative poultry production. In the conventional industry, broilers are raised on litter-covered floors, and layers are kept in cages.

Free-roaming – hens are not kept in cages but rather on the floor in buildings.

Outdoor: Contained – containing (and protecting) the foraging of the birds in some way – within a fence, field pen, or netting. Containment allows management of bird grazing where you want it.

Yarding – A common illustration is a stationary house with a fenced yard. However, the effort to avoid buildups of manure, pathogens, and worms, and to provide fresh forage, has ignited grassroots range poultry producers across the U.S. to search for ways to rotate pastures and provide multiple yards.

Field pens – Floorless pastured poultry field pens or shelters are moved daily; chicken tractor field pens are used in gardens for fertility and tilling.

Net-range or day-range (moveable) – Small portable poultry housing is used with moveable net fencing.

Net-range (stationary) – Stationary houses are also used with net fencing to make multiple yards.

Outdoor: Uncontained—you do not contain the foraging of the birds. Birds range freely during the day — usually in a pasture —and return to a portable house at night. The house is moved regularly to a fresh site.

Free-range – Houses on runners or skids; houses on wheels or "eggmobiles."

Colony – Several small roosting houses share a common nest house and feed area.

Note: ATTRA's *Sustainable Poultry: Production Overview* discusses production systems in more detail.

Choosing a production system involves the following considerations:

Type – Intensive vs. extensive.

Fertility – Heavy loads on a small piece of ground vs. light loads on a large piece of ground.

Flexibility – Getting started with a low investment and ability to switch systems.

Labor – Labor-intensive vs. automated to reduce labor.

Bird welfare – Providing fresh forage and fresh air, and permitting natural behaviors while limiting exposure to the elements, predators, and pathogens.

Site- or operation-specific needs – Handling rough terrain, keeping eggs clean, etc.

Please note that the terms classifying these systems are not legally binding terms, but rather popular-usage terms in the U.S., except for the term "free-range." However, the USDA definition of free-range livestock – free access to the out-of-doors for a significant portion of their lives – is vague.

Nuts and Bolts

Housing – There are many variations on pens and houses. Materials and construction may depend on the resources and skills of the producer. Hoophouses are popular. Many housing topics (i.e. floor vs. no floor, litter vs. no litter, access and number of popholes, etc.) are better discussed under the production system. Cross-over information from the conventional industry is useful (i.e. ventilation, insulation materials, etc.).

Lighting – Usually natural light is used, except when managing layers and pullets. Bird reproductive behavior and activity are related to the length of the photoperiod. Artificial lighting stimulates production during days of declining natural light, resulting in a more constant supply of eggs. Long light wavelengths (red, orange, and yellow light) stimulate sexual activity which can lead to aggression. Fluorescent lighting is short wavelength lighting and does not stimulate sexual activity; incandescent lighting is long wavelength lighting.

Litter – Litter is used widely in brooding and by some range poultry producers in portable houses during grow-out.

It can help provide insulation during cold periods but is troublesome to clean out from a house. It also absorbs manure and can be used later as compost for fields. There is some interest in bioprocessing litter in the house.

Net fencing – Portable electric netting is used to make multiple paddocks. It is versatile and convenient, but time is needed to master the technology.

Land Management – Land is usually managed for ruminants (perennial polyculture) but there is some interest in specialty poultry pasture. Producers have turned to old research on clover, alfalfa, and other forages. Poultry may prefer broad-leafed plants to grasses, but the use of oats holds interest. Shade can be provided with trees or shade crops.

Feeder/Waterer design – Information is readily available on automated feeding and watering for large commercial flocks in confined housing, as well as on labor-intensive, manual feeding and watering for backyard flocks.

However, it is a new frontier for systems for small commercial flocks, especially those that are portable. Five-gallon water buckets are being replaced with piped water, and bulk feeders are built to hold more feed. Some producers provide feed and water both in the house and outdoors. Producers need to be careful to provide sufficient water, especially during hot weather, and ensure it is cool enough to drink.

Brooding and transition to pasture – Although information exists for backyard and large-scale commercial brooding, producers are exploring new ways to brood small commercial flocks and even do field brooding.

Weather – Weather conditions are big variables for outdoor poultry operations. Year-round production systems can plan for climate and weather patterns. However, seasonal production systems provide less shelter and are more subject to drastic, unexpected temperature swings, storms, and winds.

Winter Production – Layers are usually over-wintered by backyard producers. However, it is a new frontier for year-round production of broilers and eggs on range. Birds need to be kept warm and water prevented from freezing or being too cold. There may be long periods when birds do not go outdoors. Eggs need to be kept from freezing.

Predators and Pests – The use of electric net fencing during the day and predator-proof housing at night can protect birds from many predators. Keeping housing away from woods, frequent moves, and guardian animals also help. However, overhead predators such as hawks are a difficult problem to solve. Producers try many options such as scarecrows, stringing shiny objects such as CDs, and keeping the housing close to a residence.

Mortality – It is usually high for beginners, but experi-

enced producers may have 5% mortality or less.

Note: ATTRA's Sustainable Poultry: Production Overview has more details on these nuts and bolts topics.

RANGE POULTRY PRODUCTION TOPICS

Health Issues for Range Poultry Production

Although many producers consider their range poultry flocks to be healthy, poultry health is affected not only by infectious disease but nutrition, genetics, trauma, toxins and stress. In dealing with infectious disease, producers need to have an understanding of immunology concepts, pathological agents (bacteria, virus, and fungi), and specific diseases that commonly affect poultry (i.e. Marek's, Newcastle, Fowl Cholera, coccidiosis, etc.). Little diagnosis is done and there is no coordinated reporting mechanism in place to know what disease problems affect range poultry. State-sponsored diagnostic labs and state poultry health Extensionists can offer diagnosis and technical support concerning vaccination programs, etc. Many producers are interested in control and prevention of coccidiosis, parasites, cannibalism, etc. rather than treatment. Or they are interested in alternative treatments such as herbal remedies, diatomaceous earth, probiotics, etc.

Are birds on range healthier than indoor flocks? When raising small outdoor flocks, disease challenge levels are low compared to industrial production because the birds are not as concentrated. Also, air quality is improved since high indoor ammonia levels cause immunosuppression. Exercise and activity help reduce disease problems related to boredom, and UV light is a good sanitizer for pathogens.

However, on-range birds are exposed to many pathogens transmitted by wildlife, cattle, earthworms, grasshoppers, pillbugs, snails, and slugs (intermediate hosts for poultry parasites). Since many of the flocks are multi-age, older birds act as reservoirs of pathogens. Multi-species flocks can also be problematic since some species serve as disease carriers for other species. Since on-range birds are kept longer, they have more opportunity to develop infections.

Feeding Chickens

As the major production cost in poultry production, feed requires close attention. Alternative poultry production focuses on natural feed, avoiding routine medication and unappealing by-products typically used in the conventional industry. Poultry feeds should contain sources of protein, energy, vitamins, and minerals. In the U.S., protein is usually provided by soybeans, energy by corn, and vitamin and mineral pre-mixes are added. Range poultry producers usually prefer roasted soybeans. Local feed mills may be able to provide a poultry vitamin and

mineral pre-mix, as well as calcium, phosphorus, and salt but many producers prefer Fertrell's Nutribalancer™. There is interest in alternative feed ingredients (kelp, sprouted grain for winter feed), and feeding flax to increase omega-3 fatty acids in eggs and meat.

Producers buy unmedicated commercial diets, work with feed mills to custom mix a diet, or make homemade diets. The range poultry movement is not well served by nutritionists, and homemade diets in particular may not be optimized. Many producers balance the rations themselves or use a trusted recipe. The number of diets a producer can realistically keep on-farm is limited, so diets may not match the birds' stage of growth. Some are interested in feeding whole grains in combination with concentrates in order to use their own grain and reduce processing costs. Feeding whole grains and concentrates may also result in more optimized diets since birds can self-select. Birds on pasture also eat forage and live protein (insects, worms, etc.)

Breeds

Range poultry producers usually use Cornish Cross for meat production – the same genetics used by the industry and developed for confinement production. Producers and their customers appreciate the meaty breast and rapid growth; however, growth may be too rapid, resulting in ascites syndrome and other health problems. In addition, the broilers are not active foragers.

Specialty broiler genetics for pasture-rearing have been developed in Europe but are not yet very accessible in the U.S. These genetics are slower growing and have been developed for gourmet taste since they are harvested at maturity.

Heritage chicken breeds in the U.S. are currently not suited for commercial production due to very slow growth and comparatively small breast. However, heritage turkey breeds such as Bourbon Red grow well, have good market conformation, and excellent taste. Breeds used for layer production in the U.S. are varied and include Leghorn (white eggs) and Rhode Island Red and New Hampshire (brown eggs). See ATTRA's *Label Rouge: Pasture-Raised Poultry in France* for more details on slow-growing commercial breeds and sources.

Processing

Small producers usually process birds on-farm. There are very few plants that will do custom processing. Birds are caught, crated, and then put in kill cones where the throat is slit. Stunning is not typically used on-farm. After bleed out, birds are scalded and feathers removed with a small mechanical picker. Evisceration is usually done on stainless steel tabletops and then birds are chilled in ice

water. Birds are usually bagged for customers and purchased the same day. Some are stored and aged in a cooler. It is important to reduce the temperature of the carcass to 40°F within four hours to prevent microbe growth and ensure food safety.

There are sources of small-scale poultry processing equipment, but they are generally expensive, and many producers buy used equipment or make their own. Mobile processing units are sometimes built on trailers to be shared by several producers.

Some producers are building processing plants that will meet government-inspection requirements. However, there is a lack of information on building and equipment requirements for low-volume poultry processing plants, as well as little how-to information on the building process itself. Air-chilling holds interest because it does not allow the 8-12% water uptake that immersion chilling in water does. Whole birds are usually sold, but cut-up is increasing in importance. (Contact ATTRA for more information on small-scale poultry processing.)

Egg processing is usually by hand, but more producers are looking at equipment for egg washing, candling, and grading.

Economics

Range poultry can provide supplemental income on a small scale. Many producers raise several thousand birds per year and report that they are easy to direct-market. Producers can get in with a low initial investment – under \$1,000 if used processing equipment is found or made by the producer. Most producers sell meat directly, netting about \$2 to \$3 per bird. When farmers start out with their first batch of birds, hourly earnings may be very low. However, as they gain experience and their efficiency increases, hourly earnings also increase. University of Wisconsin studies showed an experienced farmer can earn as much as \$10 an hour. Eggs provide a particularly good cash flow because producers have marketable produce to sell every day.

Budgets detailing expenses are available in NCAT's *Growing Your Range Poultry Business: An Entrepreneur's Toolbox*. In addition, the Toolbox can help you study the feasibility of a start-up or expanded enterprise and plan your business. It takes you through a marketing plan, production plan, and using an income statement to determine if your enterprise will be profitable, and a cash flow plan to determine if you can afford to do it. Some producers invest substantial money in their operations and need to develop a business plan.

Marketing

Pastured poultry founder Joel Salatin is an expert at

direct-marketing and teaches producers to build relationships with customers. Customers come directly to the farm or meet the farmer at a farmers' market, where they may learn about the production practices used on the farm and take advantage of the opportunity to support a local farmer. Relationship marketing cannot be replaced.

Farmers usually receive about \$2.00 per pound for the meat (whole birds) and \$1.50 to \$2.00 for a dozen eggs. Advertising is usually word-of-mouth, but some producers have web sites. A central place to advertise is www.eatwild.com where suppliers are listed by state. Although in many states, it is legal to process 1000 birds per year on-farm and sell to consumers, regulations surrounding on-farm processing are notoriously murky.

As producers move beyond direct marketing, market plans will become more important. Market research can be based on secondary sources. There is a growing body of information on the natural and organic markets. The Hartman Group in Bellevue, Wash., conducted a national study in the mid-90s and found 52 percent of consumers want to buy "green." The organic foods industry reached almost \$8 billion in total retail sales in 2000, with 20 to 25 percent annual growth from 1990 to 2000. Primary market research is do-it-yourself and involves surveys, interviews, observation, test marketing, etc.

There are many distinctions consumers make about poultry (image, quality, food safety, and local production). Data showing differences in meat or eggs is limited, although producers present a great deal of anecdotal evidence. Unfortunately, range poultry production systems in the U.S. do not have legal definitions, contributing to consumer confusion about production practices. In contrast, the European Union requires free-range poultry to have a limited density (1,000 hens per hectare– 400 per acre) and the land must be largely covered with vegetation.

Certification programs can help with consumer education and promote niche markets, such as the USDA's National Organic Program. In France, range poultry are marketed under the Label Rouge certification system and command 30 percent of poultry market share. Regular taste-testing is a part of the certification (see ATTRA's *Label Rouge: Pasture-Raised Poultry in France*). In the U.S., consumer groups like Slow Food and Chefs' Collaborative are interested in natural poultry.

Putting It All Together

Sustainable agriculture refers to agriculture that is environmentally sound, economically viable, and socially just. Main considerations include:

Environmental: The re-integration of livestock with the land base is a key concept of sustainable agriculture. When feed is produced on farm and manure recycled

back to crop fields, nutrient cycles are closed.

Economic: You should be profitable (unless you intentionally make it a hobby or intend to subsidize with other farm operations). Otherwise you will not remain in business and will not be able to positively impact your community and environment.

Social: Agriculture is increasingly more consumer-oriented as consumers make more informed choices about food and increase their knowledge about how it is raised.

Working together in cooperative groups and coordinated efforts will be key as the range poultry movement grows and provides regionally produced food.

Resources:

Publications available from ATTRA (800-346-9140):

Sustainable Poultry: Production Overview

Growing Your Range Poultry Business: An Entrepreneur's Toolbox

Feeding Chickens

Organic Livestock Feed Suppliers

Range Poultry Housing

Pastured Poultry: A Heifer Project International Case Study Booklet

Legal Issues for Small-Scale Poultry Processors (a Heifer Project International publication)

Label Rouge: Pasture-Raised Poultry in France

American Pastured Poultry Producers Association (APPPA)

PO Box 1024

Chippewa Falls, WI 54729

715-577-5966 (cell)

Contact: Jody Padgham

www.apppa.org

Grit@apppa.org

Membership is \$20 per year and includes newsletter.

Damerow, Gail. 1995. *A Guide to Raising Chickens*. Storey Communications, Pownal, VT. Order from: Storey Books, 4818 West Converter's Drive, Appleton, WI 54913

800-441-5700

\$14.95 plus \$3.95 shipping

www.apppa.org

For more information contact:

Anne Fanatico

National Center for Appropriate Technology (NCAT)

P.O. Box 3657

Fayetteville, AR 72702

800-346-9140

www.attra.ncat.org

See page 30 for more information about Anne Fanatico.