# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>5</td>
</tr>
<tr>
<td>The Journey</td>
<td>5</td>
</tr>
<tr>
<td>What is the System?</td>
<td>6</td>
</tr>
<tr>
<td>Economic and Ecological Diversification</td>
<td>7</td>
</tr>
<tr>
<td>Adaptability and Resilience</td>
<td>7-8</td>
</tr>
<tr>
<td>Competitiveness</td>
<td>8-9</td>
</tr>
<tr>
<td>Opportunity</td>
<td>9</td>
</tr>
<tr>
<td>Chapter 1 – System Principles</td>
<td>10</td>
</tr>
<tr>
<td>Permaculture Principles, Ethics and Nutritional Values</td>
<td>11</td>
</tr>
<tr>
<td>Chapter 2 – Coop and Paddock Design</td>
<td>12</td>
</tr>
<tr>
<td>Site Selection and Land Access</td>
<td>12-13</td>
</tr>
<tr>
<td>Coop Designs</td>
<td>13-14</td>
</tr>
<tr>
<td>Chapter 3 – Paddock Orientation and Establishment</td>
<td>15</td>
</tr>
<tr>
<td>Orientation</td>
<td>15</td>
</tr>
<tr>
<td>Site Selection</td>
<td>15-16</td>
</tr>
<tr>
<td>Paddock Establishment</td>
<td>16-18</td>
</tr>
<tr>
<td>Perennial Selection</td>
<td>18-20</td>
</tr>
<tr>
<td>Field Layout</td>
<td>20-21</td>
</tr>
<tr>
<td>Paddock Access</td>
<td>21</td>
</tr>
<tr>
<td>Chapter 4 – Standards for a Regenerative Model of Raising Poultry</td>
<td>22</td>
</tr>
<tr>
<td>Housing and Shelter, Paddock</td>
<td>23</td>
</tr>
<tr>
<td>Feeding and Watering</td>
<td>23</td>
</tr>
<tr>
<td>Brooding, Transport and Loading, Regenerative and Ecologically Sound, Social</td>
<td>24</td>
</tr>
<tr>
<td>Humane Management, General Management</td>
<td>24</td>
</tr>
<tr>
<td>Chapter 5 – Paddock Management</td>
<td>25</td>
</tr>
<tr>
<td>Spring Preparation of Annuals</td>
<td>25-26</td>
</tr>
<tr>
<td>Sowing Small Grains</td>
<td>26-28</td>
</tr>
<tr>
<td>Weed Control</td>
<td>27-28</td>
</tr>
<tr>
<td>Straw Mulch</td>
<td>28-29</td>
</tr>
<tr>
<td>Sample Rotation Schedule</td>
<td>29</td>
</tr>
<tr>
<td>Chapter 6 – Flock Management</td>
<td>30</td>
</tr>
<tr>
<td>Sourcing Inputs (chicks, feed, grain, bedding, straw, wood chips)</td>
<td>30</td>
</tr>
<tr>
<td>Watering System, Scheduling</td>
<td>31</td>
</tr>
<tr>
<td>Chick Arrival</td>
<td>31-32</td>
</tr>
<tr>
<td>The Right Temperature for Chicks</td>
<td>32</td>
</tr>
<tr>
<td>Bedding</td>
<td>33</td>
</tr>
<tr>
<td>Flock Health</td>
<td>33-34</td>
</tr>
<tr>
<td>Feeding the Chickens</td>
<td>35-37</td>
</tr>
<tr>
<td>Predator Control</td>
<td>37-38</td>
</tr>
<tr>
<td>Health Observation, Checking a Chicken’s Health</td>
<td>38-39</td>
</tr>
<tr>
<td>Biosecurity, Euthanizing of Sick Birds and Disposal</td>
<td>40</td>
</tr>
</tbody>
</table>
Manure Plan, Processing Plan 41
Coop Cleanout, Recordkeeping 42

Chapter 7 – Calendar: Production Protocols for Raising Broilers 43
January, One Month Before Arrival 43
At Least 7-10 Days Before Arrival 43-44
At Least 1-2 Days Before Arrival 44
Day of Arrival, Week 1 (1-7 days) 45
Week 2 (8-14 days), Week 3 (15-21 days) 46
Week 4 (22-28 days) 46-47
Week 5 (29-35 days) 47
Week 6 (36-42 days) 47
Week 7 (43-49 days), Week 8 (50-56 days), Week 9 (57-63 days) 48
Week 10 (64-70 days) 48-49
Flock End 49

Chapter 8 – Small-business Management 50
The Business Plan 50-51
Marketing Management 51-55
Operations Management, Human Resource Management 55
Financial Management 56
Profit and Loss/Budget of Operations 57-62
Managing Systems of Support 62-63
Conclusion 64
INTRODUCTION

This manual is designed for aspiring and established farmers who are interested in a profitable way to build a more sustainable farming and food system. The manual’s contents reflect years of effort by dozens of people and many institutional partners to develop a Poultry-Centered Regenerative Agriculture system.

Our research is based on several prototype units designed, built and operated in real-world conditions. The system’s design is intended to maximize efficiency while producing the highest quality products. Once fully deployed, this system has the potential to generate significant economic, ecological and social benefits – increasing farm income, building wealth, protecting and restoring the ecology, and improving community health.

The Journey

The Poultry-Centered Regenerative Agriculture system is a response to a current food and farm system that doesn’t work. Due to lack of land access and other start-up costs, many beginning farmers find it hard to break into farming. In addition, the current food system, with its reliance on low-wage labor, externalized costs and unchecked market power, has taken a toll on our public and ecological health.

Conventional agricultural systems have historically struggled to provide living wage jobs throughout the agricultural sector. This emphasis on “getting big or getting out” and planting “fencerow to fencerow” has made many small family farms unable to compete in a global market. The necessary investment in equipment and infrastructure forces small family farms to choose: Grow to take advantage of economies of scale, or divest and pursue alternative employment. Farms, as a result, are growing to tremendous sizes that are highly susceptible to changing market conditions because they lack production diversity. An alternative system exists, though, that relies not on each farm becoming larger, but rather groups of small farms joining together, if they wish, as a cluster to achieve many of the same scale benefits without building confinement facilities or planting thousand-acre monocrops.

This system combines the energy-converting prowess of chickens with the productive capacity of perennials. This multi-tier system takes advantage of the real spatial capacity of every acre to produce a variety of products without drastically increasing land costs or labor requirements. Through the testing of various feed rates and perennial companion plants, Sharing Our Roots (formerly Main Street Project) and its partners have developed a system for maximizing the productive capacity of each poultry-centered unit.

What Is the System?

The basis of the Poultry-Centered Regenerative Agriculture system is the **1.5 acre unit of production**, the most basic measurement for performance. Each unit is
the starting point for production and, in standardized increments, can be increased to meet each farm’s needs and capacities.

Each unit consists of a coop, two paddocks, grain storage and a perennial canopy cover. In this unit a farm can produce a 1,500-bird flock two to four times annually. Final coop design dictates the seasonal range in which poultry can be raised, either limiting production to the summer months, extending production into early spring and late fall, or facilitating year-round production. A complete coop with solarium can safely produce three-four flocks a year even in Northern Tier states. The design included in this manual represents a year-round model, capable of the harshest winters and a diversity of uses.

Depending on the type and maturity of perennial cover within each paddock, farmers can expect to harvest valuable products that complement the economic return from poultry. This unit design protects poultry from extreme weather events while still allowing the free range of animals throughout the paddock. A robust canopy mimics the natural environment chickens evolved to utilize; as a result, they thrive in our paddocks. The choice of perennial plants will vary from farm to farm; we have included hazelnuts as our local plant of choice. Hazelnuts are not required and you may want to substitute other locally adapted species.

_Diversity is essential. Diversity buffers each producer from changing market conditions as well as severe climate events._ Unlike corn or soy, a poultry unit does not rely on timely rain or a specific planting window. A farmer using this system does not need to worry that market prices will wipe out the value of their farm; diversity ensures the land is always producing a valuable product. It is the synergy between chickens and perennials that creates farm resilience.

Our year-round or extended-season coops can also incorporate a solarium to mimic a free-range environment when weather or bird age limits outside roaming. Through a simple heat capture system, the entire coop can provide a safe warm environment for chickens in the most extreme situations. Designed to withstand Midwest winters, our model coops represent the pinnacle of potential. In more mild environments the total cost of the coop can be reduced to account for less extreme conditions during the productive portions of the year.

**Economic and Ecological Diversification**

While free-range poultry is central to the system, it is by no means the only source of revenue produced with Poultry-Centered Regenerative Agriculture. A perennial canopy is central to the holistic production of chickens and can be leveraged in the farmer’s favor. Every region will have a different...
perennial canopy that suits the climate and market conditions. In the Upper Midwest, hazelnuts are well suited for the local environment and are undisturbed by local weather conditions. They likewise produce a high-value product in the form of nuts. When planted with sufficient space between rows (we recommend 15 ft.-20 ft.), alley cropping can also be incorporated in the paddock. A diverse agroforestry system can and will have space for trees, shrubs, annual crops, animals and a healthy natural biota. Additional shrubs and trees can be incorporated within each paddock. For example, elderberries can provide a fast canopy that yields flowers and berries much sooner than hazelnuts, and they do not impede the addition of slower growing species.

Diversity is a compelling risk management strategy within any agricultural system. With so many variables dictating the productive capacity of any farm, cultivating a diversity of species ensures that the loss of one does not equate to the loss of the farm. Selling animal protein alongside hazelnuts from each paddock diversifies the markets that are available to each individual farmer. Value-added products, like hazelnut oil, can further insulate farmers from loss and improve farm-generated income. Preventative design features, like diversity, incorporated into a production model reduce reactionary responses to negative economic and climatic factors. The less a farmer has to worry about the future, the better able they are to farm in the now.

Adaptability and Resilience

Adaptability and resilience are foundations that influence our designs and recommendations. To that end we offer a variety of options in coop designs that account for environmental, economic and production considerations. For example, a year-round coop design is capable of being used both for broilers as well as egg layers with only minor modifications. A diverse host of livestock can also take advantage of the coop if poultry production becomes unviable. On at least one occasion, a Sharing Our Roots prototype coop has been repurposed as a goat barn for the winter. Likewise, the solarium follows a design very similar to a cold frame and can be used to produce heat-loving crops in summer or extend the season in spring and fall for mild-tempered crops.

We strongly encourage producers to diversify their products. Low-acreage, high-value crops that do not conflict with poultry labor requirements are a highly effective way for farmers to make year-to-year adaptations to market conditions. Crops like garlic offer a high return on investment that do not need specialized equipment beyond a tractor and rototiller. Various other perennial and annual herbs, flowers and botanicals have market values that make them favorable to incorporation into a productive farm. A market garden can also be a highly valuable component within any individual farm. The fertility immediately available from a poultry unit complements the nutrient requirements of many heavy-feeder crops; even chicken manure can be making you money. An adaptable farmer should always understand the available options and be prepared to change business plans as needed.
A changing climate presents unique risks for agricultural resilience. Most crops and animals cannot be fully shielded from climatic conditions and are therefore at immediate risk. The 2018 hurricane season was a stark reminder of the fragility of many modern animal-based agricultural businesses. Even with updates made specifically to help prevent instances of manure lagoon overflow, Hurricane Florence showed how quickly the situation can change. Hurricanes are only one of the weather events projected to continue increasing in severity throughout the foreseeable future. Instances of heavy rainfalls, tornadoes, drought and fire likewise place agricultural systems at increased risk. Diverse farms are not wholly immune to climatic factors but are often better suited to weather storms and extreme events.

**Competitiveness**

A competitive business model is going to be defined by a variety of factors. Access to markets, barriers to entry, information availability and location will all play into the ongoing success of any farm. Each farmer will need to make individual decisions that maximize returns from each investment.

The two main barriers to entry for any farmer are land and capital investment when approaching a new production model. A farmer interested in growing corn needs a combine, for wheat a thresher, hay requires another set of tools. Each of these components requires a large investment in specialized machinery and land to cultivate. Established farmers have the advantage by owning or leasing land that can be transition to new systems but beginning farmers are often faced with daunting financial requirements that deter entry into the industry. Land purchase alone, before tractors, seed, and labor, prevent many potential producers from entering markets. This manual is designed to help beginning farmers understand what it takes to be successful and to help them articulate how they will be successful if they choose to pursue loans or other financial arrangements. When building a farm, sweat equity and a savvy business plan are always key.

Inherent value can be leveraged when developing a competitive agricultural business. Consumers are often willing to pay a premium for happy animals, happy farmers and healthy ecosystems. The general understanding of ecological impacts has reached a critical threshold where grass-fed beef, free-range poultry and non-confinement pork sell for substantially more than their conventional counterparts. Free-range poultry and perennial agriculture have inherent value to consumers, above and beyond improved taste and texture. Our Poultry-Centered Regenerative Agriculture model is meant to capitalize on this value in the marketplace.

The value propositions embedded in the system presented here are capable of capturing consumers’
imagination and building a market tipping point without one-to-one price competition with conventional systems. This phenomenon is already happening. A general education campaign in conjunction with retail availability will continue to hasten a transition away from confinement mega barns and return real value to farmers and consumers.

**Opportunity**

The timing for launching this new sustainable system could not be better. Consumer demand among universities, schools, hospitals, and various demographics for local, naturally healthy food is growing. As awareness has grown of the unfair and unsafe labor practices on many industrial farms, a conscious shift towards sustainable, and now regenerative, agriculture has developed. We at Sharing Our Roots are working to expand choice and opportunity for farmers by doing the leg work. We’ve gone through the financials, designs and research to make choosing a new model that much easier.

The markets exist right now for thousands of coops to be built all over the country. In 2018, the average American consumer ate 93 lbs. of chickens according to a USDA-funded survey. This astronomical demand means that one of our units is capable of supplying 200 people with their annual poultry consumption. If in an average American town of 20,000 people purchase local poultry first, they would generate nearly $4,000,000 in sales revenue, $850,000 in processing revenue (when the processor is local), and at least $2,000,000 in supporting industry revenue. The impact on a small town’s economy would be tremendous.

The only thing holding back the system now is producers. In reading this manual you are taking the first steps towards producing happy and healthy chickens that command a market premium. Farming isn’t for everyone, but if you’ve made it this far, it might be for you.

If you are interested in producing chickens, whether under the Poultry-Centered Regenerative Agriculture model or just as a backyard flock, invest in a library card or a solid book collection for yourself. There are a number of wonderful books available that we use as references ourselves that will help make you a better farmer and producer. If you want to build a coop, then continue on to the production manual or get in touch with our staff. We provide consultations for farmers whether big or small who find themselves needing more than what is in the manual. The first step in building a new agricultural system is farmers creating great things with soil, sunshine and a little bit of water.
CHAPTER 1
SYSTEM PRINCIPLES

Poultry-Centered Regenerative Agriculture builds upon a rich history and understanding of food systems. Since the birth of agriculture, groups around the world have developed diverse and complex relationships with poultry and perennials. These agricultural traditions are at the core of our work along with more modern interpretations of permaculture, sustainability and real-cost accounting. This system follows five principles:

1. Sustainable
   - Conserves, protects and regenerates natural resources, landscapes and biodiversity
   - Promotes healthy local economies; is socially diverse and ecologically designed
   - Meets and adjusts to market demands and main support systems
   - Meets food and nutritional needs
   - Relies primarily on naturally occurring bio-physicochemical processes for energy transformation and ecological and economic efficiency

2. Resilient
   - Able to withstand, react and adapt to shock, be it ecological, economic or social
   - Diverse in size and scale, geography, culture and food choices
   - The system’s design and local blueprint support natural ecological processes, are economically flexible, and socially diverse
   - If a system is resilient, it is sustainable: the opposite is not necessarily true

3. Healthy
   - Supports the health of all farmers, workers and consumers in the chain
   - Accounts for public health impacts across entire lifecycle of products - seed to table
   - Must not use synthetic chemicals

4. Fair
   - Promotes equitable access to affordable food that is culturally appropriate
   - Pays fair prices for farmers and fair wages for workers
   - Promotes democratically run, inclusive organizational structures to distribute ownership and control of the system by design
   - Supports equal participation and career advancements throughout the system

5. Transparent
   - Provides opportunities for farmers, workers and consumers to learn how food is produced, processed, distributed, marketed, consumed and disposed of
   - Empowers farmers, workers and consumers to participate in decision making throughout the systems and allows the system the flexibility to respond
   - Real costs of food are included in the price; costs are not externalized

These principles are a mechanism for maintaining accountability as individuals, groups and businesses. While at any given moment or with any decision not every principle will be engaged, it is
important to regularly review all of the principles. Achieving one principle should not be done at the cost of disregarding another. If a task, a decision or a business deal violates even one principle, ask yourself: How or why is there a violation? What steps can be taken to remedy the situation?

**Permaculture Principles and Ethics**

The 12 principles of permaculture design, based on indigenous knowledge, are valuable guides to creating healthy and resilient food systems. The three ethics of permaculture -- Care of the Earth, Care of People and Fair Share -- are likewise integral to Poultry-Centered Regenerative Agriculture.

1. Observe and interact
2. Catch and store energy
3. Obtain a yield
4. Apply self-regulation and accept feedback
5. Use and value renewable resources and services
6. Produce no waste
7. Design from patterns to details
8. Integrate rather than segregate
9. Use small and slow solutions
10. Use and value diversity
11. Use edges and value the marginal
12. Creatively use and respond to change.

**Nutritional Values**

The Poultry-Centered Regenerative Agriculture system is designed to maintain a set of standards regarding the nutritional quality and the value of poultry and perennials. A nutritional value system that ensures that the end product has all components present that consumers have been told are present. Changes in production protocols must result in maintaining the nutritional standards or improving the nutritional value of a product.

1. Food must provide the maximum nutritional value possible.
2. Animals must be fed diets that consist of evolutionarily relevant foods free from harmful chemicals that can be transferred to consumers.
3. No known bioaccumulant or toxin can be present within feed sources.
4. The end product must be free of pathogens that can harm the consumer.

The end goal of both the setting of specific standards and ideological frameworks is a chicken that tastes better, lived a healthier life, positively impacts the surrounding environment, and builds resilient food communities. To achieve even one of these goals is a positive step forward; achieving all of them is to farm the Poultry-Center Regenerative Agriculture way.