INTEGRATED FARMS

This presentation is sponsored by the Beginning Farmer and Rancher Development Program.
Integrated Farms

- In the 20th century, farming saw a gradual separation and specialization of production.
- Large intensive farms that are specialized in just one type of crop or animal became the norm.
- This change meant that now, crops need to be harvested and then transported and transformed into feed that is then transported to the livestock farms.
Integrated Farms

- A different production model is based in the integrated production of livestock and crops
- In this model, crops and livestock interact to create a synergy with recycling allowing the maximum use of available resources

Manure is used to enhance crop production, crop residues and by-products feed the animals, supplementing often inadequate feed supplies, thus contributing to improved animal nutrition and productivity
Examples of Integration of Crops and Livestock

**PIG TRACTOR:** systems where the animals are confined in crop fields well prior to planting and are used to “plow” the field by digging for roots.
Examples of Integration of Crops and Livestock

**CHICKEN TRACTOR:** poultry used in orchards or vineyards after harvest to clear rotten fruit and weeds while fertilizing the soil
Examples of Integration of Crops and Livestock

Cattle of other livestock allowed to graze cover crops between crops on farms that contain both cropland and livestock pasture.

Sheep grazing the cover crop at a vineyard.
Examples of Integration of Crops and Livestock

Animals grazing in forest areas
Examples of Integration of Crops and Livestock

Goats for clearing land or weed control
Examples of Integration of Crops and Livestock

Multi-species grazing systems

- This option not only helps integrate crops with animals, but also helps to improve the use of the crops by taking advantages of the different grazing strategies of the different species.
Examples of Integration of Crops and Livestock

Feeding the animals with leftover or damaged fruits and vegetables
Examples of Integration of Crops and Livestock

- Bee hives kept in the field to pollinate the orchards and crops
  - Almost all crops and flowers depend on insect pollinators
  - A bee hive can produce over 100lbs of honey a year (if they have enough nectar available)….you can then sell this product!
Integrated Farms

- An important characteristic of integrated farms is that all the different subsystems (crops, trees, animals) are part of the same plan.

- This is different from diversified systems where the different subsystems coexist in the farm independently from each other.
Goals of Integrated Farming Systems

- Year-round income
- Risk avoidance
- Increased input-output efficiency
- Increased productivity and profitability
- Reduced costs in feed and labor
- Year-round employment opportunities
- Increased efficiency in labor and resources
- Reduced use of external inputs
- Recycling of resources
- Increased sustainability
- Avoiding deforestation
Integrated Farms

Examples of different production systems included in integrated farms:

1. Crop production (fruits and vegetables)
2. Orchard
3. Flowers and herbs
4. Fodder (hay) production
5. Cattle production (dairy/beef)
6. Sheep and goat production
7. Swine production
8. Poultry production (dual purpose)
9. Honey
10. Compost/Humus production
## Integrated Farms: Crops

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fodder</strong></td>
<td>Alfalfa, barley, clovers, brassicas, grasses (native grasses, Bermuda, fescues, orchard grass, ryegrass, timothy grass)</td>
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<tr>
<td><strong>Grain</strong></td>
<td>Corn, wheat, barley, sorghum, millet, oats, rye, buckwheat</td>
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<tr>
<td><strong>Vegetables</strong></td>
<td>Peas, beans, tomatoes, eggplants, peppers, potatoes, broccoli, cauliflower, cabbage, onion, garlic, chives, carrots, lettuce, melons, cucumber, squash, pumpkin</td>
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<tr>
<td><strong>Fruits</strong></td>
<td>Berries, red currants, black currants, grapes, melons, figs</td>
</tr>
<tr>
<td><strong>Roots</strong></td>
<td>Beets, rutabaga, carrots, yams, radish, salsify, ginger, sweet potato</td>
</tr>
<tr>
<td><strong>Herbs</strong></td>
<td>Culinary herbs (thyme, lavender, parsley, basil, rosemary, bay laurel, dill) Medicinal herbs (St. John’s Wort, chamomile, elderberry, primrose, fenugreek, licorice, marigolds, marsh mallow, milk thistle)</td>
</tr>
<tr>
<td><strong>Fruit Trees</strong></td>
<td>Apricots, cherry, citrus, kiwifruit, pear, apple, persimmon, plum, cashew, peach</td>
</tr>
<tr>
<td><strong>Nuts</strong></td>
<td>Almonds, chestnuts, pecan, hazelnut, walnut, pine nut</td>
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</tbody>
</table>
Integrated Farms: Livestock

The selection of livestock is dependent upon family consumption, potential market and availability of resources.
Integrated Farms: More Options

- **Agroforestry**
  - *Timber, nuts, fodder, branches, etc.*

- **Forest Farming**
  - *Mushrooms, flowers, herbs, pinecones, ferns, etc.*

- **Aquaculture**
  - *Walleye, bait fish (shiners/minnows), catfish, bass, shrimp*
Integrated Farms

- Some of the most common combinations are:
  - *Crop-livestock-agroforestry system*
  - *Crop-livestock-poultry-agroforestry system*
  - *Crop-fish-poultry-agroforestry system*

- However, depending on your interests and location you could have any combination
Where do I start?

There are several things that need to be considered BEFORE choosing the type of production system(s) for your farm:

■ Soil and climatic features of the selected area
■ Availability of resources, land, labor & capital
■ Present level of utilization of resources
■ Economics of proposed integrated farming system
■ Managerial skill of the farmer
■ Personal preferences
■ Marketing opportunities
Where do I start?

- Once you have selected the different enterprises that you would like to have, develop a plan.
- Start with one or two of your enterprises (usually a fodder crop and a type of livestock...poultry is common).
- Once those enterprises are going then you can start adding another element to the farm that can be connected to the other two (a vegetable patch or an orchard in a field treated with the compost of the animals).
- Or start implementing some agroforestry practices that will need attention later on.
What do I need?

- In traditional agriculture, labor is usually limited to one or two times in the year, but with so many enterprises of integrated farming, labor is spread throughout the entire year
  - You will need reliable labor that can stay with you for long periods of time (if you plan on doing something bigger than one person can handle)
  - You will need year-round outlets for your products (marketing)
What do I need?

- Two of the most essential elements of integrated farming are
  - PLANNING and ORGANIZATION
What do I need?

- You need to be able to know how many animals you will be able to keep before you need to buy more feed.
- You need to plan your weekly & daily activities so that you can oversee all the different elements on your farm.
  - There will be a time when the crops require more time and others when the chickens need more attention.
  - Keep records of EVERYTHING! It is the ONLY way to know what you have and what you need at any given time on the farm.
Integrated Farms

- Setting objectives and monitoring the results provides the needed information to improve farming operations.
- Each different element of the farm has to be monitored for both short term and long term goals:
  - Crop production
  - Livestock performance & well-being
  - Market outlets
  - Financial considerations
  - Environmental considerations
  - Family considerations
  - Staff training & motivation
Reality Check

- Few farms reach a high level of complexity and interconnectedness between the different parts of the farm.
- In the initial stage of the farm, there are usually many expenses.
- It is very labor intensive and time demanding.
- Farming requires planning and organizations to run all the different elements of the farm at their prime.
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