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## Corn-Livestock Integrated Farming System

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## **CORN-LIVESTOCK INTEGRATED FARMING SYSTEM**

Integrated farming system is a commonly used term to explain a more integrated approach to farming compared to monoculture approaches. It refers to agricultural systems that integrate livestock and crop production or integrate fish and livestock and may sometimes be known as integrated biosystems.



Also, integrated farming/integrated production or integrated farm management is a whole farm management system which aims to deliver more sustainable agriculture. It is a dynamic approach which can be applied to any farming system around the world.

low-cost rations for fattening cattle. Corn silage requires less labor per ton to produce than many other forage crops. It can extend the harvest period for the entire corn acreage and provide an opportunity for salvage of stressed or damaged cornfields. Also, corn silage can efficiently recycle plant nutrients, especially large amounts of N and K.

Corn silage has some disadvantages, however. It is difficult to market and transport very far. Corn silage can also lead to an increased potential for soil erosion and a subsequent loss in soil productivity when soil conservation practices are not a part of the production system.

**Corn residues:** There are large differences in the nutritional quality of different residue plant parts. The leaves and husks have much higher quality than stems and cobs. Utilization of crop residues as a forage resource must be managed properly to insure long term sustainability of the production system.



The crop provides livestock producers with a high-yielding, relatively consistent source of forage and the animals with a highly digestible and palatable feed. Corn silage produces more energy per acre than any other crop grown in Pennsylvania. Corn silage serves as a high-energy forage for dairy cows. This is most important for high-producing herds and on farms experiencing problems with making or buying high quality hay crop forage. Corn silage, with its relatively high energy content, is also well adapted for use in

### Benefits:

Incorporating livestock production into a cropping system offers additional opportunities to recover establishment and termination costs associated with cover crop management.



Additional benefits associated with integrating livestock into cropping systems include:

- Reduced risk of raising a single product
- Increased water infiltration and resistance to soil erosion
- Increased soil organic composition
- Reduced fertilizer uses from nutrient cycling

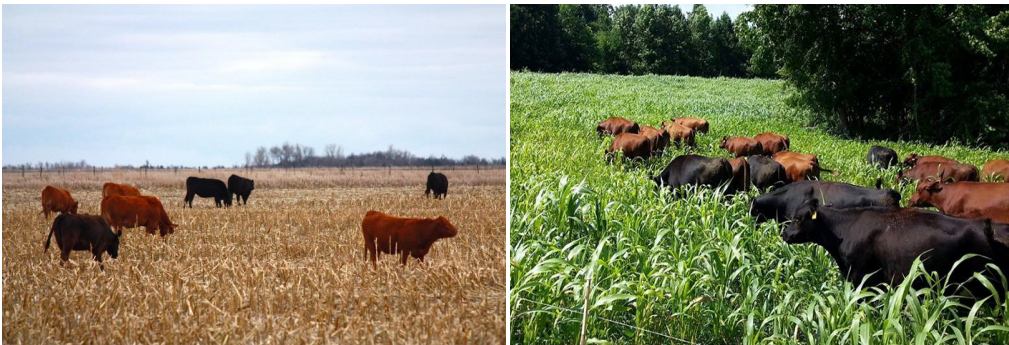
## Forage Cover Crops:

The opportunities to incorporate annual forages as a forage cover crop into current cropping systems could increase the supply of high-quality forage, while reducing erosion and nutrient leaching.



Seed corn production practices lend themselves to provide cover and serve as nitrogen scavengers. Grazing forage cover crops after seed corn production is common, but underutilized practice. Thus, the left excrements of the animals in the pasture area may be taken advantage as soil fertilizer which in turn becomes a replenishment for the depleted soil nutrients.

Grazing croplands can have positive effects for increasing soil microbial biomass and organic matter through the addition of manure.



## Utilizations:

Maize stover is commonly left on the field or buried to provide organic matter to the soil but is also used to feed livestock:

- Grazing. This is often done when stover is abundant in relation to livestock.
- Cut-and-carry after drying. This is done by stacking or baling, in the field or at the farm.
- Silage: it has to be chopped, moistened, well compacted and sealed.
- Feeding green maize stover tops is also practiced.

To use the corn as a forage feeds for animals. A green forage, particularly it contains the stalks, leaves and ears, is an energy-rich feed for ruminant livestock.



## Composition:

Maize stover contains different plant parts in variable proportions. Stalks are the main component (40-60%), followed by leaves (20-30%), cobs (15-20%) and husks (10-15%) (Lizotte et al., 2015).



## Poultry (chicken, pigeon, duck, turkey)

Dry the chicken coops to be used as a fertilizer for the soil. Use the compost as a planting media for the corn. If the corn is matured, harvest the cobs for food consumption and let the other cobs to be used as a feed for the animals.

When the corn plants have been established, allow the chickens to range freely around the plantation area to scavenge worms and feed on the weeds serving as a control agent.



## Rotational grazing area

Ruminants (buffalo, cattle, sheep, goat). Divide the plantation into four or six areas depending on how wide the cropping area. Make sure to install fences on the borders to prevent the animal graze in the unintended area. After harvesting the corn in one area, put the animals in the pasture to graze. Let the animals wander for some time until they have finished the leftover corn plants in one area before transferring. After the transfer of animals, till the pastured area for continuous planting cropping. Where the ruminants will graze in rotational pattern throughout the year.

Integrating cattle production into cropping systems through grazing or harvest of crop residues or producing forage cover crops within grain crop rotations are mechanisms to increase the availability of forage due to the shrinking perennial forage base.



### Advantages:

Rotational grazing is the practice of moving grazing livestock between pastures (often called paddocks) as needed or on a regular basis. There are many approaches and types of grazing that fall under the broad umbrella of rotational grazing. The simplest is moving livestock between paddocks every set number of days:

- two days
- one week
- one month



But well-managed rotational grazing means that you evaluate the nutritional and forage needs of your animals, assess forage quality and quantity, regulate the acreage of access and control which parts of the pasture/range that the animals have access to.

- Increased forage production.
- Increased soil fertility.
- Increased resistance to drought.
- Less wasting of forage.
- Soil compaction.
- Control fewer desirable plants.
- Limit feeding during times of drought.
- Improved animal management.
- Animal assessment.

### Corn as Forage:

Maize stover consists of the residues of maize plants grown for grain and left in the field following the harvest. It includes stalks, leaves, husks, and cobs. Because the amount of maize dry matter left on the field is similar to the amount of dry grain produced, considerable quantities of maize stover are available. Maize stover is often considered as the best of the cereal stovers for livestock due to its higher protein and energy content. However, it remains a highly fibrous feed of limited digestibility and palatability that may require treatments to enhance its nutritional value.

