

Under-Exploited Doublecrop Opportunities

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Introduction

The objective of this paper is to create awareness among Indiana forage producers about under-exploited crops that could fit into double-crop forage systems.

The Midwest USA has distinct seasons that create unique double-crop opportunities for livestock producers. There are many diverse annual crops that grow best in particular seasons of the year that can help improve the efficiency of the farming enterprise when utilized as a double crop. I want to make it clear, however, that I prefer using high quality perennial forages as the base of a livestock producer's forage program. Annual crops can create more "headaches" for producers than perennial crops; annual crops have to be found and purchased each year, seeded in a timely fashion each year (sometimes Mother Nature does not let that occur), and there is risk associated in getting a good stand established each year.

Used appropriately, annual crops can be an important component of the forage/livestock program; they can provide quick growth of emergency or supplemental feed, extend the grazing season, and be a rotational crop between alfalfa seedings to reduce autotoxicity concerns or when converting less desirable forages (e.g., endophyte infected tall fescue) to improved forages.

When to Consider Use of Annuals in the System

Specific double crop systems that warrant some thought include:

- Small grains (wheat, barley, and oat) harvested as grain and followed

immediately with a summer-annual grass.

- A perennial hay crop harvested for the last time in the spring followed by a summer-annual grass or a brassica like forage turnips.
- Corn silage harvest in late summer followed by a winter-annual small grain or annual ryegrass.
- Soybean as an oilseed (grain) harvested in the early autumn followed by a winter-annual small grain or annual ryegrass.
- Corn residues grazed immediately after corn grain harvest. One could argue that this is not a true double crop system but rather a more intense use of the corn crop. I liken the use of residues as the analogy of the addition of frosting (residues) to a baked cake (grain).

Crop Comments

Brown midrib sorghum-sudangrass The release of sorghum-sudangrass hybrids with the brown midrib trait has increased the digestibility of the consumed forage because of less lignin or altered lignin content. Brown midrib sorghum-sudangrass is an excellent choice when an emergency or supplemental feed is needed. This warm-season annual grass has been successfully used at the Southern Indiana Purdue Agricultural Center as an intervening crop between destruction of established endophyte-infected tall fescue and reestablishment to improved forage crops. Cattle performance has been enhanced with its use as compared to the traditional sorghum-sudangrass hybrids.

To minimize prussic acid concern, utilize the sorghum-sudangrass before a killing freeze occurs (For more information refer to Extension publication AY-196).

A slow curing rate can be a concern if the harvest package is dry hay.

Pearl millet This drought tolerant summer-annual grass has excellent utility when seeded as a double crop following winter wheat harvest in the early summer or a final harvest in May of a perennial hay crop. Since no prussic acid is found in pearl millet, unlike members of the sorghum family, one does not need to be concerned about release of hydrocyanic acid during times of stress caused by extreme drought or freeze damage. Regrowth of pearl millet is not as vigorous as sudangrass or sorghum-sudangrass. A slow curing rate can be a concern if the harvest package is dry hay.

German Millet This millet looks like a robust giant foxtail weed and has much smaller stem size than pearl millet; this results in a faster curing time which is desirable if the crop is to be harvested as hay. My limited experience with this warm-season annual grass suggests that loss of quality is more rapid as it matures as compared to sorghum-sudangrass or pearl millet.

Winter Small Grains and Annual Ryegrass Soft red winter wheat, winter rye, winter triticale (a manmade cross between wheat and rye) and annual ryegrass can make a positive contribution to a ruminant livestock enterprise when used in a double crop system. These crops can be seeded following corn silage or timely soybean harvests. They have been overseeded into senescing corn or soybean crops and successfully established provided autumn rain is adequate. If temperature and precipitation are adequate, light grazing can

occur in autumn. These crops can also be grazed prior to dormancy break of cool-season grass/legume pasture, or harvested as hay or silage in May. My experiences with these crops indicate that the small grains listed are more winter hardy than annual ryegrass.

Forage Turnips This forb has extremely high energy content and can also be used as an excellent double crop option for ruminant livestock producers when seeded after winter wheat harvest or the final harvest of a perennial hay crop in May. If too high of energy is a concern with turnips, spring oats in combination with the turnips makes a compatible grazing mixture. My experience with forage turnips as a double crop was not good following September corn silage harvest or dry autumn conditions as dry matter yield was small and the crop does not overwinter. Also, unlike pearl millet, sudangrass or sorghum-sudangrass, which will regrow after grazing in the summer, forage turnip stand thins over time as the grazing livestock consumes many of the bulbs. There are many other brassica crops (e.g. rape, swedes, kale), but forage turnips or the chinese cabbage x forage turnip hybrid are probably the best choices to use.

Corn Residues If good sense prevails when corn residues are grazed, right after grain harvest and not highly stocked in muddy conditions, they are an excellent feed resource for dry beef cows and ewes. If made a routine part of the feed resource at the appropriate time over the years, its use can quickly pay for the cost of fence to constrain livestock as compared to investing more dollars in the harvest and feeding of hay.

Pencil and Measure the Cost/Return

If the double crop system reduces feed expenditures and/or provides rotation crop

benefits to the soil, then this particular system should become a part of the farming enterprise. Remember that risk and cost occurs when seeding any crop. There may be years that purchasing hay will be a cheaper/ less risk venture than seeding double crop forages. For more information regarding agronomic practices refer to Extension publication AY-263.