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G91-1025 Two Crops in One Year: Doublecropping

Russell Moomaw
University of Nebraska - Lincoln

Gary Lesoing
University of Nebraska - Lincoln, glesoing2@unl.edu

Charles Francis
University of Nebraska--Lincoln, cfrancis2@unl.edu

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Two Crops in One Year: Doublecropping

Choice of crops, weed control, and other cultural practices for successful doublecropping are discussed here.

Russell Moomaw, Extension Crops & Weeds Specialist
Gary Lesoing, Administrative Assistant, Agricultural Research Development Center
Charles Francis, Extension Crops Specialist

Multiple cropping refers to growing two crops on the same field during the same year. One method of multiple cropping is doublecropping, which is when one crop is grown after the first crop is harvested. Prime USA regions for doublecropping are the eastern cornbelt, and southeastern and south central states where relatively long growing seasons and abundant rainfall occur. By contrast, shorter growing seasons and less frequent rainfall limit the potential for doublecropping in Nebraska.

Irrigation is essential for successful doublecropping in Nebraska. Without irrigation, it's better not to attempt doublecropping if June has been dry and subsoil moisture is depleted. Adequate rainfall during the first three weeks after planting is especially critical. If rainfall is adequate for seedling establishment and rapid root development, then subsoil moisture may meet the needs of moderate to deep-rooted crops. Shallower rooted crops require more frequent rainfall.

In traditional doublecrop regions, the crop sequence is usually winter wheat harvested for grain followed by no-till planting soybean into the stubble. Modifications of that system will likely be needed, at least in parts of Nebraska.

First Crop

1. *Choice of Small Grain.* Winter wheat is the most common small grain grown in east central and southern Nebraska. For successful doublecropping in this region, it is necessary to plant wheat after the Hessian fly-free date, using an early maturity variety. Swathing rather than direct cutting the wheat speeds harvest, as does combining at higher moisture and bin drying with natural air. Operate

the swather or combine cutter head to leave an 8- to 12-inch stubble height and bale the straw.

North of the Platte River and into northeast Nebraska, oats or barley rather than winter wheat are the major small grains. A shorter growing season and lower summer rainfall in northern Nebraska make it necessary to harvest the small grain for forage rather than grain. Barley and winter wheat reach a comparable stage of maturity three to six days earlier than oats, allowing earlier planting of the second crop. Small grain forage yield at milk stage of maturity will be from six to eight tons per acre at 65 percent moisture.

2. *Weed Control in Small Grain.* If the intention is to no-till plant the second crop in a doublecrop program, weed management should start in the small grain to minimize weeds present in the stubble. Buctril, 2,4-D, Bronate, and Banvel can be applied on small grains without leaving soil residues injurious to the second crop. Consult the latest edition of *EC-130, A Guide for Herbicide Use in Nebraska*, for information on using these products on specific small grains. Some brands of 2,4-D ester also can be applied at 1 quart per acre after hard dough stage of small grains as a harvest aid and to reduce weed infestation in the following doublecrop. Herbicides for control of grass weeds in small grains are not registered for use in Nebraska. As a result, summer annual grasses will be present in oats and barley stubble, less so in winter wheat.

3. *Other Possible First Crops.* Besides winter wheat, oats, and barley, other crops could be considered. Winter rye is more common than wheat in northern Nebraska. Rye cut for forage generally can be harvested a few days earlier than oats or barley planted in spring, an advantage for the second crop. Winter triticale could be used rather than rye. Some companies market forage mixtures such as spring triticale plus field peas, which are suitable as the first crop in a doublecrop program. These crops would generally be harvested by June 20 in northern Nebraska and earlier further south.

   Limited research at the Northeast Research Center at Concord has shown that some field pea species could be monoseeded in early spring and used as a one-cut forage. Austrian winter pea and Tangier flat pea were used. These cool season legumes have little tendency to regrow in Nebraska after an early June harvest.

Second Crop

1. *Seed Crops.* Grain producers prefer to utilize a seed crop for doublecropping. Soybeans are most often used for double cropping after winter wheat in southern Nebraska. Even with good management, performance of doublecrop soybeans under dryland conditions can vary greatly from year to year. Economic yields should not be expected from planting later than July 10 south of the Platte or July 15 in the extreme southeast. Soybeans planted this late flower about 30 days after emergence and never produce a large plant. Therefore, it is desirable to plant in rows 15 inches or narrower to maximize sunlight interception. A high seeding rate of about 200,000 soybean seed per acre (six per foot in 15-inch rows) is necessary for early canopy cover. If planting in 30 inch or wider rows, use the higher seeding rate to encourage greater plant height and pod set. Select an early Group II indeterminate variety for northern areas or a late Group II variety further south.

   Because chinch bugs are usually a problem in southern Nebraska, grain sorghum or corn should usually not be doublecropped after a small grain. Chinch bugs are not as much of a threat in northeast Nebraska, but even then their development should be monitored if sorghum or corn is the second crop.

   Yields of irrigationd, doublecropped soybean, grain sorghum, and dwarf corn were much lower in northeast Nebraska when planted after direct cutting winter wheat (July 6 planting) then when

planted after removing barley for forage (June 23 planting), *Table I*. In northern Nebraska, the doublecrop needs to be planted by about June 25, requiring harvest of the small grain for forage at boot to soft dough stage. Forage yield will be higher with later cutting but quality will be lower; milk stage is a good target. In order to doublecrop after winter wheat harvested for grain in northeast Nebraska, a second crop with an extremely short maturity is needed. Consider proso millet and buckwheat since they can produce mature grain in about 60 days. Proso millet is used for bird seed and can be substituted for corn in beef rations. Proso millet is more drought tolerant than buckwheat. Buckwheat has a limited root system that restricts its use to irrigationd conditions. However, markets are not large for these crops, particularly buckwheat.

Table 1. Doublecrop grain yields of several crops planted after harvest of barley forage or winter wheat grain, Northeast Research Center, Concord, NE, 1987-89.

Doublecrop [a]	Second crop planted after harvest of: [b]	
	Barley forage	Wheat grain
		(bu/acre)
Early dwarf corn	51	28
Grain sorghum	83	19
Soybean	25	13

[a]Cargill 1077 corn, DK-18 grain sorghum, and Elgin soybean. Supplemental irrigation was applied.
[b]Average planting date after barley was June 23 and after wheat was July 6.

Sunflower may be used as a second crop, particularly in southern areas. Later planting of sunflower with doublecropping reduces head moth problems, but field scouting should still be done. Select an early maturity, fast dry-down hybrid. Dwarf sunflower hybrids also are available and may be preferred in northern areas. Dwarf hybrids reach physiological maturity in 75 to 85 days. Dwarf sunflowers should be planted in 12- to 24-inch rows at 44,000 seeds per acre.

2. *Forage crops.* Early freeze potential is more of a threat to seed crops than to forages in a doublecrop system. Producers with livestock or opportunities to sell forages to livestock producers, can expect reliable production from annual forages planted from late June to mid-July. Results from an irrigationd doublecrop experiment in northeast Nebraska indicated forage sorghum, sorghum-sudangrass, and pearl millet produced higher forage and protein yields when planted June 23 compared to July 6 (*Table II*). Sudangrass, sorghum sudangrass, and pearl millet provide forage for pasture or green chop while forage sorghums are best suited for silage. Foxtail millet produced an excellent hay crop in about 60 days and could be planted up to about July 15 (*Table II*). Turnips provide fall and early winter grazing and can be planted as late as 60 to 70 days before the average first freeze date. Seeding rate of forage crops should be increased about 10 percent with doublecropping compared to an earlier planting date.

Table II. Doublecrop yield of several forages planted after harvest of the small grain for forage or grain, Northeast Research Center, Concord, NE, 1987-89.

Crop	Second crop planted after harvest of [a]	
	Barley forage	Winter wheat grain
	(forage yield, ton/acre)	
Foxtail millet	5.7	6.2
Pearl millet	8.9	6.8
Forage sorghum	15.2	14.2
Sorghum sudangrass	11.5	8.2
Turnip	4.6	5.9
	(protein yield, lb/acre)	
Foxtail millet	509	594
Pearl millet	835	617
Forage sorghum	1010	879
Sorghum sudangrass	993	632
Turnip	485	631

[a]Average date of double crop planting after barley forage harvest was June 23, and July 6 after wheat grain harvest. Forage yields are at 65% moisture.

3. *Weed control in the double crop.* Use tillage or herbicides to control weeds in the first crop stubble during establishment of the second crop. With tillage, prepare the seedbed with a disk or field cultivator. For satisfactory performance of the tillage implements it will be necessary to either chop the straw, or bale and remove it from the field. In most cases, it will be necessary to use tillage plus herbicides even when planting the second crop later in the season. Herbicide programs will be similar to those used in conventional row crop production, using preplant, preemergence or postemergence products. Vital soil moisture will be lost by seedbed tillage but direct weed control costs should be lower compared to no-tillage. If the soil is hard and dry, it may not be possible to get good soil-seed contact without tillage.

   Two general approaches to weed control can be used if the second crop is to be no-tilled into stubble. First, Roundup at 1 to 1.5 pint per acre applied in 3 to 10 gallons water per acre should control weeds in wheat stubble, or in oats or barley cut for forage. Roundup also will control regrowth of these small grains, which is likely to occur if they are cut for forage before the milk or early dough stage. In this case, it will be necessary to delay second crop planting several days. Preemergence application of Roundup should be delayed until just before second crop seedlings are ready to emerge so more green plant growth can be contacted. Low-rate application of Roundup will only control existing weeds; new weed growth must be controlled with additional preemergence or postemergence herbicides.

   The second approach to control existing weeds with no-tillage is to use higher rates of Roundup or Gramoxone Extra, applied in tank-mix combination with an appropriate residual herbicide for the crop being grown. Consult NebGuide *G89-899, Weed Control in No-Till Corn, Grain Sorghum and Soybean Production* for an expanded discussion of these two approaches to no-till weed control.

Summary

1. Doublecropping is a high risk cropping system in Nebraska. The risk increases from south to north as the growing season shortens and rainfall diminishes.
2. Supplemental irrigation should be available for consistent success with doublecropping. Under strictly dryland conditions, do not attempt doublecropping if June has been dry and subsoil moisture is depleted.
3. Winter wheat is the best first crop for southern Nebraska. In northern areas, whichever small grain is used should be harvested for forage to allow earlier planting of the second crop.
4. Soybeans and sunflowers are the best second crops for southern areas. In the north where chinch bugs are less of a threat, corn, grain sorghum, or summer annual forages can be used as the second crop, in addition to soybeans. If planting sunflowers in northern areas, use an early maturity, dwarf hybrid.

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