

Spring Wheat in Indiana? – Not a good option

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I would not recommend considering spring wheat in Indiana in general, and especially south of the latitude of Fort Wayne. Several reasons:

1. Spring wheat would yield about ½ to 2/3 of adapted winter wheat varieties.
2. The spring wheat varieties that are available have not been developed for adaptation in Indiana.
3. Spring wheat should be seeded as early in the spring as possible – so that the day length is short enough to induce tillering, but increasing the chance of a killing frost just after emergence. And unlike spring oats, the first internode of spring wheat elongates at emergence, placing the growing point of spring wheat near the surface of the soil where a frost can kill it. There is at least a two-week delay before the first internode of oats elongates, thus protecting the growing point even if a killing frost kills the first 1 or 2 leaves after emergence – so oats can re-initiate growth after a killing frost. If spring wheat is seeded after about March 20 (and many years in Indiana the soil is not dry enough prior to early April to prepare the soil for seeding – or even to simply seed), the day length becomes long enough so that the seedlings are encouraged to go into the adult or reproductive stage too early, so that they do not have time to develop large spikes or produce tillers – and this is the main reason for the low yield of spring wheat in latitudes south of about Madison, WI and southern MN.
4. Spring wheat varieties that are available are hard wheat, meaning they produce high percentage protein in the flour – they are developed for making bread. And, they are adapted to drier climates than that of Indiana and eastern USA. Low rainfall, causing various degrees of moisture stress, results in higher protein grain because the grain fill period is shortened, resulting in less starch accumulation, which dilutes the protein percent – protein is generally accumulated prior to starch accumulation in the developing grain. If these spring wheat varieties are grown in a high rainfall climate like Indiana, they would tend to have somewhat lower percent protein, although higher than our soft (pastry) wheat varieties, and thus, their baking qualities would not be suitable for bread or pastry – it would be poor for bread making and poor for pastry – it would be a ‘feed’ wheat. Likewise, if one were to grow a good quality pastry wheat variety in Kansas or Nebraska, with

- low rainfall, it would produce flour with somewhat higher protein than in Indiana, but not high enough for good bread making quality – it would be “feed” wheat.
5. Wheat, like its related small cereal grains grasses, like oats and barley, grow best in climates with cool nights, warm but not hot days, and enough but not too much rainfall. Typically in Indiana, night temperatures begin to be very warm after mid to end of June. Thus, grains of winter wheat, which typically heads by early to mid May, are well filled by mid to end of June. But spring wheat is typically three weeks later in maturity, which exposes spring wheat to very warm night temperatures beginning at or soon after heading.

For similar reasons, it is imperative to seed spring oats as early in the spring as possible. The fact that the first internode of germinating oat seedlings does not elongate, thus protecting its growing point for 2 to 3 weeks after germination, allows oats to be seeded very early. In addition, if one prepares the seedbed for oats in the previous fall, after soybean or corn harvest, one can gain 1 to 3 weeks for earlier seeding by using lighter machinery for seeding rather than for tilling the soil in the spring, thereby moving the growing period of the crop 1 to 2 weeks earlier and avoiding the very warm night-time temperatures during early grain fill. Protection of the growing point of oat from killing frosts in early spring by maintaining its position below the soil surface suggests the importance of placing the oat seed 1 to 1 ¼ inches below the surface – using a drill rather than broadcasting the seeds.

It is useful to recall that the winter wheat varieties that were introduced to the eastern US from Europe, matured about three weeks later than our modern varieties that are adapted to this region. We have grown some of the older tall and late varieties and modern early and short varieties side by side, and depending on the environmental stresses and diseases that prevail in a given season, the late varieties typically have more shriveled kernels due to moisture and heat stress during grain fill in some years and more severe disease, especially foliar diseases in other years – partially because diseases have more time to develop on the late varieties and also because the older varieties are more susceptible to the diseases. Two important contributions of plant breeding are the development of earlier maturing, and shorter and strong-strawed wheat and oat varieties.

Don't forget, this and other timely information about crops can be viewed at the Chat 'n Chew Café on the Web at <http://www.kingcorn.org/cafe>. For other information about corn, take a look at the Corn Growers' Guidebook on the Web at <http://www.kingcorn.org>.

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