Five soft red winter wheat (Triticum aestivum L.) R-lines, PR143, PR189, PR267, PR270, and PR302 (Reg. no. GP-482 to GP-486, P1591553 to P1591557), were developed by the Purdue University Agricultural Research Programs and released in 1995. During their development, the five Purdue restorer (PR) lines, with T. timopheevi Zhuk. cytoplasm, were selected during inbreeding with the pedigree method of selection for their ability to restore pollen fertility in crosses to cytoplasmic male sterile (cms) 'Monon', cms 'Arthur', and cms 'Redcoat'. We observed seed sets of 80 to 100% in lateral florets, and the absence of spike tip sterility, in the field for hybrids of the five R-lines with cms parents when good synchrony of pollen dispersal and female receptivity occurred under several environments. These three A-lines of Monon, Arthur, and Redcoat are considered difficult to restore (2). Seed set of the five PR lines is 100%. All five R-lines are awned, are early-maturing, and have levels of winterhardiness adequate for production in Indiana. The five germplasm R-lines are being made available for use in developing improved R-lines for soft wheat hybrids.

PR143 has the parentage T. timopheevi 'Marquis' cms 'Monon'/'Primepi'. PR143 was developed by the pedigree method of breeding after the final cross and possibly has a combination of nuclear fertility restorer genes from T. timopheevi via a germplasm line developed from a cross of 7! 'Marquis' obtained from the late R.W. Livers, Kansas State University, and restorer genes from 'Primepi'. The latter may have two nuclear genes for pollen fertility restoration (3). PR143 is about 3 d later in heading than Monon, and is 105 cm tall; it is resistant to powdery mildew (caused by Erysiphe graminis DC. f sp. tritici) and susceptible to leaf rust (caused by Puccinia recondita Roberge ex Desmaz.) in tests at Lafayette, IN.

PRI 89 has the parentage cms 'Abe'*4/ND R5 and has restorer genes from R5, a germplasm release from North Dakota State University and the USDA-ARS. R5 is a spring wheat and may possess as many as three genes for pollen fertility restoration (1). PR189 restored fertility in hybrids from crosses with cms Monon and cms Redcoat (5). In tests, PRI 89 was moderately susceptible to powdery mildew and similar to Abe in heading date.

PR267 has the parentage cms Arthur*3/TBR26-6-4. The TBR (Texas bulk restorer) lines have an unknown source of one or more genes for pollen fertility restoration (4). The TBR lines were selected following wind pollinations at Bushland, TX, of cms 'Bison' by a composite of the USDA-ARS National Small Grains Germplasm Collection, Aberdeen, ID. PR267 is about 1 d later than Monon and heads 2 d earlier than Abe. PR267 was resistant to powdery mildew in our tests.

PR270 was developed from the cross cms Arthur* 3/TBR76-1-3. TBR76-1-3 has restoration genes from unknown parents, as discussed above (4). PR270 is about 1 d later in heading than Arthur and was moderately resistant to powdery mildew.

PR302 was selected from the cross cms Arthur/PRl-1. PR1-1 was selected following the cross of TBR24-6/Primepi. PR302 is similar to Arthur in date of heading and was moderately resistant to powdery mildew.

Small samples (3 g) of seed of each pollen fertility restorer line are available upon written request to the corresponding author.