and remain as chlorotic spots. It appears that the fungitoxic compounds modified by the Bx gene act in containing the spread of the fungus.

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1. A polyphenol oxidase oxidizable flavonoid difference in corn silks.

Silks from certain stocks turn a brown color when ground up and allowed to stand a few minutes, while with other stocks the ground silks remain yellow-green (i.e. no change in color occurs). Furthermore, differences in ground up silk color can be detected on the plant by cutting back the silks and observing the cut ends an hour later. If the cut ends turn brown, then the silks turn brown upon grinding. Likewise if the cut ends don't change color, then the ground silks don't change color. For convenience, the phenotype shown when cut silks ends and ground up silks turn brown is designated "brown," while that where no change in color of cut silks ends or ground up silks is observed is called "colorless." The inbred line NC232 has the brown phenotype while NC236 has the colorless. The F_1 between NC232 and NC236 has the brown phenotype. A testcross gave 37 brown and 44 colorless types. This fits a 1:1 ratio with a probability of .4-.5. These results indicate a monohybrid segregation with the brown phenotype being dominant to the colorless.

Analysis of the brown phenotype has indicated that the brown color in ground silks is due to the oxidation of a polyphenolic compound and the subsequent polymerization of the resulting quinones. Polyphenol oxidase is the enzyme responsible for the oxidation of the polyphenol. The browning reaction can be inhibited by DIECA (sodium diethyldithiocarbonate), a selective inhibitor of polyphenol oxidase. The brown

reaction might be catalyzed by peroxidase, but appropriate peroxides are apparently missing in the silks and this reaction requires the addition of hydrogen peroxide. Enzyme preparations from the brown and colorless phenotype both have polyphenol oxidase activity. However, polyphenol preparations from silks of the brown and colorless phenotypes differ. The polyphenol preparation from the brown phenotype turns brown when added to enzyme preparations from either the brown or colorless phenotype. But, the polyphenol preparation from the colorless phenotype remains colorless when added to enzyme preparations from the brown or colorless types. These results indicate the presence of a polyphenolic compound in the brown phenotype which is oxidized by polyphenol oxidase that is not present in the colorless phenotype. This compound has been isolated but not rigorously identified. It is tentatively identified as a flavonol based upon the following results. The compound has a yellow color; it turns yellow with a base and is unstable in air, becoming brown; it is orange in concentrated H_2SO_4; and it is magenta in alcoholic Mg plus HCl.

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2. Segregation for colored nodes.

A plant was found in the variety, Jarvis Golden Prolific, which had a red stripe approximately 1/8" wide encircling the culm at each node. The color appears beneath the leaf sheath and varies in intensity up and down the plant. The stripe is usually most vivid on 2 or 3 of the nodes immediately below the ear. The trait segregates as a single dominant gene; out of 597 progeny, 458 showed the red stripe and 139 had normal colored nodes. In testcrosses to normal plants, 200 plants had the stripe and 190 were normal. Tests for possible allelism with known loci which affect plant color are planned.

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