Meeting: 1006, Lubbock, Texas, SS 10A, Special Session on Extinction, Periodicity, and Chaos in Population and Epidemic Models

1006-92-112 **S. H. Faeth**, **K. P. Hadeler** and **Horst R. Thieme*** (thieme@math.asu.edu), Dept. Mathematics and Statistics, Arizona State University, Tempe, AZ 85287-1804. *A paradox of horizontal and vertical disease transmission.* Preliminary report.

Endophytic fungi from the genus *Neotyphodium* in Arizona grass *Festuca arizonica* appear to be completely vertically transmitted via infected seeds. Since the fungus uses host resources for its own growth and propagation, it is suggestive that infected plants do worse than uninfected ones. No compensatory benefits, as they can be found in agronomic grasses (protection against herbivores), have been detected so far. Since vertical transmission is not perfect (some seeds of infected grass do not carry the fungus), it is a mystery how the fungus persists. In the following, we will make the case that horizontal transmission which could make up for imperfect vertical transmission can be easily overlooked, once the fungal disease has established itself and if vertical infection protects against horizontal infection. Paradoxically, the horizontal transmission is the harder to detect the larger the per plant rate of horizontal transmission. (Received February 10, 2005)