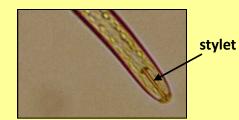


2<sup>nd</sup> stage juveniles emerge from cyst & migrate through the soil in the spring (some are released the 1<sup>st</sup> year and others over several years)



when crushed, a brown cyst is shown to contain up to 600 eggs + juveniles



feeding stylet thrusts outward to injure root cells & inject toxins



inflated 3<sup>rd</sup> stage female becomes embedded in roots of very small seedlings



swollen 4<sup>th</sup> stage females embedded in roots



Heterodera avenae

(1-year life cycle)



egg-filled brown cysts are freely disbursed into the soil & survive for many years



egg-filled swollen white female at time of wheat anthesis (≈1/32" diam.)



roots become knotted & shallow