Hyperaccumulating plants, such as the zinc (Zn)/cadmium (Cd) hyperaccumulator *Thlaspi caerulescens* L., use unique mechanisms to tolerate and accumulate levels of heavy metals that are toxic to normal, non-accumulating plant species. *Thlaspi caerulescens* is a member of the Brassica family and can accumulate and tolerate up to 10 000 ppm Cd in the shoots (shoot Cd levels are typically between 0.1 and 10 ppm) and 40 000 ppm Zn (normal foliar [Zn] for hydroponically grown plants is around 100–200 ppm, while 30 ppm is considered adequate) (Chaney, 1993; Brown et al., 1995a, 1995b). As the contamination of surface soils with toxic heavy metals is a serious environmental problem (Ryan et al., 1982; Mazess and Barden, 1991; Gairola et al., 1992), understanding the underlying physiological and molecular mechanisms of Zn hyperaccumulation in this plant could provide molecular tools that can be used to develop plants better suited for the phytoremediation of these contaminated soils. It also could yield useful information about micronutrient homeostasis that could enable researchers to develop crops better suited for cultivation on low fertility soils.