The convenience yield is an important risk factor for commodity derivatives, but very little is known about how convenience yield risk is priced. In this paper, we construct portfolios of commodity futures that track the convenience yield risk premium. Our empirical results for a variety of different commodities show that premiums are consistently positive, as suggested by an argument based on hedging demand. However, the magnitude of the premium varies strongly between groups of commodities. Such differences can be explained by different market structures. Our study has implications for the risk management of commodity positions and demonstrates the value of convenience yield risk premiums for investors. For grains, a risk-averse investor realizes monetary utility gains over a risk-free investment of up to 11% per year from a trading strategy that tracks the premium.