The purpose of this grounded theory study was to conceptualize the pedagogical content knowledge (PCK) of experienced agriculture teachers in the plant sciences. The overarching theme that emerged was the influence of beliefs on participants’ PCK. This finding guided subsequent data collection and analysis that focused on what was shaping the participants’ PCK in plant sciences. Three major themes that shaped the participants’ PCK were: integrated belief systems, experiences prior to and during in-service, and the context of the participants. The integrated beliefs system was the driving force in shaping the participants’ PCK. A theory was developed that illustrated the relationships between the three themes on participants’ PCK. These findings support further examination into what is shaping agriculture teachers’ PCK, including investigation in other agriculture content areas such as animal sciences and further examination into views about the purpose of agricultural education. The findings from this study can be used to guide teacher preparation programs in agricultural education.