Insect pests often overcome our endeavor to contain or manage them by quickly adapting our tactics, warranting newer approaches. In this regard, the late potential of RNA interference (RNAi), called gene silencing, has been demonstrated in insects belonging to Lepidoptera, Hemiptera, Coleoptera, etc. For pest management, RNAi is mediated through an exogenous supply of double-stranded RNA (dsRNA) or small interfering RNA (siRNA) and artificial/synthetic micro RNA (amiRNA) for various purposes. These include, for example, silencing the physiologically important genes involved in digestion, growth & development, egg laying, and pheromone synthesis and reception. Additionally, modifying the host plant volatiles is also emerging as a futuristic tool in insect pest management for the development of insect elusive plants. These are expected to bring about a paradigm shift in pest management, as some of the RNAi-based spray formulations are getting deregulated for field use.