Endemic of avian influenza virus (AIV) in Asia and epizootics in some European regions have caused considerable public concern on a possible pandemic of AIV. A rapid method for virus detection and effective surveillance in wild avian, poultry production as well as in humans is required. In this article, a DNA microarray-based solid-phase polymerase chain reaction (PCR) approach has been developed for rapid detection of influenza virus type A and for simultaneous identification of pathogenic virus subtypes H5 and H7. This solid-phase RT-PCR method combined reverse-transcription amplification of RNA extract in the liquid phase with sequence-specific nested PCR on the solid phase. A simple ultraviolet cross-linking method was used to immobilize the DNA probes over an unmodified glass surface, which makes solid-phase PCR a convenient possibility for AIV screening. The testing of 33 avian fecal and tracheal swab specimens was completed in less than 2 h with 94% accuracy.