Roundup ready corn (NK603) is the first transgenic glyphosate tolerant corn approved in 2005 for propagation in the Philippines. Our research investigated the effects of continues planting of NK603 corn in several growing seasons on the weeds, arthropod pests and beneficial organism population structures. Observation fields were established at Isabela, Pangasinan, Nueva Ecija, Misamis Oriental, Bukidnon, South Cotabato and Koronadal City. Plantings started from 2005 to 2008 utilizing rice-corn and corn-corn cropping systems. The treatments were: (1) NK603 corn managed using weed management recommended technology, and (2) conventional hybrid corn managed using farmer’s practice. The experimental plots measured 0.5 ha for each treatment. Five quadrants measuring 1 square meter were selected randomly for each treatment. All weeds present in observation plot were counted at V4-V8 and V10-12 corn growth stages. Arthropod monitoring for arthropod pests and beneficial organisms were gathered from 25 randomly selected plants using visual direct observations, coincide during weed counting. Weed and arthropod counts were computed into percentages and analyzed, descriptively. A total of 88,290 weed species were counted on farmer’s weeded field, which is 18% higher than NK603 corn field. A total of 34 weed species observed in all project sites. Consistently, similar number of weed species found in both corn fields. The important 5 weed species were *Cleome rutidosperma*, *Synedrella nodiflora*, *Ageratum conyzoides*, *Commelina benghalensis*, *Eleusine indica* and *Rottboellia cochinchinensis*. A total of 12 arthropod pests observed in both corn fields for all sites. *Sternocranus pacificus* and *Helicoverpa armigera* were insect pests species dominantly present in both treatments across seasons. The important beneficial organisms were coccinellids, green lacewing, wasps, trichogramma, damselfly, earwig, assain bug, orius and spiders. Both treatments recorded same species of beneficial organisms. *Micraspis discolor*, *Cheilomenes sexmaculatus* and spiders were frequently present in 2 monitoring corn growth stages in both corn fields.

Keywords: NK603 Corn, Roundup Ready Corn, Weeds, Non-Target Organisms