Sentinel Chicken Program results in the Top End of the NT
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The sentinel chicken program in the Northern Territory (NT) is part of a national program involving Western Australia, New South Wales, Queensland and Victoria and is designed to detect flavivirus activity (including the endemic arboviruses Murray Valley encephalitis virus (MVEV) and Kunjin virus (KUNV), as well as exotic arboviruses such as Japanese encephalitis (JE). The current NT program commenced in January 1992 and replaced an earlier program run by the Australian Quarantine Inspection Service (AQIS). Sentinel chicken flocks in the NT are maintained, bled and analysed for flavivirus in a combined program between the Department of Health and Community Services (DHCS), NT Department of Business Industry and Resource Development (DBIRD) and volunteers.

Sentinel chicken flocks are presently located at Leanyer, Howard Springs, Coastal Plains Research Station (CPRS) Middle Point, Katherine, Nhulunbuy, Tennant Creek, Jabiru, Alice Springs (2), Nathan River and Alyangula (see map). DBIRD officers or volunteers usually bleed flocks once a month and the samples are tested for MVEV and KUNV. When chickens from a flock show new antibodies to MVEV during a prime risk period (January to July), a media warning is issued for the general area. A media warning might be issued for Central Australia, the Top End or for the whole of the NT, depending on the location the chickens seroconverted, and might be re-issued if seroconversions occur after the initial one. These warnings advise residents of the need to take added precautions to avoid mosquito bites.

Chickens are replaced at least annually, and more frequently if birds die or a large proportion seroconvert. The flocks are well positioned to detect flavivirus activity near the principal towns of the NT and hence provide timely and accurate indication of risk to people in those towns.

KUNV and MVEV activity in the Top End for the last 3 financial years is outlined in Figures 1 and 2. These show new seroconversions to KUNV and MVEV for the sentinel chicken flocks located at Howard Springs, Leanyer, the Coastal Plains Research Station, Nhulunbuy, Jabiru and Katherine only.

In the Top End, most seroconversions to MVEV occurred between February and June in the last 3 years (Figure 1). More seroconversions are expected in May and June 2007, due to the late wet season rain in the Top End this year, causing extensive flooding of wetlands and creating suitable breeding habitats for the main vector mosquito *Culex annulirostris*. The number of seroconversions to MVEV in June 2004/05 and 2005/06 indicates that more seroconversions to MVEV are likely to follow (Figure 1). The fact that 4 chickens in Jabiru have seroconverted to KUNV in early May 2007 and relatively high common banded mosquito numbers in Jabiru indicates that the vectors, bird reservoirs and environmental conditions may be favorable for MVEV transmission over the next 2 months.

Like MVEV activity, KUNV activity also mostly occurs between February and June in the Top End (Figure 2). Again even more seroconversions to KUNV are expected in May and June 2007, due to the late wet season rainfall and the fact that 2 chickens have already seroconverted to KUNV in Katherine in April and 4 in Jabiru in May 2007. Two sentinel pigs located at the Coastal Plains Research Station near Fog Dam also seroconverted to KUNV in early April 2007.

A media alert was issued in early March for the Top End of the NT. This was reissued in May 2007 following the new positive results for Jabiru and the seroconversions in the north west of WA in May.

Reference

Figure 1. Seroconversion for MVEV

(NB: Months are dates of blood sample - seroconversions occurred at some time between the previous blood sample and the date of blood sample)

![MVEV 2004/05](image1) ![MVEV 2005/06](image2) ![MVEV 2006/07](image3)

Figure 2. Seroconversions for KUNV

(NB: Months are dates of blood sample - seroconversions occurred at some time between the previous blood sample and the date of blood sample)

![KUNV 2004/05](image4) ![KUNV 2005/06](image5) ![KUNV 2006/07](image6)

Note: sentinel chicken flocks included are: Howard Springs, Leanyer, Coastal Plains Research St, Nhulunbuy, Jabiru, Katherine.