FOR INFORMATION

SWFSPP Steering Committee Annual Meeting 2020
Agenda Item 3.1
last updated: 20 October 2020
Prepared by S. Fruean

(TITLE OF PAPER)

RECOMMENDATION

1. That the SWFSPP Steering Committee **NOTE** this update on the domestic SWF situation including R&D and other matters of potential importance for Australia

BACKGROUND

2. SWFSPP includes the following performance indicator: Steering Committee updated on domestic SWF situation including R&D and other matters of potential importance for Australia.
3. In the past, this has been addressed by a report from the Commonwealth (DAWE). In the absence of a committee rep from the animal policy area of DAWE, NAQS has agreed to coordinate input for this item for this meeting and going forward.

DISCUSSION

4. Changes in distribution of SWF or other factors that may impact on the risk to Australia.
    a. Nothing reported.
5. R&D
    a. See agenda Item 1.1 for update on proposed insectocutor trial in PNG.
    b. No other R&D reported.
    c.
6. Other matters
    a. An update on sterile insect technology (SIT) is included in Attachment A.

FINANCIAL IMPLICATIONS

7. Nil.

CONSULTATION/COMMUNICATION

8. Animal policy areas of DAWE were consulted for input into this paper.

NEXT STEPS/ACTIONS

9. Not applicable.

Attachment A: Update on sterile insect technology (SIT)

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Sterile insect rearing method (SIRM) or sterile insect technique (SIT) = mass rearing and sterilisation of male screwworm flies to introduce in endemic areas for control +/- eradication. Works best in areas of low prevalence, and particularly where habitat/terrain prevents access to potential host animals for surveillance or treatment.

The only current SWF rearing facility is for NWSWF in Pacora, Panama. This facility is used for maintaining a biological barrier between endemic south America and NWSWF-free northern America. Millions of sterile NWSWF are bred weekly and release via a flight over Panama/Colombia[1].

Previous SIRM facilities:

- **Mexico & Texas** (closed when NWSWF eradicated regionally and risk of escaped unsterilised flies was considered too high)
- **Johor, Malaysia** (closed in 2004?) – established in conjunction with Aust. Dept. of Primary Industries and Energy, and Dept. Veterinary Services Malaysia to rear 10 million flies/week – use as basis for protocols for Australian facility for 100-200 million flies/week[2].
- **Laloki, PNG** (closed in 1990) – parliamentary question time – alternatives for SWF defences with decision to close the facility[3].
- A study[4] on the feasibility for OWSWF SIRM facility in Middle East was completed but it does not appear to have been established. It looks like they are using chemical management only.

Australian eradication scenarios established by Anaman *et al* in 1993[5] – depending on likelihood of invasion:

- In a 1:325 year chance of invasion the most economic option is to design and build a multispecies SIRM facility (with 50% devoted to SWF rearing) that can produce 100 million flies per week.
- If the annual probability is less than that, then the better option is to have a design for a 150million flies/week facility ready to build in the event of an incursion.
- At probability of 1:1250 or less, then best strategy is to wait for an invasion then build a facility with 200-250million flies/week capacity.

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1 https://www.aphis.usda.gov/aphis/ourfocus/internationalservices/sterile_fly_release_programs/screwworm/screwworm

2 https://inis.iaea.org/search/searchsinglerecord.aspx?recordsFor=SingleRecord&RN=36045158

3 https://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;db=CHAMBER;id=chamber/hansards/1990-08-21/0094;query=Id:%22chamber/hansards/1990-08-21/0010%22

4 https://www.researchgate.net/publication/315778905_SOCIOECONOMIC_FEASIBILITY_STUDY_OF_THE_OLD_WORLD_SCREWWORM_FLY_CONTROL_AND_ERADICATION_IN_THE_MIDDLE_EAST_A_REPORT_SUBMITTED_TO_THE_ARAB_ORGANISATION_FOR_AGRICULTURAL_DEVELOPMENT_AOAD_FOR_THE_JOINT_AO

5 Anaman, K.A, Atzeni, M.G., Mayer, D. G. *et al.* 1993. *Economic assessment of the expected producer losses and control strategies of a screwworm fly invasion of Australia.* Department of Primary Industries, Queensland

Options for Australia[6]

- AUSVETPLAN states that SIT is required for successful eradication but a facility won't be built until an incursion.
- Multispecies facility
    - Suggestion as per Anaman *et al* 1993. Mahon 2001[7] – probably not if purpose built for incursion, but if built in anticipation then could rear fruit fly, melon fly, *Lucilia* (sheep blow fly) etc. then more quickly incorporate SWF in the event of incursion.
- Repurpose fruit fly facility at Pt Augusta
    - Deemed not feasible.
- Build new facility at Belmont Research Station (Rockhampton)
    - Estimated $5million and two years – SWF incursion could spread far in that time.
- Floating facility to be moved wherever required around the world
    - Deemed not feasible.

**Caution for SIT facility in SWF-free or eradicated area – risk of escape of unsterilised SWF.

[6] Dyck, V.A., Hendrichs, J., Robinson, A.S. 2005. *Sterile insect technique – principles and practice in area-wide integrated pest management*. Springer. http://www-naweb.iaea.org/nafa/ipc/public/Sterile_Insect_Technique_book.pdf#page=220

[7] Mahon, R.J. 2001. *Genetic control of* Lucilia cuprina*, past and prospects.* Proceedings of the FLICS conference, Launceston, June 2001