

Field Checklist 4: Billet collection & emergence monitoring

- **Purpose**
 - Billets provide data on biocontrol program success based on sirex and parasitoid emergence and % sirex infected with nematodes.
 - It is important to know whether billets are being collected to investigate (a) background levels of nematodes (i.e. use uninoculated billets), or (b) success of nematode inoculation in a tree (i.e. use inoculated billets), or both.
- **Timing**
 - Collect billets early October (just prior to sirex emergence)
 - In Victoria, uninoculated billets are set aside when inoculating the trap trees.
 - Collected from TTP and/or naturally struck trees (NST) that
 - Likely contain sirex (struck during the preceding sirex flight season)
 - Do NOT contain sirex emergence holes
- **Billet selection**
 - The planner will advise the number of billets to be collected
 - Select billets that are likely or have been confirmed to contain sirex
 - Selection based on visual indicators or actual sirex confirmation
 - Visual indicators
 - Fine 'pin-like' resin flows or 'balls' down stem
 - Oviposition holes beneath removed bark
 - 'Tea staining' beneath removed bark
 - Canopy discolouration/decline greater than adjacent trees
 - Sirex confirmation
 - Targeted crosscutting using the visual indicators (enhances detection probability)
 - Prescribed system e.g. mid-bole crosscut of each tree to expose sirex galleries/larvae
- **Billet length**
 - Approximately 0.8m length (allows drum and cage storage)
 - Label billets & record information (Use Maxforms Sirex Bioweb App)
 - Record date billet cut, area/site, TTP/NST, position in tree, sirex indicators, sirex confirmed
 - Record % bluestain on larger diameter end of cut billet
 - Attach bar-code for Sirex App if applicable

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- **Billet storage at emergence facility**

- Record identity of billets placed in each bin (Use Maxforms Sirex Bioweb App)
- Place billets horizontally in securely netted drums or cages (bins)
- Support billets (if desired) from base to enable underside examination and prevent wasps from drilling through the bin wall.
- Use one bin for billets from one tree
- Use a separate bins for inoculated and un-inoculated billets (no nematode inoculation undertaken)

- **Emergence monitoring records**

- % bluestain coverage of larger diameter billet end
- Date sirex emerged, numbers, size, sex(females/males) and nematode presence
- Date parasitoids emerged, species, numbers and sex(females/males)
- Date beetles emerged, numbers, beetle group e.g. bark/borer (*Ips*), Longicorn, Weevil. Send sample to appropriate expert for identification if needed.



Fine 'pin-like' resin flows or 'balls' down stems of Sirex struck *Pinus radiata*



Sirex 'tea stained' oviposition sites



Exposed Sirex galleries after crosscutting trap tree (galleries packed tightly with white frass)



TTP billets in emergence drum (Note support under billets)