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# Coffee Berry Borer: Jerbalin Ippān Doon Ńan Bōbrae Kij

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## 1. Karreo Mejan (Field Sanitation)

Jājek tok kobban juōn ra, bōlōk, cherry im aolepān men ko leen innem karreoik mejan eo ilo jemļokin juōn rak, wōr em jab wōr CBB, ej wāween eo eaurōk tata Ńan *control* maķūtkūt ko an CBB. Elaņe ejatūljōk jerbaļe im etale wāween in, jeļā bwe 1 CBB emaroņ bar kwaļoktok 15 million nājin CBB ilo juōn rak. Elaņe eņōj im dedeļok karreo im kōmakūt cherry ko jān jikin kallib eo enaaj ejjeļok imōn im kijen CBB kein, im naaj mōkaļ aer iietļok, jājek jān aolepān men ko leen juōn ra ej kūltōn eo eweppāntata Ńan an ri-kallib coffee ro ilo Hawaii lore.

- Aolep ri-kallib rej aikuj kōmmane wāween in jemļokinļok juon rak
- Jājektok leen cherry ko mokta jān an wūt eppōļ ak mokta jān jino jepjep ra
- Jab kōtļok an *raisin* eddōk ioon ra bwe rej naaj wōtļok wōt Ńan laļ.

Joļok cherry ko rōkijkiķ kōn CBB Ńan kōjparok jān an bar ejaak kij ilo jikin kallib coffee eo aņ. Kōjербal bakōj ko ewōr mejāer ak *bag* ko enaaj to aer pād iuņwin aļ Ńan 2 em men week. Eņōj lo bwe CBB emaroņ ōrōr plastic bag kōn men in, kōjербal bag ko rōmjel. Wāween eo juōn, kalbwini ķij kein Ńa ilo juōn roņ (~6 inij mwilal) juōn wāween eo emaroņ jab ekkar Ńan ri-kallib ro edkāke jikin kallib ko aer.

## 2. Jepjep Ra (Pruning)

Elaņe jepjep ra ej juōn wāween bōbrae loņļok in CBB, innem jek uninata ra eo ej jekjek eo ewōr tokjān kōmmane Ńan bōk jān kijen im jikin an CBB ko jokwe. Kilen jepjep ra eo Kona ak Beaumont-Fukunaga rej ļore rainin elikjab Ńan tōpar joņan peļaaķ ne eņōj an CBB tōļoņe. Eaurōk ad kememej bwe jepjep ra ejjab juōn wāween bōbrae: meņe eļap koņaan ilo kōkmanman jербal in bōbrae ko rōweppānļok (e.g. jājek im bōk jān leen, spray im manman ķij). Jepjep ra enaaj bōrainwōt kōmman bwe en jedmatmat mejan eo Ńan kōto im kaiņoļoļoiki jān an māāņāņ im kāaltok CBB.

### 3. Jerbalin Etale im Bōbrae Meļan Eo Jān Kij (Field Monitoring)

Kōjērbal aujiid āletok melele kōn wāween an CBB mour ñan kaalikar ñaat eo eṃṃan tata kōjērbal spray ñan mani. Kōjērbal aujiid enaaj bar letok melele ko ikijjien ia ko ekkā an CBB jokwe ie (“hot spot”). Ej bar jipañ letok melele ikijjien ñaat im iien ta eo ekkar tata ñan kōjērbal wāween eo ña etan “Thirty Trees Method ñan Kōṃṃan Jerbal in Etale im Bōbrae”.

Jej rōjañ kōjērbal aujiid iien eo eṃōkajata jeṃlōkin wōt an ṃōj būki leen ko, etale aujiid ko im lale aer jērbal aolep ruo week. Aujiid ko jej make kōṃṃani kab ko būkitok jān iṃōn wia ko rōṃṃan ñan kōkkāāl CBB. Ri-kapeeļ ro raar lo bwe likit juōn dān eo ekāāre kin 1:1 ak 3:1 *methanol* ñan *ethanol* ilo juōn ninne eo ewōr juōn roñ ie, 2mm dettan, ebar ļap an eṃṃan ñan aujiid CBB. Dān ejjoobob ej men eo epidodo im dik tata wōnāān ñan kōjērbale ilo aujiid kein.

Kōnke aujiid ejjab juōn wāween control, kōjērbal 5 em men aujiid ilo juōn āika ebwe ñan jipañ lale tok wāween mour im ṃakūtkūt ko an CBB. Likūt aujiid 3-5 ne ṃwilaļ jān eon bwidej, ijo ekkā an CBB pād ie.

## 4. Sample (Sampling)

Sample CBB ekaalikrak ñāāt eo em̄mantata ñan spray kij eo etan Beauveria. Elañe epolel iien im wāween aṃ kōjermal spray, eban kannooj lōñ kij ilo jinoin juōn rak

- Jino sample im kōjermal “Jilñuul Wōjke Method ñan Control” 60-90 raan ālikin an waḷok wūt.
- Elañe wūt ko rejjab mājkun ak rej eppō! jān iien ñan iien , innem jermal in sample en jab bōjrak
  - Sample iietata 2 week otemjej ilo jinoin rak, tokālik juōn alen ilo juōn allōñ
  - Sample mokta im ālkin aṃ spray, enaaj kaalikkar ewi joñan an kajoor im polōmān spray eo kwōj kōjerbale

Ekkar ñan kein joñak eo etan Cenicafe threshold 5% ej joñak eo loore ñan spray Beauveria . 2% ej joñak eo ri-kallib in Hawaii rej loore, bōtaab joñak in ej maroñ wōt oktak ippān kajojo pedped ion joñan maroñ. “Joñak” eo juōn enaaj loe im loore ej waḷok jān an keidi oran tōbrak ak luuj koba joñan eo ej joḷok ñan kein jermal ko aikuji ñan jikin kallib eo an.

## 5. Manman Kij Kōn Uno (Pesticides Use)

Mokta jān spray kōn Beauveria ak jabdewōt uno in manman kij , rii im loor laajrak ko emōj kōllaajraki ikilin uno eo

Errein ej unoon Beauveria ko komaroñ kōjermali ñan spray coffee:

Botanigard® ES (EPA Reg. No. 82074-1) – Conventional

Botanigard® 22 WP (EPA Reg. No. 82074-2) – Conventional, EJJAB

ÑAN BWIDEJ

Mycotrol® O (EPA Reg. No. 82074-3) – OMRI™ emālim kōjerbale

Ñan Spray Wōjke:

Kōjermal Beauveria 32 ounces (1 quart) ñan 1 eika

Surfactant (Silwet L- 77® Surfactant, Widespread® Max, etc.) rii ta label eo ej ba

Kōjermal 30 gallons in dān ñan 1 eika

Spray iki aolepān wōjke eo ekoba dipen, kein, im bōlōk ko.

Ren tutu ak ren jab baj toor ḷok kōn dān

Joñan wōjke eo, joñan an māje!, joñan rittoon, im kain ta spray eo

kwōj kōjerbale enaaj kwaḷok joñan dān eo aikuji ñan juōn eika.

Spray juōn alen ilo juōn allōñ ak ekkar ñan ta tōbrak in jermal in etale ko rej letok meḷeḷe kōn wāween in

## 6. Bar Jet Naan in Jipañ Ikijien Spray (Spraying Tips)

1. *Spray* ilo raelep ak jota ak ilo raan rot ne **ekkōdodo** ñe komaroñ
2. Kajjeoñ jab spray ilo iien an wūt eppōl im ilo iien an *bee* ko kappok kijeer
3. Kurkure uno in *Beauveria* mokta jān kāreiki kōn dān ñan an oñloḵ uno ko ie.
4. Kakone ṅa ilo jikin eo emōrā. Jab kakone ilo jikin eo eḷap an mōlo ak jikin eo eḷap an māāṅāṅ ilōñ in 85° F.
5. Mōkaj im kōjerbale, im jab likūt bwe en wōr uno rejañin oñloḵ iumwin 24 awa.
6. Leḷok iien eḷap an bōlōk ko mōrā ālkin *spray* bwe en jab pidodo an toorloḵ uno jāni ñe ej wōt

Tarlep in CBB IPM Meḷeḷe Kein Rej Itok Jān:

**Laajrak in Karōk Kōn Coffee Berry Borer**

Jerbalin Ippān Doon Nān Bōbrae Kij

**ilo Hawaii 2013.**

Lale aolepān report in CBB IPM in ilo CTAHR

website <http://www.ctahr.hawaii.edu/oc/freepubs/pdf/IP-31.pdf>



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