

LAUNCHING WORKSHOP-ICO – CFC- CABI PROJECT

INTEGRATED STEM BORER MANAGEMENT IN SMALL HOLDER FARMS-INDIA, MALAWI, ZIMBABWE

MANAGEMENT OF WHITE STEM BORER

CHEMICAL CONTROL

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CHEMICAL CONTROL

CHEMICAL PESTICIDE IS AN IMPORTANT TOOL IN THE MANAGEMENT OF PESTS

PARIS GREEN – FIRST CHEMICAL USED TO CONTROL COLARADO POTATO BEETLE DURING 1867

INVENTION OF DDT, DURING THE 1940s OPENED A NEW CHAPTER IN PEST CONTROL



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USE OF INSECTICIDES IN COFFEE

I PHASE - PRE- WORLD WAR

SWABBING, SPRAYING OF MORTEGG, CALCIUM ARSENATE, PARIS GREEN TRIED

CASHEW OIL, TAR DISTILLATE

DNOC (2-METHYL-4,6, DINITROPHENOL) WERE PRACTICED

TAR DISTILLATE AND MORTEGG FOUND TO REDUCE BORER INCIDENCE UP TO 5% AND 8% RESPECTIVELY, IN THE FIELD



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PHASE II - POST- WORLD WAR – 1945-55

ERA OF INSECTICIDES

MANY INSECTICIDES LIKE DDT, BHC, DNOC, LINDANE, FOLIDOL, CHLORDANE, TOXOPHENE, ALDRIN, DIELDRIN WERE SCREENED

IN THE FIELD, INCIDENCE OF BORER WAS REDUCED IN PLOTS SPRAYED WITH THESE FORMULATIONS

IN LABORATORY STUDIES TOXIC EFFECT OF BHC 50% W.P @ 1% WAS FOUND TO LAST UP TO 75 DAYS

STEM INJECTION OF SYSTEMIC INSECTICIDES LIKE, SYSTOX, PESTOX, TETRAX , SYTAM, METASYSTOX FOUND INEFFECTIVE IN KILLING THE STAGES IN SIDE THE PLANTS



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PHASE III - 1956- 65

BHC, DIELDRIN, GUSATHION, TELODRIN, FOLIDOL, INEXIT WERE FOUND EFFECTIVE IN FIELD AND HEPTACHLOR WAS LESS EFFECTIVE

PHASE IV - 1965-1975

SEVIN, MALATHION, ENDRIN, FURADAN, LANNATE, ANATOX, HELITOX, LINDANE, DIELDRIN, THIMET, CIDAL, TERRACUR, DISYSTON WERE TESTED IN FIELD – YIELDED INSIGNIFICANT RESULTS

TERRACUR, DISYSTON AND THIMET 83 EC FOUND TO HAVE SOME REPELLENT ACTION



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PHASE V - 1975-1985

EKALUX, METACID, THIODAN, ZOLAN, ANATOX, ROGOR, SUMICIDIN, PERMASECT, MONOCROTOPHOS AND SYNTHETIC PYRETHROIDS LIKE PERMETHRIN, AMBUSH, CYMBUSH, CORSAIR WERE TRIED. NONE FOUND EFFECTIVE

STUDIES INDICATED THAT MONOCROTOPHOS BY **STEM IMPLANTATION** OR **PADDING** METHOD DID NOT KILL STAGES INSIDE THE PLANT



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PHASE VI - 1986-1995

**NONE OF THE NEW FORMULATIONS
TESTED WERE FOUND EFFECTIVE**

**SPRAYING OF BHC OR LINDANE WAS FOUND
EQUALLY EFFECTIVE AS SWABBING**

**SPRAYING ON STEM IS MORE BENEFICIAL
IN TERMS OF BETTER COVERAGE AND
PENETRATION, REDUCED QUANTITY OF
SPRAY SOLUTION AND LESSER MAN POWER
REQUIREMENT**



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AFTER 1995

IN LABORATORY SCREENING EXPERIMENTS, EFFECTIVENESS OF ENDOSULFAN (83 DAYS) AND CHLORPYRIFOS (76 DAYS) WAS FOUND COMPARABLE WITH THAT OF LINDANE (83 DAYS).



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CHEMICAL TESTING METHODOLOGY

FIELD EVALUATION OF PESTICIDES WERE DONE BY BULK SPRAYS WHICH DID NOT GIVE CONSISTANT RESULTS DUE TO THE BEHAVIOUR OF THE BORER. IN MANY CASES CONTROL PLOTS HAD NO INFESTATION AT THE END OF THE TRIAL

AS THE MAIN AIM OF PESTICIDE SPRAY IS TO KILL THE ADULT, EGGS OR THE EARLY LARVAE, THE CHEMICAL TESTING METHODOLOGY WAS MODIFIED. THE PESTICIDES WERE SPRAYED ON THE PLANTS IN THE FIELD AND FIRST INSTAR LARVAE/ADULTS RELEASED ON THE STEM COLLECTED AT PERIODICAL INTERVALS AND MORTALITY COUNTS TAKEN



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STUDIES ON CHLORPYRIFOS IN LABORATORY AND FIELD

AMONG DIFFERENT CONCENTRATIONS OF CHLORPYRIFOS TESTED, 0.06% FOUND TO BE OPTIMUM

CHLORPYRIFOS BOTH IN LABORATORY AND FIELD CONDITION FOUND TO BE ON PAR WITH LINDANE

BASED ON THIS CHLORPYRIFOS WAS RECOMMENDED AS AN ALTERNATE TO LINDANE



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INSECTICIDES UNDER EVALUATION

CARBOSULFAN (MARSHAL 25 EC)

AND

IMIDACLOPRID (CONFIDOR 200 SL)

CARBOSULFAN IS FOUND PROMISING

THE SYSTEMIC ACTION OF CONFIDOR IS
UNDER EVALUATION



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TRIALS WITH BIOPESTICIDES AND OTHER PRODUCTS

BIOPESTICIDES LIKE NIMBECIDINE AND CASHEW OIL 1.5% MADE MISCIBLE BY ADDING EQUAL QUANTITY OF BUTANOL FOUND EFFECTIVE FOR 33 AND 23 DAYS RESPECTIVELY

CASHEW OIL WITH KEROSENE WAS HIGHLY PHYTOTOXIC

CASHEW OIL CONCENTRATE COMPLETELY REMOVES THE BARK AND THE APPLICATION IS DIFFICULT

COAL TAR BASED PRODUCTS VIZ., XYLOCHECK, QUADRICHECK WERE NOT FOUND USEFUL



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STUDIES USING NEEM PRODUCTS

NEEM SEED KERNEL (NSK) EXTRACT WAS FOUND USEFUL. REPEATED APPLICATION BECAME NECESSARY DUE TO THE SHORT PERSISTANCE – NOT ECONOMICAL

NEEM BASED PRODUCTS LIKE GRONIM, ECONEEM, NEEM LIMNOIDS WERE NOT EFFECTIVE.



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ORGANIC PRODUCTS

STICKFAST GLUE - NOT EFFECTIVE AND COSTLY

WHITE ANT EARTH MIXED WITH MUCILAGE OF
PTEROCARPUS MARSUPIUM AND *BUCHANNANIA*
LATIFOLIA NOT GIVEN DESIRED EFFECT

BRUNOLINEUM AND OTHER TAR DISTILLATE AS
WASH

- DUE TO NON AVILABILITY DISCONTINUED

APPLICATION OF LIME 10% WITH DDL FEVICOL
FOUND EFFECTIVE



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TO SUM UP

ONLY INSECTICIDES WITH LONG RESIDUAL TOXICITY WERE FOUND EFFECTIVE AGAINST STEM BORER

AS BHC WAS A CHEAPER AND EASILY AVAILABLE PESTICIDE, IT WAS IN USE TILL ITS BAN

AT PRESENT LINDANE AND CHLORPYRIFOS ARE IN USE

TIMING OF APPLICATION TO COINCIDE WITH THE ACTIVE FLIGHT PERIOD IS VERY CRUCIAL IN GETTING THE DESIRED CONTROL

USE OF NEEM DERIVATIVES IS UNECONOMICAL DUE TO THE NEED FOR REPEATED APPLICATIONS TO GET REASONABLE CONTROL

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THANK YOU

