tute an electrophoretic key, but do demonstrate that sufficient genetic
differences in enzyme expression in the 3 weevil species tested exist to
construct such a key. Mention of a trademark, warranty, proprietary product,
or vendor does not constitute a guarantee by the U. S. Department of Agri-
culture and does not imply its approval to the exclusion of other products
or vendors that may also be suitable. We would like to acknowledge the
technical assistance of S. Lovestrand, B. Hewitt, and the advice of R.
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CHEMICALS TESTED AS INTERNAL DYE MARKERS
FOR THE CARIBBEAN FRUIT FLY, ANASTREPHA
SUSPENSA (LOEW) (DIPTERA: TEPHritidae)

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A study was undertaken to find an internal dye marker for the
Caribbean fruit fly, Anastrepha suspensa (Loew) (Diptera: Tephritidae),
that would color adults if the material were mixed into the larval diet. An
acceptable marker should not affect fly behavior or biology and would be
detectable for 1 to 2 weeks after eclosion.

Anastrepha suspensa eggs (1/4 ml or 3841 eggs) were surface sterilized
with 0.3% solution of sodium benzoate and pipetted onto white filter paper;
they were incubated then for 48 h. Next the paper and eggs were placed
on 125 g of larval diet (Greany et al. 1976) that was thoroughly blended with 125 mg of a candidate dye 24 h earlier. All were contained in a covered, black plastic box (19 x 13 x 9 cm) and kept in an environmental chamber at 25-26°C, 65 ± 5% RH, and under a photoperiod of 14L:10D. Larvae fed and developed for 7 days after which they were transferred with the diet onto a plastic tray (16.5 x 11.5 x 1 cm) resting on moist vermiculite (50% weight:weight water). At maturity, larvae left the diet and pupated in the vermiculite. Pupae were separated from the vermiculite after 12 days and put into petri dish bottoms which were put inside screen and metal cages (32 x 32 x 32 cm) provisioned with 8% sucrose solution. Adults that had fed as larvae on dyed diet were compared with adults that had fed as larvae on undyed diet. Of 55 chemicals (2 replicates each) evaluated as internal markers for A. suspense (Table 1), Calco® oil red N1700 colored larvae and fat red 7B colored larvae, pupae and adults when 125 mg of dye material was added to the larval diet. When the con-

<table>
<thead>
<tr>
<th>SOURCE AND DYE</th>
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<tbody>
<tr>
<td>American Cyanamid</td>
<td>Congo red (C.I. 22120)</td>
</tr>
<tr>
<td>Calco oil red N1700</td>
<td>Cresol red sodium salt</td>
</tr>
<tr>
<td>Day-Glo Color Corp.</td>
<td>Crocein scarlet 7B (C.I. 27165)</td>
</tr>
<tr>
<td>Horizon blue A-19</td>
<td>Direct red (C.I. 28160)</td>
</tr>
<tr>
<td>Rocket red A-13</td>
<td>Disperse red 1 (C.I. 11110)</td>
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<tr>
<td>Saturn yellow A-17</td>
<td>Erlochrome black T (C.I. 14645)</td>
</tr>
<tr>
<td>R. T. French Co.</td>
<td>Fast black K salt (C.I. 37190)</td>
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<tr>
<td>French's® green food color</td>
<td>Fast red al salt (C.I. 37278)</td>
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<td>French's red food color</td>
<td>Fast red ITR base (C.I. 37150)</td>
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<tr>
<td>French's yellow food color</td>
<td>Fast red PDC salt (C.I. 37151)</td>
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<td>Knomark, Inc.</td>
<td>Fat red 7B</td>
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<tr>
<td>Tinex black No. 44</td>
<td>Methyl red (C.I. 13020)</td>
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<td>Tinex brilliant yellow No. 05</td>
<td>Methyl red sodium salt</td>
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<tr>
<td>Tinex purple No. 02</td>
<td>Mordant red 19 (C.I. 18735)</td>
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<td>Tinex red red No. 50</td>
<td>Naphthol blue black (C.I. 20470)</td>
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<tr>
<td>Matheson Coleman and Bell®</td>
<td>a-Naphthyl acid phosphate monosodium salt</td>
</tr>
<tr>
<td>Crystal violet CX 2095</td>
<td>Nuclear fast red</td>
</tr>
<tr>
<td>Fluorescein yellow 73, water soluble, U.S.P.</td>
<td>Palantine fast black wan (C.I. 15711)</td>
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<tr>
<td>Janus green B JX 10</td>
<td>Phenol red, free acid</td>
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<td>Methyline blue MX 985</td>
<td>Phenol red sodium salt</td>
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<td>Trypan blue (C.I. 23850)</td>
<td>Pigment red 1 (C.I. 12070)</td>
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<td>Sigma</td>
<td>Quinaldine red</td>
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<td>Acid black 48 (C.I. 65005)</td>
<td>Reactive red 120</td>
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<td>Acid red 1 (C.I. 18050)</td>
<td>Ruthenium red, practical grade</td>
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<td>Sudan black B (C.I. 26150)</td>
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<td>Bordeaux red (C.I. 16180)</td>
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<td>Brilliant black BN (C.I. 28440)</td>
<td>Toluidine red (C.I. 12120)</td>
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<td>p-Bromophenol</td>
<td>2,3,5-Triphenyltetrazolium chloride</td>
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<tr>
<td>Bromopyrogallo red</td>
<td>Wernle AG</td>
</tr>
<tr>
<td>Chlorazolic acid E (C.I. 30235)</td>
<td>(8001 Zurich, Switzerland)</td>
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<td>Schwarz</td>
<td>Helleorange-vollorange</td>
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centration of fat red 7B was increased to 200 or 500 mg per 125 mg of
diet, the adults were colored red for 2 days after eclosion, similarly, as
they were colored red in diet with 125 mg of fat red 7B. Eggs did not hatch
on diets mixed with janus green B, quinaldine red, crystal violet, fast red
PDC salt, and 2,3,5-triphenyltetrazolium chloride (the latter 2 diets dried
out completely). Perhaps some dyes are oxicidal. Larval development was
delayed 2 to 3 days if larvae fed on diets with methylene blue and the 4
Tinex® dyes. The average number of recovered pupae ranged from 26
from diet with Tinex black to 2475 from typan blue; an average number of
1930 pupae was recovered from diet with fat red 7B (125 mg) and 1980
from the control diet. This note discerns 55 chemicals that were unsuitable
internal dye markers for adult A. suspensa. (Mention of a commercial or
proprietary product does not constitute an endorsement by the USDA.)

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MYNDUS CRUDUS (HOMOPTERA: CIXIIDAE) IN
CANCUN, MEXICO

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Myndus crudus Van Duzee (Homoptera: Cixiidae) es una chicharrilla
asociada a los céspedes y a las palmeras y está implicada como un vector
del amarillamiento letal (AL) de palmeras en Florida (Howard et al. 1983).
Está ampliamente distribuido en América tropical y subtropical y ha sido
registrado de las localidades afectadas por el amarillamiento letal notadas en
sequía: el sur de Florida, Cuba, Jamaica (Kramer 1979), Grand Cay-
man Island (Fennah 1971) y el Valle del Río Bravo del Norte, Texas
(Meyerdirk y Hart 1982). Las áreas de las Américas afectadas por el AL
donde no se ha registrado M. crudus incluyen Hispaniola, donde se ha regis-
trada una especie de Myndus no descrita pero próxima a M. crudus (Howard
et al. 1981) y la isla de Nueva Provedencia, Bahamas. Se conoce la presencia
de la especie en varias localidades en México, pero hasta ahora no se la

(This note has been prepared in both Spanish and English versions since the topic is
of particular interest to readers in the Caribbean, Central and South America.—Ed.)