ATTACHMENT 4

CONSISTENCY CORRECTIONS IN RELATION TO HARMONIZATION OF FRUIT FLY STANDARDS

(Developed by the TPFF, October 2015; approved by SC May 2016 pending CPM-13 decision on reorganization)

APPENDIX 1 (FRUIT FLY TRAPPING) (2011) OF ISPM 26

Instructions: Changes to the text are shown in "track change" mode. If paragraphs are to be moved, this is indicated by "Move [para] to before / after [para]".
(Note that tables may not show in full)

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[1]	~~This appendix was adopted by the Sixth Session of the Commission on Phytosanitary Measures in March 2011.~~ This appendix is for reference purposes only and is not a prescriptive part of the standard.	The adoption statement appears at the start of the core ISPM.
[2]	**APPENDIX 1: Fruit fly trapping (2011)**	
[3]	This appendix provides detailed information for trapping procedures for fruit fly species (Tephritidae) of economic importance under different pest statuses. Specific traps, in combination with attractants~~,~~ and killing and preserving agents, should be used depending on the technical feasibility, the species of fruit fly and the pest status of the area~~s~~, which can be ~~either~~ an infested area, an area of low pest prevalence (fruit fly area of low pest prevalence (FF-ALPP))~~,~~ or an ~~pest free area (~~FF-PFA~~)~~. It describes the most widely used traps, including materials such as trapping devices and attractants, and trap~~ping~~ densities, as well as procedures including evaluation, data recording and analysis. Additional information about fruit fly trapping is available in the following publication of the Food and Agriculture Organization of the United Nations (FAO) and the~~/~~ International Atomic Energy Agency (IAEA) (in English only):	The panel felt it would be important to link this appendix to the IPPC diagnostic protocols to ensure users of the trapping guidelines would be prompted to use the internationally harmonized diagnostic protocols. Editorial corrections (incorrect to use “either” with more than two options; FF-PFA was defined in the core standard and according to IPPC Style Guide does not need to be redfined in component documents).

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	FAO/IAEA (Food and Agriculture Organization of the United Nations/International Atomic Energy Agency). 2018. *Trapping guidelines for area-wide fruit fly programmes*, Second edition, by Enkerlin, W.R. and Reyes-Flores, J. (eds). Rome, Italy. 65 pp. ~~2013. *Trapping manual for area-wide fruit fly programmesTrapping manual for area-wide fruit fly programmes.* Rome, FAO. (English only). 47 pp.~~ Available at https://www.iaea.org/about/insect-pest-control-section~~http://www-naweb.iaea.org/nafa/ipc/public/Trapping-guideline-(002).pdfhttp://www-naweb.iaea.org/nafa/ipc/public/Trapping-Manual-Final-sept13.pdf.~~ ~~IPPC d~~Diagnostic protocols adopted as annexes to ISPM 27 (*Diagnostic protocols for regulated pests*) may be useful tools to diagnose the adult fruit fly specimens ~~(ISPM 27)~~.	Reference styled as a bibliographic record according to IPPC Style guide. Hyperlink removed and URL given. New 2018 version (Trapping guidelines for area-wide fruit fly programmes, Second edition) is available. Editorial correction.
[4]	**1. Pest S~~s~~tatus and S~~s~~urvey T~~t~~ypes**	Editorial correction.
[5]	There are five pest statuses where surveys may be applied:	
[6]	A. Pest present without control. The pest is present but not subject to any control measures.	
[7]	B. Pest present under suppression. The pest is present and subject to control measures. Includes FF-ALPP.	
[8]	C. Pest present under eradication. The pest is present and subject to control measures. Includes FF-ALPP.	
[9]	D. Pest absent and FF-PFA being maintained. The pest is absent (e.g. eradicated, no pest records, no longer present) and measures to maintain pest absence are being applied.	Editorial correction.
[10]	E. Pest transient. Pest under surveillance and actionable, under eradication.	
[11]	The three types of surveys and corresponding objectives are:	

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[12]	- **monitoring surveys**, conducted~~applied~~ to verify the characteristics of the pest population	Editorial correction (surveys cannot be "applied", and "conducted" is the word used in relation to surveys in ISPM 5).
[13]	- **delimiting surveys**, conducted~~applied~~ to establish the boundaries of an area considered to be infested by or free from the pest	
[14]	- **detection surveys**, conducted~~applied~~ to determine if the pest is present in an area.	
[15]	Monitoring surveys are necessary to verify the characteristics of the pest population before the initiation or during the application of suppression and eradication measures to verify the population levels and to evaluate the efficacy of the control measures. These surveys are necessary for situations A, B and C. Delimiting surveys are conducted~~applied~~ to determine the boundaries of an area considered to be infested by or free from the pest such as boundaries of an established FF-ALPP (situation B) (Annex 1 of ISPM 35~~30~~ (*Systems approach for pest risk management of fruit flies (Tephritidae)*) and as part of a corrective action plan when the pest exceeds the established low pest prevalence level~~s~~ or in an FF-PFA (situation E) as part of a corrective action plan when a detection occurs. Detection surveys are conducted to determine if the pest is present in an area, that is, to demonstrate pest absence (situation D) and to detect a possible entry of the pest into the FF-PFA (pest transient, actionable) (ISPM 8).	Consequential change (ISPM 30 no longer exists). Editorial corrections.
[16]	Additional information on how or when specific types of surveys should be applied can be found in other standards dealing with specific topics such as pest status, eradication, pest free areas or areas of low pest prevalence.	
[17]	**2. Trapping ~~s~~Scenarios**	Editorial correction.
[18]	As the pest status may change over time, the type of survey needed may also change:	
[19]	- Pest present. Starting from an established population with no control (situation A), phytosanitary measures may be applied, and potentially lead	Editorial correction.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	to~~ward~~ an FF-ALPP (situation B and C) or an FF-PFA (situation D).	
[20]	- Pest absent. Starting from an FF-PFA (situation D), either the pest status is ~~either~~ maintained or a detection occurs (situation E), where measures ~~would be applied~~ aimed at restoring the FF-PFA would be applied.	Editorial correction (grammatical error).
[21]	**3. Trapping M~~m~~aterials**	Editorial correction.
[22]	The effective use of traps relies on the proper combination of trap, attractant and killing agent to attract, capture, kill and preserve the target fruit fly species for effective identification, counting ~~data collection~~ and data analysis. Traps for fruit fly surveys use the following materials, as appropriate:	Editorial correction.
[23]	- a trapping device	
[24]	- attractants (pheromones, male lures ~~parapheromones~~ and food attractants)	The panel noted that the term "male lures" was used in Annex 3 and that this term was more correct than "parapheromones" and more easily understandable, and it enhanced the consistency with Annex 3. The panel agreed that this should be a global change in the appendix, as the annex has prescriptive character.
[25]	- killing agents in wet and dry traps (with physical or chemical action)	
[26]	- preservation agents (wet or dry traps).	Editorial correction.
[27]	**3.1 Attractants**	
[28]	Some fruit fly species of economic importance and the attractants commonly used to capture them are presented in Table 1. The pr~~P~~resence or absence of a species from this table does not indicate that pest risk analysis has been performed and in no way is presence or absence~~it~~ indicative of the regulatory status of a fruit fly	Editorial correction.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	species.	
[29]	**Table 1.** A number of fruit fly species of economic importance and commonly used attractants	
[30]	~~Scientific name~~Species / Attractant *Anastrepha fraterculus* (Wiedemann)[4] — Protein attractant (PA) *Anastrepha grandis* (Macquart) — PA *Anastrepha ludens* (Loew) — PA, 2C-1[1] *Anastrepha obliqua* (Macquart) — PA, 2C-1[1] *Anastrepha serpentina* (Wiedemann) — PA *Anastrepha striata* (Schiner) — PA *Anastrepha suspensa* (Loew) — PA, 2C-1[1] *Bactrocera carambolae* (Drew & Hancock)[4] — Methyl eugenol (ME) *Bactrocera caryeae* (Kapoor)[4] — ME *Bactrocera correcta* (Bezzi) — ME *Bactrocera dorsalis* (Hendel)[4] — ME, 3C[2] ~~*Bactrocera invadens* (Drew, Tsuruta, & White)~~ — ~~ME, 3C[2]~~ *Bactrocera kandiensis* (Drew & Hancock)[4] — ME *Bactrocera musae* (Tryon) — ME *Bactrocera occipitalis* (Bezzi)[4] — ME ~~*Bactrocera papayae* (Drew & Hancock)~~ — ~~ME~~ ~~*Bactrocera philippinensis* (Drew & Hancock)~~ — ~~ME~~	Scientific name changed to "species" as the date of authority is ~~not given and thus~~ the list does not provide the full scientific name. Recent scientific research demonstrates that *Bactrocera invadens, B. papayae* and *B. philippinensis* are merged into *B. dorsalis* and are not separate species. The panel felt that this change was essential, although outside of the scope of this meeting. The panel agreed to add note 4 to other species of the *B. dorsalis* complex because this would clarify which species were included in the complex. The panel included "3C" in *B. dorsalis* because this had been tested for *B. invadens* which had now been merged into *B. dorsalis*. The panel agreed that *B. jarvisi* may be attracted to zingerone and that this had been tested in the field, and added this attractant. The panel felt that these changes were essential, although outside of the scope of this meeting. The paned discussed after the meeting via e-mail taxonomy related with *B. minax/B. citri*. The Panel agreed that *Bactrocera minax* is a synonym of *Bactrocera citri* and agreed that only *B. minax* should be used. The panel felt this change was essential. Editorial corrections (abbreviations not used again within the table do not need to be presented).

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)		Explanation for change
	Bactrocera umbrosa (Fabricius)	ME	The table cues may be changed to proceed in the correct order.
	Bactrocera zonata (Saunders)	ME, $3C^2$, ammonium acetate (AA)	
	Bactrocera cucurbitae (Coquillett)	Cuelure (CUE), $3C^2$, AA	
	Bactrocera neohumeralis (Hardy)	CUE	
	Bactrocera tau (Walker)	CUE	
	Bactrocera tryoni (Froggatt)	CUE	
	Bactrocera ~~citri (Chen) (B.~~ minax, Enderlein~~)~~	PA	
	Bactrocera cucumis (French)	PA	
	Bactrocera jarvisi (Tryon)	PA, zingerone	
	Bactrocera latifrons (Hendel)	PA	
	Bactrocera oleae (Gmelin)	PA, ammonium bicarbonate (AC), spiroketal (SK)	
	Bactrocera tsuneonis (Miyake)	PA	
	Ceratitis capitata (Wiedemann)	Trimedlure (TML), Capilure (CE), PA, $3C^2$, $2C\text{-}2^3$	
	Ceratitis cosyra (Walker)	PA, $3C^2$, $2C\text{-}2^3$	
	Ceratitis rosa (Karsch)	TML, PA, $3C^2$, $2C\text{-}2^3$	
	Dacus ciliatus (Loew)	PA, $3C^2$, AA	
	Myiopardalis pardalina (Bigot)	PA	
	Rhagoletis cerasi (Linnaeus)	Ammonium salts (AS), AA, AC	
	Rhagoletis cingulata (Loew)	AS, AA, AC	
	Rhagoletis indifferens (Curran)	AA, AC	
	Rhagoletis pomonella (Walsh)	~~b~~Butyl hexanoate ~~(BuH)~~, AS	

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	Toxotrypana curvicauda (Gerstaecker)— | 2-~~m~~Methyl-vinylpyrazine ~~(MVP)~~ [1] Two-component (2C-1) synthetic food attractant (~~of~~ ammonium acetate and putrescine), mainly for female captures.	
[31]	[2] Three-component (3C) synthetic food attractant~~, mainly for female captures~~ (ammonium acetate, putrescine, trimethylamine), mainly for female captures.	Editorial corrections to make table note text consistent.
[32]	[3] Two-component (2C-2) synthetic food attractant (~~of~~ ammonium acetate and trimethylamine), mainly for female captures.	
[33]	[4] Taxonomic status of some listed members of the *Bactrocera dorsalis* complex and of *Anastrepha fraterculus* is uncertain.	
[34]		
[35]	**3.1.1 Male-specific attractants**	
[36]	The most widely used attractants are pheromones or male lures ~~parapheromones~~ that are male~~-~~-specific. The male lure ~~parapheromone~~ trimedlure (TML) captures species of the genus *Ceratitis* (including *C. capitata* and *C. rosa*). The male lure ~~parapheromone~~ methyl eugenol (ME) captures a large number of species of the genus *Bactrocera* (including *B. carambolae*, *B. dorsalis*, ~~*B. invadens*~~, *B. musae*, ~~*B. philippinensis*~~ and *B. zonata*). The pheromone spiroketal captures *B. oleae*. The male lure ~~parapheromone~~ cuelure (CUE) captures a large number of other *Bactrocera* species, including *B. cucurbitae* and *B. tryoni*. Male lures ~~Parapheromones~~ are generally highly volatile and can be used with a variety of traps (examples are listed in Table 2a). Controlled-release formulations exist for TML, CUE and ME, providing a longer-lasting attractant for field use. It is important to be aware that some inherent environmental conditions may affect the longevity of pheromone and male lures~~parapheromone attractants~~.	For the changes in this paragraph, see discussions under [23] and [29].
[37]	**3.1.2 Female-biased attractants**	
[38]	Female-specific pheromones~~/parapheromones~~ are not usually commercially available (except, for example, 2-methyl-vinylpyrazine). Therefore, the female-biased attractants (natural, synthetic, liquid or dry) that are commonly used are	Editorial correction ("wide range" and "different" are redundant; once an abbreviation is defined it should be used).

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	based on food or host odours (Table 2b). Historically, liquid protein attractants (PAs) have been used to capture a wide range of ~~different~~ fruit fly species. Liquid PAs~~protein attractants~~ capture both females and males. These liquid PAs ~~attractants~~ are generally less sensitive than the male lures~~parapheromones~~. In addition, liquid PAs ~~attractants~~ capture high numbers of non-target insects and require more frequent servicing.	
[39]	Several food-based synthetic attractants have been developed using ammonia and its derivatives. These~~This~~ may reduce the number of non-target insects captured. For example, for capturing *C. capitata* a synthetic food attractant consisting of three components (ammonium acetate, putrescine and trimethylamine) is used. For capturing ~~of~~ *Anastrepha* species the trimethylamine component may be removed. A synthetic attractant lasts approximately four to ten~~4–10~~ weeks, depending on climatic conditions. It captures few non-target insects and significantly fewer male than female fruit flies, making this attractant suited for use in sterile fruit fly release programmes. New synthetic food attractant technologies are available ~~for use~~, including the long-lasting three-component and two-component mixtures contained in the same patch, as well as the three component~~s~~ mixture incorporated in a single cone-shaped plug ~~(Tables 1 and 3)~~.	Editorial corrections (assume "these" refers to plural attractants; IPPC Style Guide advice for numbers; for clarity; reference to tables 1 and 3 is not needed because the paragraph is self-explanatory and there are already references to tables 1 and 3 in paragraphs [28] and [59]).
[40]	~~In addition, b~~Because food-foraging female and male fruit flies respond to synthetic food attractants at the sexually immature adult stage, these attractant types are capable of detecting female fruit flies earlier and at lower population levels than liquid PAs~~protein attractants~~.	Editorial correction (unclear reference: in addition to what?; abbreviation use).
[41]	**Table 2a.** Attractants and traps for male fruit fly surveys	For the changes see Attachment 1.
[42]	**Table 2b.** Attractants and traps for female-biased fruit fly surveys	For the changes see Attachment 1.
[43]	**Table 3.** List of attractants and field longevity	For the changes see Attachment 1.
[44]	**3.2 Killing and preserving agents**	

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[45]	Traps retain attracted fruit flies through the use of killing and preserving agents. In some dry traps, killing agents are a sticky material or a toxicant. Some organophosphates may act as a repellent at higher doses. The use of insecticides in traps is subject to the registration and approval of the product in the respective national legislation.	
[46]	In other traps, liquid is the killing agent. When liquid PAs~~protein attractants~~ are used, ~~mix~~ borax to three percent~~3%~~ concentration is mixed in to preserve the captured fruit flies. Some~~There are~~ PAs~~protein attractants~~ ~~that~~ are formulated with borax, and thus no additional borax is required. When water is used in hot climates, ten percent~~10%~~ propylene glycol is added to prevent evaporation of the attractant and to preserve captured flies.	Editorial correction (for sense).
[47]	**3.3 Commonly used fruit fly traps**	
[48]	This section describes commonly used fruit fly traps. The list of traps is not comprehensive; other types of traps may achieve equivalent results and may be used for fruit fly trapping.	
[49]	Based on the killing agent, there are three types of traps commonly used:	
[50]	- **Dry traps.** The fly is caught on a sticky material board or killed by a chemical agent. Some of the most widely used dry traps are Cook and Cunningham (C&C) trap, ChamP (CH) trap, Jackson trap (JT) or ~~/~~Delta trap, Lynfield trap (LT), open bottom dry trap (OBDT) or Phase IV trap, red sphere (RS) trap, Steiner trap (ST), and yellow panel (YP) trap and ~~/~~Rebell (RB) trap~~s~~.	Editorial corrections (abbreviations defined here at first use).
[51]	- **Wet traps.** The fly is captured and drowns in the attractant solution or in water with surfactant. One of the most widely used wet traps is the McPhail (McP) trap. The Harris trap is also a wet trap, with a more limited use.	Editorial corrections.
[52]	- **Dry or wet traps.** These traps can be used either dry or wet. Some of the most widely used are e~~E~~asy trap (ET), Multilure trap (MLT) and Tephri	Editorial corrections (full stop in bold).

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	(TP) trap.	
[53]	**3.3.1 Cook and Cunningham ~~(C&C)~~ trap**	Editorial corrections (this heading level should be numbered; abbreviation use (already defined, and abbreviations should not be defined in headings in any case)).
[54]	~~*General d*~~*Description*	Editorial correction as "general" assumes a detailed description to come at a later stage. In the final formatted ISPM, this should be an in-line heading, in italics. The same applies to all "Description" headings of sections 3.3.2 to 3.3.15.
[55]	The C&C trap consists of three removable creamy white panels, spaced approximately 2.5 cm apart. The two outer panels are made of rectangular paperboard measuring 22.8 cm × 14.0 cm. One or both panels are coated with sticky material (Figure 1). The adhesive panel has one or more holes that~~which~~ allow air to circulate ~~through~~. The trap is used with a polymeric panel containing an olfactory attractant (usually TML~~trimedlure~~), which is placed between the two outer panels. The polymeric panels come in two sizes – standard and half ~~panel~~. The standard panel (15.2 cm × 15.2 cm) contains 20 g ~~of~~ TML, while the half size panel (7.6 cm × 15.2 cm) contains 10 g. The entire unit is held together with clips~~,~~ and is suspended in the tree canopy with a wire hanger.	Editorial corrections.
[56]	*Use*	In the final formatted ISPM, this should be an in-line heading, in italics. The same applies to all "Use" headings of sections 3.3.2 to 3.3.15.
[57]	As a result of the need for economical highly sensitive delimiting trapping of *C. capitata*, polymeric panels were developed for the controlled release of greater amounts of TML. These~~This~~ keep~~s~~ the release rate constant for a longer period of time, reducing hand labour and increasing sensitivity. The C&C trap with its multipanel construction has significant adhesive surface area for fly capture.	Editorial correction (spelling; grammar; comma for sense).

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[58]	- For the species for which the trap and attractant is used, see Table 2a.	
[59]	- For rebaiting (field longevity), see Table 3.	
[60]	- For use under different scenarios and recommended densities, see Table 4d.	
[61]	**3.3.2 ChamP trap ~~(CH)~~**	Editorial correction.
[62]	*~~General d~~Description*	
[63]	The ~~ChamP~~ CH trap is a hollow, YP~~ellow panel~~-type trap with two perforated sticky side panels. When the two panels are folded, the trap is rectangular in shape (18 cm × 15 cm), and a central chamber is created to place the attractant (Figure 2). A wire hanger placed at the top of the trap is used to place it on branches.	Editorial correction (abbreviation use).
[64]	*Use*	
[65]	The CH~~ChamP~~ trap can accommodate patches, polymeric panels~~,~~ and plugs. It is equivalent to a YP~~ellow panel~~ trap and ~~/~~Rebell trap in sensitivity.	Editorial corrections.
[66]	- For the species for which the trap and attractant is used, see Table 2 (a and b).	
[67]	- For rebaiting (field longevity), see Table 3.	
[68]	- For use under different scenarios and recommended densities, see Table~~s~~ 4 (b and ~~4~~c).	Editorial correction (for consistency with [66]).
[69]	**3.3.3 Easy trap ~~(ET)~~**	Editorial correction.
[70]	*General description*	
[71]	The ~~Easy trap~~ ET is a two-part rectangular plastic container with an inbuilt hanger. It is 14.5 cm high, 9.5 cm wide and~~,~~ 5 cm deep and can hold 400 ml of ~~liquid~~ solution (Figure 3). The front part is transparent and the rear part is yellow. The transparent front of the trap contrasts with the yellow rear enhancing the trap's	Editorial corrections.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	ability to catch fruit flies. It combines visual effects with male lure ~~parapheromone~~ and food-based attractants.	
[72]	*Use*	
[73]	The trap is multipurpose. It can be used dry baited with male lures ~~parapheromones~~ (e.g. TML, CUE, ME) or synthetic food attractants (e.g. 3C and both combinations of 2C attractants) and a retention system such as dichlorvos. It can also be used wet baited with liquid PAs,~~protein attractants~~ holding up to 400 ml of mixture. When synthetic food attractants are used, one of the dispensers (the one containing putrescine) is attached inside ~~to~~ the yellow part of the trap and the other dispensers are left free.	Editorial corrections.
[74]	The ET~~Easy trap~~ is one of the most economical traps commercially available. It is easy to carry, handle and service, providing the opportunity to service a greater number of traps per person~~man~~-hour than some other traps.	Editorial corrections (gender-neutral language, see FAO Style Guide).
[75]	- For the species for which the trap and attractant is used, see Table 2 (a and b).	
[76]	- For rebaiting (field longevity), see Table 3.	
[77]	- For use under different scenarios and recommended densities, see Table 4d.	
[78]	**3.3.4 Fluorescent yellow sticky "cloak" trap ~~(PALz)~~**	Editorial correction.
[79]	*General description*	
[80]	The fluorescent yellow sticky "cloak" trap (PALz) ~~trap~~ is prepared from fluorescent yellow plastic sheets (36 cm × 23 cm). One side is covered with sticky material. When setting the trap up, the sticky sheet is placed around a vertical branch or a pole in a "cloak-like" manner (Figure 4), with the sticky side facing outward, and the back corners are fastened together with clips.	

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[81]	*Use*	
[82]	The trap uses the optimal combination of visual (fluorescent yellow) and chemical (cherry fruit fly synthetic bait) attractant cues. The trap is kept in place by a piece of wire, attached to the branch or pole. The bait dispenser is fastened to the front top edge of the trap, with the bait hanging in front of the sticky surface. The sticky surface of the trap has a capture capacity of about 500 to 600 fruit flies. Insects attracted by the combined action of these two stimuli are caught on the sticky surface.	
[83]	- For the species for which the trap and attractant is used, see Table 2b.	
[84]	- For rebaiting (field longevity), see Table 3.	
[85]	- For use under different scenarios and recommended densities, see Table 4e.	
[86]	3.3.5 **Jackson trap ~~(JT)~~ or Delta trap**	Editorial correction.
[87]	*General description*	
[88]	The ~~Jackson trap~~ JT is hollow, delta~~-~~shaped and made of a white waxed cardboard. It is 8 cm high, 12.5 cm long and 9 cm wide (Figure 5). Additional parts include a white or yellow rectangular insert of waxed cardboard, which is covered with a thin layer of adhesive used to trap fruit flies once they land inside the trap body; a polymeric plug or cotton wick in a plastic basket or wire holder; and a wire hanger placed at the top of the trap body.	Editorial corrections.
[89]	*Use*	
[90]	This trap is mainly used with male lures ~~parapheromone attractants~~ to capture male fruit flies. The attractants used with JT or ~~/~~Delta traps are TML, ME and CUE. When ME and CUE are used a toxicant must be added.	Editorial correction.
[91]	For many years this trap has been used in exclusion, suppression or eradication programmes for multiple purposes, including population ecology studies (seasonal	Editorial correction.

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	abundance, distribution, host sequence, etc.); detection and delimiting trapping; and surveying sterile fruit fly populations in areas subjected to sterile fly mass releases. JT or ~~/~~ Delta traps may not be suitable for some environmental conditions (e.g. rain or dust).	
[92]	The JT or ~~/~~Delta traps are some of the most economical traps commercially available. They are easy to carry, handle and service, providing the opportunity of servicing a greater number of traps per person~~man~~-hour than some other traps.	Editorial corrections.
[93]	- For the species for which the trap and attractant is used, see Table 2a.	
[94]	- For rebaiting (field longevity), see Table 3.	
[95]	- For use under different scenarios and recommended densities, see Table~~s~~ 4 (b and ~~4~~d).	Editorial correction.
[96]	**3.3.6 Lynfield trap ~~(LT)~~**	Editorial correction.
[97]	*General description*	
[98]	The conventional ~~Lynfield trap~~ LT consists of a disposable~~,~~ clear plastic~~,~~ cylindrical container measuring 11.5 cm high with a 10 cm diameter base and 9 cm diameter screw-top lid. There are four entry holes evenly spaced around the wall of the trap (Figure 6). Another version of the LT~~Lynfield trap~~ is the Maghreb-Med trap, also known as the Morocco trap (Figure 7).	Editorial corrections.
[99]	*Use*	
[100]	The trap uses an attractant and insecticide system to attract and kill target fruit flies. The screw-top lid is usually colour-coded to the type of attractant being used (red, Capilure (CE)/TML; white, ME; yellow, CUE). To hold the attractant a 2.5 cm screw-tip cup hook (opening squeezed closed) screwed through the lid from above is used. The trap uses the male lures ~~male-specific parapheromone attractants~~ CUE, ~~Capilure~~ (CE~~)~~, TML and ME.	Editorial corrections (abbreviation use).

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[101]	CUE and ME attractants, which are ingested by the male fruit fly, are mixed with malathion. However, because CE and TML are not ingested by either *C. capitata* or *C. rosa*, a dichlorvos-impregnated matrix is placed inside the trap to kill fruit flies that enter.	
[102]	- For the species for which the trap and attractant is used, see Table 2 (a and b).	
[103]	- For rebaiting (field longevity), see Table 3.	
[104]	- For use under different scenarios and recommended densities, see Table~~s~~ 4 (b and 4d).	Editorial correction.
[105]	3.3.7 **McPhail ~~(McP)~~ trap ~~type~~**	Editorial correction.
[106]	*General description*	
[107]	The conventional ~~McPhail~~ (McP~~)~~ trap is a transparent glass or plastic~~,~~ pear-shaped invaginated container. The trap is 17.2 cm high and 16.5 cm wide at the base and holds up to 500 ml of solution (Figure 8). The trap parts include a rubber cork or plastic lid that seals the upper part of the trap and a wire hook to hang the trap~~s~~ on tree branches. A plastic version of the McP~~McPhail~~ trap is 18 cm high and 16 cm wide at the base and holds up to 500 ml of solution (Figure 9). The top part is transparent and the base is yellow.	Editorial corrections.
[108]	*Use*	
[109]	For this trap to function properly it is essential that the body stays clean. Some designs have two parts in which the upper part and base of the trap can be separated, allowing for easy ~~service (~~rebaiting~~)~~ and inspection of fruit fly captures.	Editorial correction. The term has already been used for other traps.
[110]	This trap uses a liquid food attractant, based on hydrolysed protein or torula yeast/borax tablets. Torula tablets are more effective than hydrolysed protein~~s~~ over time because the pH is stable at 9.2. The level of pH in the mixture plays an important role in attracting fruit flies. Fewer fruit flies are attracted to the mixture	Editorial correction.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	as the pH becomes more acidic.	
[111]	To bait with yeast tablets, mix three to five torula tablets in 500 ml ~~of~~ water or follow the manufacturer's recommendation. Stir to dissolve the tablets. To bait with protein hydrolysate, mix protein hydrolysate and borax (if not already added to the protein) in water to reach five to nine percent~~5–9%~~ hydrolysed protein concentration and three percent~~3%~~ ~~of~~ borax.	
[112]	The nature of its attractant means this trap is more effective at catching females. Food attractants are generic by nature, and so McP traps tend to also catch a wide range of other non-target tephritid and non-tephritid fruit flies in addition to the target species.	
[113]	McP ~~type~~ traps are used in fruit fly management programmes in combination with other traps. In areas subjected to suppression and eradication actions, these traps are used mainly to monitor female populations. Female catches are crucial in assessing the amount of sterility induced to a wild population in a sterile insect technique (SIT) programme. In programmes releasing only sterile males or in a male annihilation technique ~~(MAT)~~ programme, McP traps are used as a population detection tool by targeting feral females, whereas other traps (e.g. JT~~Jackson traps~~), used with male-specific attractants, catch the released sterile males, and their use should be limited to programmes with an SIT component. Furthermore, in fruit fly-free areas, McP traps are an important part of the non-indigenous fruit fly trapping network because of their capacity to capture fruit fly species of quarantine importance for which no specific attractants exist.	Editorial correction (confusing terminology).
[114]	McP traps with liquid PA~~protein attractant~~ are labour-intensive. Servicing and rebaiting take time, and the number of traps that can be serviced in a normal working day is half that of some of the other traps described in this appendix.	Editorial correction.
[115]	- For the species for which the trap and attractant is used, see Table 2b.	
[116]	- For rebaiting (field longevity), see Table 3.	

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[117]	- For use under different scenarios and recommended densities, see Table~~s~~ 4 (a, ~~4~~b, ~~4~~d and ~~4~~e).	Editorial correction.
[118]	**3.3.8 Modified funnel trap ~~(VARs+)~~**	Editorial correction.
[119]	*General description*	
[120]	The modified funnel trap (VARs+) consists of a plastic funnel and a lower catch container (Figure 10). The top roof has a large (5 cm diameter) hole, over which an upper catch container (transparent plastic) is placed.	Editorial correction.
[121]	*Use*	
[122]	As~~Since~~ it is a non-sticky trap design, it has a virtually unlimited catch capacity and very long field life. The bait is attached to the roof, so that the bait dispenser is positioned in~~to~~ the middle of the large hole on the roof. A small piece of matrix impregnated with a killing agent is placed inside both the upper and the lower catch containers to kill fruit flies that enter.	Editorial corrections.
[123]	- For the species for which the trap and attractant is used, see Table 2a.	
[124]	- For rebaiting (field longevity), see Table 3.	
[125]	- For use under different scenarios and recommended densities, see Table 4d.	
[126]	**3.3.9 Multilure trap ~~(MLT)~~**	Editorial correction.
[127]	*General description*	
[128]	The Multilure trap (MLT) is a version of the McP~~hail~~ trap described previously. The trap is 18 cm high and 15 cm wide at the base and can hold up to 750 ml of ~~liquid~~ solution (Figure 11). It consists of a two-piece plastic invaginated cylind~~er~~rical~~er-shaped~~ container. The top part is transparent and the base is yellow. The upper part and base of the trap separate, allowing the trap to be serviced and rebaited. The transparent upper part of the trap contrasts with the yellow base	Editorial corrections.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	enhancing the trap's ability to catch fruit flies. A wire hanger, placed on top of the trap body, is used to hang the trap from tree branches.	
[129]	*Use*	
[130]	This trap follows the same principles as those of the McP trap. However, an MLT used with dry synthetic attractant is more efficient and selective than an MLT or McP trap used with liquid PA~~protein attractant~~. Another important difference is that an MLT with a dry synthetic attractant allows for ~~a~~ cleaner servicing and is much less labour~~-~~ intensive than a McP trap. When synthetic food attractants are used, dispensers are attached to the inside walls of the upper cylindrical part of the trap or hung from a clip at the top. For this trap to function properly it is essential that the upper part stays transparent.	Editorial corrections.
[131]	When the MLT is used as a wet trap a surfactant should be added to the water. In hot climates ten percent~~10%~~ propylene glycol can be used to decrease water evaporation and decomposition of captured fruit flies.	Editorial correction.
[132]	When the MLT is used as a dry trap, a suitable (non-repellent at the concentration used) insecticide such as dichlorvos or a deltamethrin (DM) strip is placed inside the trap to kill the fruit flies. DM is applied to a polyethylene strip placed on the upper plastic platform inside the trap. Alternatively, DM may be used in a circle of impregnated mosquito net and will retain its killing effect for at least six months under field conditions. The net must be fixed on the ceiling inside the trap using adhesive material.	
[133]	- For the species for which the trap and attractant is used, see Table 2b.	
[134]	- For rebaiting (field longevity), see Table 3.	
[135]	- For use under different scenarios and recommended densities, see Table~~s~~ 4 (a~~, 4b, 4c and 4~~d).	Editorial correction.
[136]	**3.3.10 Open bottom dry trap ~~(OBDT)~~ or ~~(~~Phase IV~~)~~ trap**	Editorial correction.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[137]	*General description*	
[138]	The~~is~~ OBDT or Phase IV trap is an open-bottom cylindrical dry trap that can be made from opaque green plastic or wax-coated green cardboard. The cylinder is 15.2 cm high and 9 cm in diameter at the top and 10 cm in diameter at the bottom (Figure 12). It has a transparent top, three holes (each of 2.5 cm diameter) equally spaced around the wall of the cylinder midway between the ends, and an open bottom, and is used with a sticky insert. A wire hanger, placed on top of the trap body, is used to hang the trap from tree branches.	Editorial correction.
[139]	*Use*	
[140]	A food-based synthetic chemical female–biased attractant can be used to capture *C. capitata*. However, it also serves to capture males. Synthetic attractants are attached to the inside walls of the cylinder. Servicing is easy because the sticky insert permits easy removal and replacement, similar to the inserts used in the JT. This trap is less expensive than the plastic or glass McP ~~type~~ traps.	Editorial corrections.
[141]	- For the species for which the trap and attractant is used, see Table 2b.	
[142]	- For attractants used and rebaiting (field longevity), see Table 3.	
[143]	- For use under different scenarios and recommended densities, see Table 4d.	
[144]	**3.3.11 Red sphere trap ~~(RS)~~**	Editorial correction.
[145]	*General description*	
[146]	The RS trap is a red sphere 8 cm in diameter (Figure 13). The trap mimics the size and shape of a ripe apple. A green version of this trap is also used. The trap is covered with a sticky material and baited with the synthetic fruit odour butyl hexanoate, which has a fragrance like a ripe fruit. Attached to the top of the sphere is a wire hanger used to hang it from tree branches.	Editorial correction.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[147]	*Use*	
[148]	The red or green traps can be used unbaited, but they are much more efficient in capturing fruit flies when baited. Fruit flies that are sexually mature and ready to lay eggs are attracted to this trap.	
[149]	Many types of insects will be caught by these traps. It will be necessary to positively identify the target fruit fly from the non-target insects likely to be present on the traps.	
[150]	- For the species for which the trap and attractant is used, see Table 2b.	
[151]	- For rebaiting (field longevity), see Table 3.	
[152]	- For use under different scenarios and recommended densities, see Table 4e.	
[153]	**3.3.12 Sensus trap ~~(SE)~~**	Editorial correction.
[154]	*General description*	
[155]	The Sensus (SE) trap consists of a vertical plastic bucket 12.5 cm ~~in~~ high and 11.5 cm in diameter (Figure 14). It has a transparent body and a blue overhanging lid, which has a hole just underneath it. A wire hanger placed on top of the trap body is used to hang the trap from tree branches.	Editorial correction.
[156]	*Use*	
[157]	The trap is dry and uses male lures ~~male-specific parapheromones~~ or, for female-biased captures, dry synthetic food attractants. A dichlorvos block is placed in the comb on the lid to kill the flies.	
[158]	- For the species for which the trap and attractant is used, see Table 2 (a and b).	
[159]	- For rebaiting (field longevity), see Table 3.	

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[160]	- For use under different scenarios and recommended densities, see Table 4d.	
[161]	**3.3.13 Steiner trap ~~(ST)~~**	Editorial correction.
[162]	*General description*	
[163]	The ~~Steiner trap~~ ST is a horizontal~~,~~ clear plastic cylinder with openings at each end. The conventional ST~~Steiner trap~~ is 14.5 cm long and 11 cm in diameter (Figure 15). There are a number of versions of this~~Steiner~~ trap~~s~~. These include one~~the Steiner trap of~~ that is 12 cm long and 10 cm in diameter (Figure 16) and one 14 cm long and 8.5 cm in diameter (Figure 17). A wire hanger, placed on top of the trap body, is used to hang the trap from tree branches.	Editorial corrections.
[164]	*Use*	
[165]	This trap uses the male lures ~~male-specific parapheromone attractants~~ TML, ME and CUE. The attractant is suspended from the centre of the inside of the trap. The attractant may be a cotton wick soaked in 2–3 ml of a mixture of male lure ~~parapheromone~~ or a dispenser with the attractant and an insecticide (usually malathion, dibrom or DM~~deltamethrin~~) as a killing agent.	Editorial correction (DM was defined earlier in the appendix).
[166]	- For the species for which the trap and attractant is used, see Table 2a.	
[167]	- For rebaiting (field longevity), see Table 3.	
[168]	- For use under different scenarios and recommended densities, see Table~~s~~ 4 (b and ~~4~~d).	Editorial correction.
[169]	**3.3.14 Tephri trap ~~(TP)~~**	Editorial correction.
[170]	*General description*	
[171]	The ~~Tephri~~ TP~~trap~~ is similar to the~~a~~ McP trap. It is a vertical cylinder 15 cm high and 12 cm in diameter at the base and can hold up to 450 ml of ~~liquid~~ solution (Figure 18). It has a yellow base and a clear top, which can be separated to	Editorial corrections.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	facilitate servicing. There are entrance holes around the top of the periphery of the yellow base, and an invaginated opening in the bottom. Inside the top is a platform to hold attractants. A wire hanger, placed on top of the trap body, is used to hang the trap from tree branches.	
[172]	*Use*	
[173]	The trap is baited with hydrolysed protein at nine percent~~9%~~ concentration; however, it can also be used with other liquid PAs~~protein attractants~~ as described for the conventional glass McP trap or with the female dry synthetic food attractant and with TML in a plug or liquid as described for the JT or~~/~~ Delta trap and YP~~Yellow panel~~ trap~~s~~. If the trap is used with liquid PAs~~protein attractants~~ or with dry synthetic attractants combined with a liquid retention system and without the side holes, the insecticide will not be necessary. However, when used as a dry trap and with side holes, an insecticide solution (e.g. malathion) soaked into a cotton wick or other killing agent is needed to avoid escape of captured insects. Other suitable insecticides are dichlorvos or ~~deltamethrin (~~DM~~)~~ strips placed inside the trap to kill the fruit flies. DM is applied in a polyethylene strip, placed on the plastic platform inside the top of the trap. Alternatively, DM may be used in a circle of impregnated mosquito net and will retain its killing effect for at least six months under field conditions. The net must be fixed on the ceiling of the inside of the trap using adhesive material.	Editorial corrections.
[174]	- For the species for which the trap and attractant is used, see Table 2 (a and b).	
[175]	- For rebaiting (field longevity), see Table 3.	
[176]	- For use under different scenarios and recommended densities, see Table~~s~~ 4 (b and ~~4~~d).	Editorial correction.
[177]	**3.3.15 Yellow panel trap and~~(YP)/~~ Rebell trap ~~(RB)~~**	Editorial correction.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[178]	*General description*	
[179]	The ~~Yellow panel~~ YP trap ~~(YP)~~ consists of a yellow rectangular cardboard plate (23 cm × 14 cm) coated with plastic (Figure 19). The rectangle is covered on both sides with a thin layer of sticky material. The RB~~Rebell~~ trap is a three-dimensional YP-type trap with two crossed yellow rectangular plates (15 cm × 20 cm) made of plastic (polypropylene), making them extremely durable (Figure 20). The trap is also coated with a thin layer of sticky material on both sides of both plates. A wire hanger, placed on top of the trap body, is used to hang it from tree branches.	Editorial corrections.
[180]	*Use*	
[181]	These traps can be used as visual traps alone and baited with TML, spiroketal or ammonium salts (ammonium acetate). The attractants may be contained in controlled-release dispensers such as a polymeric plug. The attractants are attached to the face of the trap. The attractants can also be mixed into the cardboard's coating. The two-dimensional design and greater contact surface make these traps more efficient, in terms of fly captures, than the JT and McP~~hail type~~ trap~~s~~. It is important to consider that these traps require special procedures for transportation, submission and fruit fly screening methods because they are so sticky that specimens can be destroyed in handling. Although these traps can be used in most types of control programme applications, their use is recommended for the post-eradication phase and for fruit fly ~~-~~free areas, where highly sensitive traps are required. These traps should not be used in areas subjected to mass release of sterile fruit flies because of the large number of released fruit flies that would be caught. It is important to note that their yellow colour and open design allow them to catch other non-target insects, including natural enemies of fruit flies and pollinators.	Editorial corrections.
[182]	- For the species for which the trap and attractant is used, see Table 2 (a and b).	
[183]	- For rebaiting (field longevity), see Table 3.	

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[184]	- For use under different scenarios and recommended densities, see Table~~s~~ 4 (b~~, 4c, 4d and 4~~e).	Editorial correction.
[185]	**4. Trapping ~~p~~Procedures**	Editorial correction.
[186]	**4.1 Spatial distribution of traps**	
[187]	The spatial distribution of traps will be guided by the purpose of the survey, the intrinsic characteristics of the area, the biological characteristics of the fruit fly and its interactions with its hosts, as well as the efficacy of the attractant and trap. In areas where continuous compact blocks of commercial orchards are present and in urban and suburban areas where hosts exist, traps are usually deployed in a grid system, which may have a uniform distribution.	
[188]	In areas with scattered commercial orchards, in rural areas with hosts and in marginal areas where hosts exist, trap networks are normally distributed along roads that provide access to host material.	Editorial correction.
[189]	In suppression and eradication programmes, an extensive trapping network should be deployed over the entire area that is subject to surveillance and control actions.	
[190]	Trapping networks are also placed as part of early detection programmes for target fruit fly species. In this case traps are placed in high-risk areas such as points of entry, fruit markets, urban areas and garbage dumps, as appropriate. Traps in these locations~~This~~ can be ~~further~~ supplemented by traps placed along roadsides to form transects and in~~at~~ production areas close to or adjacent to land borders, ports ~~ports points~~ of entry~~ies~~ and national roads.	Editorial corrections (grammar). SC proposed additional change from "ports of entry" to "points of entry" to use Glossary term. In CPM 2017/INF/11, the EU and its 28 Members States considered that the substitution of the term "ports of entry" by the Glossary term "points of entry" should not be made, because, according to the General recommendations on use of terms in ISPMs, "point of entry" should not be used in relation to entrance points into a pest free area (PFA) or an area of low pest prevalence (ALPP). The small group set up by CPM-12 (2017) (COSAVE, Australia, Europe and Japan) to develop a compromise on the reorganization on the fruit flies ISPMs agreed with the change proposed by the

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
		EU.
[191]	**4.2 Trap deployment ~~(placement)~~**	Editorial (described in the text).
[192]	Trap deployment involves the actual placement of the traps in the field. One of the most important factors of trap deployment is selecting an appropriate trap site. It is important to have a list of the primary, secondary and occasional fruit fly hosts, and their phenology, distribution and abundance. With this basic information, it is possible to properly place and distribute the traps in the field, and this information~~it~~ also allows for effective planning of a programme of trap relocation.	Editorial corrections.
[193]	When possible, pheromone traps should be placed in mating areas. Fruit flies normally mate in the crown of host plants or close by, selecting semi-shaded spots ~~and~~ usually on the upwind side of the crown. Other suitable trap sites are the eastern side of the tree, which gets the sunlight in the early hours of the day, and resting and feeding areas in plants that provide shelter and protect fruit flies from strong winds and predators. In specific situations trap hangers may need to be coated with an appropriate insecticide to prevent ants from eating captured fruit flies.	Editorial corrections.
[194]	~~Protein~~ PA traps should be deployed in shaded areas in host plants. In this case traps should be deployed in primary host plants during their fruit maturation period. In the absence of primary host plants, secondary host plants should be used. In areas with no host plants identified, traps should be deployed in plants that can provide shelter, protection and food to adult fruit flies.	Editorial corrections.
[195]	Traps should be deployed in the middle to the top part of the host plant canopy, depending on the height of the host plant, and oriented towards the upwind side. Traps should not be exposed to direct sunlight, strong winds or dust. It is of vital importance to have the trap entrance clear from twigs, leaves and other obstructions such as spider webs to allow proper airflow and easy access for the fruit flies.	

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[196]	Placement of traps in the same tree baited with different attractants should be avoided because it may cause interference among attractants and a reduction of trap efficiency. For example, placing a *C. capitata* male-specific TML trap and a PA~~protein attractant~~ trap in the same tree will cause a reduction of female capture in the PA~~protein~~ trap~~s~~ because TML acts as a female repellent.	Editorial corrections.
[197]	Traps should be relocated following the maturation phenology of the fruit hosts present in the area and biology of the fruit fly species. By relocating the traps it is possible to follow the fruit fly population throughout the year and increase the number of sites being checked for fruit flies.	
[198]	**4.3 Trap mapping**	
[199]	Once traps are deployed at carefully selected sites at the correct density and distributed in an appropriate pattern, the location of the traps must be recorded. It is recommended that the location of traps should be geo-referenced with the use of ~~global positioning system (~~GPS~~)~~ equipment, where available. A map or sketch of the trap location and the area around the traps should be prepared.	Editorial correction (GPS defined in core ISPM).
[200]	~~The application of~~ GPS and ~~geographic information systems (~~GIS~~)~~ have proven to be very powerful tools in the management of trapping network~~s has proved to be a very powerful tool~~. GPS allows each trap to be geo-referenced through geographical coordinates, which are then used as input information in a GIS.	Editorial correction (for sense: “application” is not the tool).
[201]	In addition to GPS location data or in the event that GPS data are~~is~~ not available for trap location~~s~~, reference for the trap location should include visible landmarks. In the case of traps placed in host plants located in suburban and urban areas, references should include the full address of the property where the traps were~~was~~ placed. Trap reference should be clear enough to allow control teams and supervisors who service the traps to find the trap easily.	Editorial correction (grammar).
[202]	A database or trapping book of all traps with their corresponding coordinates should be kept, together with the records of trap services, date of collection, collector, rebaiting, trap captures, and if possible notes on the collection site such	Editorial (redundancy).

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	as ecological characteristics. GIS provides high-resolution maps showing the exact location of each trap and other valuable information such as exact location of fruit fly detections, historical ~~profiles of the~~ geographical distribution patterns of the fruit flies, relative size of the populations in given areas and spread of the fruit fly population in case of an outbreak. This information is extremely useful in planning control activities, ensuring that bait sprays and sterile fruit fly releases are accurately placed and cost-effective in their application.	
[203]	**4.4 Trap servicing and inspection**	
[204]	Trap servicing intervals are specific to each trapping system and are based on the half-life of the attractant, noting that actual timings should be supported by field testing and validation (see Table 3). Capturing fruit flies will depend, in part, on how well the trap is serviced. Trap servicing includes rebaiting and maintaining the trap in a clean and appropriate operating condition. Traps should be in a condition to consistently kill and retain in good condition any target flies that have been captured.	Editorial correction.
[205]	Attractants have to be used in the appropriate volumes and at the appropriate concentrations and replaced at the recommended intervals, as indicated by the manufacturer. The release rate of attractants varies considerably with environmental conditions. The release rate is generally high in hot and dry areas, and low in cool and humid areas. Thus, in cool climates traps may have to be rebaited less often than in hot conditions.	Editorial correction (grammar).
[206]	Inspection intervals (i.e. checking for fruit fly captures) should be adjusted according to the prevailing environmental conditions, pest situation~~s~~ and biology of fruit flies, on a case-by-case basis. The interval can range from one day up to 30 days, for example, ~~e.g.~~ seven days in areas where fruit fly populations are present and 14 days in fruit fly free areas. In the case of delimiting surveys inspection intervals may be more frequent, with two to three days being the most common interval.	Editorial correction.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[207]	It is recommended to a~~A~~void handling more than one lure type at a time if more than one lure type is being used at a single locality. Cross-contamination between traps of different attractants~~ types~~ (e.g. CUE~~ue~~ and ME) reduces trap efficacy and makes laboratory identification unduly difficult. When changing attractants, it is important to avoid spillage or contamination of the external surface of the trap body or the ground. Attractant spillage or trap contamination would reduce the chance~~s~~ of fruit flies entering the trap. For traps that use a sticky insert to capture fruit flies, it is important to avoid contaminating areas in the trap that are not meant for capturing fruit flies with the sticky material. This also applies to leaves and twigs that surround the trap. Attractants, by their nature, are highly volatile and care should be taken when storing, packaging, handling and disposing of lures to avoid compromising the attractant efficacy and operator safety.	Editorial correction (active voice not generally used in this appendix).
[208]	The number of traps serviced per day per person will vary depending on the type of trap, trap density, environmental and topographic conditions, and experience of the operators. Where a large trap network is in place, it may need to be serviced over a number of days. In this case, the network may be serviced through a number of "routes" or "runs" that~~which~~ systematically ensure all traps within the network are inspected and serviced~~,~~ and none is~~are~~ missed.	Editorial corrections (grammar).
[209]	**4.5 Trapping records**	
[210]	The following information should be included in ~~order to keep~~ proper trapping records that~~as they~~ provide confidence in the survey results: trap location, plant where the trap is placed, trap and attractant type, servicing and inspection dates, and target fruit fly capture. Any other information considered necessary can be added to the trapping records. Retaining results over a number of seasons can provide useful information on spatial changes in fruit fly populations.	Editorial corrections (sense).
[211]	**4.6 Flies per trap per day**	
[212]	Flies per trap per day (FTD) is a population index that indicates the average number of flies of the target species captured per trap per day during a specified	Cross-reference to the prescriptive annex on FTD was added.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	period in which the trap was exposed in the field (see also Annex 2 of ISPM 35).	
[213]	The function of this population index is to have a comparative measure of the size of the adult pest population in a given space and time.	
[214]	It is used as baseline information to compare the size of the population before, during and after the application of a fruit fly control programme. ~~The~~ FTD should be used in all reports of trapping.	Editorial correction.
[215]	~~The~~ FTD is comparable within a programme; however, for meaningful comparisons between programmes, it should be based on the same fruit fly species, trapping system and trap density.	Editorial correction.
[216]	In areas where sterile fruit fly release programmes are in operation FTD is used to measure the relative abundance of the sterile and wild fruit flies.	
[217]	FTD is the result of dividing the total number of fruit flies captured (F) by the product obtained from multiplying the total number of inspected traps (T) by the average number of days between trap inspections (D). The formula is as follows:	
[218]	$FTD = \frac{F}{T \times D}$	
[219]	**5. Trap Dd~~d~~ensities**	Editorial correction.
[220]	Establishing a trap~~ping~~ density appropriate to the purpose of the survey is critical and underpins confidence in the survey results. ~~The t~~Trap densit~~yies~~ need~~s~~ to be adjusted based on many factors including type of survey, trap efficiency, location (type and presence of host, climate and topography), pest situation and lure type. In terms of type and presence of host~~s~~, as well as the risk involved, the following types of location may be of concern:	Editorial corrections.
[221]	- production areas	

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[222]	- marginal areas	
[223]	- urban areas	
[224]	- points of entry (and other high-risk areas such as fruit markets).	
[225]	Trap densityies may ~~also~~ vary as a gradient from production areas to marginal areas, urban areas and points of entry. For example, in a pest free area, a higher density of traps is required at high-risk points of entry and a lower density in commercial orchards. Or, in an area where suppression is applied, such as in an ~~area of low pest prevalence~~ALPP or an area under a systems approach where the target species is present, the reverse occurs, and trap~~ping~~ densityies for that pest should be higher in the place of production ~~field~~ and decrease towards points of entry. Other situations such as high-risk urban areas should be taken into consideration when assessing trap~~ping~~ densityies.	Editorial corrections. Area of low pest prevalence is defined in Annex 3. To use Glossary term ("production field" is not defined).
[226]	Table~~s~~ 4 (a–~~4~~f) shows suggested trap densities for various fruit fly species based on common practice. These densities have been determined taking into consideration research results, feasibility and cost-~~–~~effectiveness. Trap densities are ~~also~~ dependent on associated surveillance activities, such as the type and intensity of fruit sampling to detect immature stages of fruit flies. In ~~those~~ cases where trapping surveillance programmes are complemented with fruit sampling activities, trap densities could be lower than the suggested densities shown in Table~~s~~ 4 (a–~~4~~f).	Editorial correction (Table 4 is one table with parts).
[227]	The suggested trap densities presented in Table~~s~~ 4 (a–~~4~~f) ~~have been made also~~ tak~~e~~ing into account the following technical factors:	Editorial corrections.
[228]	- various survey objectives and pest status	
[229]	- target fruit fly species (Table 1)	
[230]	- pest risk associated with working areas (production and other areas).	

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[231]	Within the delimited area, the suggested trap density should be applied in areas with a significant likelihood of capturing fruit flies such as areas with primary hosts and possible pathways (e.g. production areas versus industrial areas).	
[232]	Table 4a. Trap densities suggested for *Anastrepha* spp.	Editorial correction in all tables 4a to 4f: "delimitation" survey changed to "delimiting" in the last row. Note for all tables: numbers in table cells should have the same number of decimal places e.g. "0.25–0.5" should be "0.25–0.50".
[233]		

Trapping	Trap type1	Attractant	Trap density/km2 (2)			
			Production area	Marginal	Urban	Points of entry3
Monitoring survey, no control	MLT/McP	2C-1/PA	0.25–1	0.25–0.5	0.25–0.5	0.25–0.5
Monitoring survey for suppression	MLT/McP	2C-1/PA	2–4	1–2	0.25–0.5	0.25–0.5
Delimiting survey in an FF-ALPP after an unexpected increase in population	MLT/McP	2C-1/PA	3–5	3–5	3–5	3–5
Monitoring survey for eradication	MLT/McP	2C-1/PA	3–5	3–5	3–5	3–5
Detection survey in an FF-PFA to verify pest absence and for exclusion	MLT/McP	2C-1/PA	1–2	2–3	3–5	5–12

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	Delimiting~~ation~~ survey in an FF-PFA after a detection in addition to detection survey4 — MLT/McP — 2C-1/PA — 20–50 — 20–50 — 20–50 — 20–50 1 Different traps can be combined to reach the total number.	
[234]	(2) Refers to the total number of traps.	
[235]	3 Also other high-risk sites.	
[236]	4 This range includes high-density trapping in the immediate area of the detection (core area). However, it may decrease towards the surrounding trapping zones.	
[237]	Trap type — Attractant McP — McPhail trap — 2C-1 — AA+Pt AA — Ammonium acetate Pt — Putrescine MLT — Multilure trap — PA — Protein attractant	It is suggested to treat tables 4a to 4f as parts of one table and have one list of all abbreviations used and table notes (most of which are common to all tables) at the bottom of 4f. There is a problem with the abbreviations list: FF-PFA and FF-ALPP definitions are missing. Also note that in Tables 4b to 4f there was "PFA" where I think "FF-PFA" was meant (I changed it). The MLT entry should appear directly under McP.
[238]	Table 4b. Trap densities suggested for Bactrocera spp. responding to methyl eugenol ~~(ME)~~, cuelure ~~(CUE)~~ and food attractants (~~PA =~~ protein attractants)	Editorial correction (abbreviations are defined below the table and they complicate the table caption).
[239]	Trapping — Trap type1 — Attractant — Trap density/km2 (2): Production area — Marginal — Urban — Points of entry3	Trap types to be placed in alphabetical order.

	Monitoring survey, no control	JT/ST/TP/LT/MM/MLT/McP/ET	ME/CUE/PA	0.25–1.0	0.2–0.5	0.2–0.5	0.2–0.5
	Monitoring survey for suppression	JT/ST/TP/LT/MM/MLT/McP/ET	ME/CUE/PA	2–4	1–2	0.25–0.5	0.25–0.5
	Delimiting survey in an FF-ALPP after an unexpected increase in population	JT/ST/TP/MLT/LT/MM/McP/YP/ET	ME/CUE/PA	3–5	3–5	3–5	3–5
	Monitoring survey for eradication	JT/ST/TP/MLT/LT/MM/McP/ET	ME/CUE/PA	3–5	3–5	3–5	3–5
	Detection survey in an FF-PFA to verify pest absence and for exclusion	CH/ST/LT/MM/MLT/McP/TP/YP/ET	ME/CUE/PA	1	1	1–5	3–12
	Delimiting~~ation~~ survey in an FF-PFA after a detection in addition to detection survey4	JT/ST/TP/MLT/LT/MM/McP/YP/ET	ME/CUE/PA	20–50	20–50	20–50	20–50

1 Different traps can be combined to reach the total number.

[240]	(2) Refers to the total number of traps.	
[241]	3 Also other high-risk sites.	
[242]	4 This range includes high-density trapping in the immediate area of the detection (core area).	

<table>
<tr><th>Para. No.</th><th>Proposal for consistency change (underline = addition; strikethrough = deletion)</th><th>Explanation for change</th></tr>
<tr><td>[243]</td><td>However, it may decrease towards the surrounding trapping zones.</td><td>Move this line to [243] (it should run on after “(core area)”.)</td></tr>
<tr><td>[244]</td><td>
<table>
<tr><th>Trap type</th><th></th><th>Attractant</th><th></th></tr>
<tr><td>CH</td><td>ChamP trap</td><td>ME</td><td>Methyl eugenol</td></tr>
<tr><td>ET</td><td>Easy trap</td><td>CUE</td><td>Cuelure</td></tr>
<tr><td>JT</td><td>Jackson trap</td><td>PA</td><td>Protein attractant</td></tr>
<tr><td>LT</td><td>Lynfield trap</td><td></td><td></td></tr>
<tr><td>McP</td><td>McPhail trap</td><td></td><td></td></tr>
<tr><td>MLT</td><td>Multilure trap</td><td></td><td></td></tr>
<tr><td>MM</td><td>Maghreb-Med or Morocco trap</td><td></td><td></td></tr>
<tr><td>ST</td><td>Steiner trap</td><td></td><td></td></tr>
<tr><td>TP</td><td>Tephri trap</td><td></td><td></td></tr>
<tr><td>YP</td><td>Yellow panel trap</td><td></td><td></td></tr>
</table>
</td><td>Editorial correction (Methyl eugenol presented as two words elsewhere in the appendix).</td></tr>
<tr><td>[245]</td><td>Table 4c. Trap densities suggested for Bactrocera oleae</td><td></td></tr>
<tr><td>[246]</td><td>
<table>
<tr><th rowspan="2">Trapping</th><th rowspan="2">Trap type1</th><th rowspan="2">Attractant</th><th colspan="2">Trap density/km2 (2)</th><th rowspan="2">Urban</th><th rowspan="2">Points of entry3</th></tr>
<tr><th>Production area</th><th>Marginal</th></tr>
<tr><td>Monitoring survey, no control</td><td>MLT/CH/YP/ET/McP</td><td>AC+SK/PA</td><td>0.5–1.0</td><td>0.25–0.5</td><td>0.25–0.5</td><td>0.25–0.5</td></tr>
</table>
</td><td></td></tr>
</table>

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)							Explanation for change
	Monitoring survey for suppression	MLT/CH/YP/ET/McP	AC+SK/PA	2–4	1–2	0.25–0.5	0.25–0.5	
	Delimiting survey in an FF-ALPP after an unexpected increase in population	MLT/CH/YP/ET/McP	AC+SK/PA	3–5	3–5	3–5	3–5	
	Monitoring survey for eradication	MLT/CH/YP/ET/McP	AC+SK/PA	3–5	3–5	3–5	3–5	
	Detection survey in an FF-PFA to verify pest absence and for exclusion	MLT/CH/YP/ET/McP	AC+SK/PA	1	1	2–5	3–12	
	Delimiting~~ation~~ survey in an FF-PFA after a detection in addition to detection survey4	MLT/CH/YP/ET/McP	AC+SK/PA	20–50	20–50	20–50	20–50	
	1 Different traps can be combined to reach the total number.							
[247]	(2) Refers to the total number of traps.							
[248]	3 Also other high-risk sites.							
[249]	4 This range includes high-density trapping in the immediate area of the detection (core area). However, it may decrease towards the surrounding trapping zones.							
[250]	Trap type Attractant							

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change

CH	ChamP trap	AC	Ammonium bicarbonate
ET	Easy trap	PA	Protein attractant
McP	McPhail trap	SK	Spiroketal
MLT	Multilure trap		
YP	Yellow panel trap		

Table 4d. Trap densities suggested for Ceratitis spp.

[251]

Trapping	Trap type1	Attractant	Trap density/km2 (2)			
			Production area	Marginal	Urban	Points of entry 3
Monitoring survey, no control4	JT/MLT/McP/ OBDT/ST/SE/ET/ LT/TP/VARs+/CH	TML/CE/3C/ 2C-2/PA	0.5–1.0	0.25–0.5	0.25–0.5	0.25–0.5
Monitoring survey for suppression	JT/MLT/McP/ OBDT/ST/SE/ET/ LT/MMTP/VARs+/CH	TML/CE/3C/ 2C-2/PA	2–4	1–2	0.25–0.5	0.25–0.5
Delimiting survey in an FF-ALPP after an unexpected increase in population	JT/YP/MLT/McP/ OBDT/ST/ET/LT/MM/TP/VARs+/CH	TML/CE/3C/ PA	3–5	3–5	3–5	3–5

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change

Monitoring survey for eradication5	JT/MLT/McP/ OBDT/ST/ET/LT/MM/TP/VARs+/CH	TML/CE/3C/ 2C-2/PA	3–5	3–5	3–5	3–5
Detection survey in an FF-PFA to verify pest absence and for exclusion5	JT/MLT/McP/ST/ ET/LT/MM/CC/ VARs+/CH	TML/CE/3C/ PA	1	1–2	1–5	3–12
Delimiting~~ati on~~ survey in an FF-PFA after a detection in addition to detection survey6	JT/YP/MLT/McP/ OBDT/ST//ET/LT/MM/TP/VARs+/CH	TML/CE/3C/ PA	20–50	20–50	20–50	20–50

1 Different traps can be combined to reach the total number.

[252]	(2) Refers to the total number of traps.	
[253]	3 Also other high-risk sites.	
[254]	4 1:1 ratio (one~~1~~ female trap per male trap).	Editorial correction.
[255]	5 3:1 ratio (three~~3~~ female traps per male trap).	Editorial correction.
[256]	6 This range includes high-density trapping in the immediate area of the detection (core area). However, it may decrease towards the surrounding trapping zones (ratio 5:1;~~,~~ five~~5~~ female traps per male trap).	Editorial correction.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)			Explanation for change
[257]	Trap type		Attractant	Editorial corrections.
	CC	Cook and Cunningham ~~(C&C) t~~Trap (with TML for male capture)	2C-2	(AA+TMA)
	CH	ChamP trap	3C	(AA+Pt+TMA)
	ET	Easy trap (with 2C and 3C attractants for female-biased captures)	CE	Capilure
	JT	Jackson trap (with TML for male capture)	AA	Ammonium acetate
	LT	Lynfield trap (with TML for male capture)	PA	Protein attractant
	McP	McPhail trap	Pt	Putrescine
	MLT	Multilure trap (with 2C and 3C attractants for female-biased captures)	TMA	Trimethylamine
	MM	Maghreb-Med or Morocco trap	TML	Trimedlure
	OBDT	Open b~~B~~ottom d~~D~~ry t~~T~~rap (with 2C and 3C attractants for female-biased captures)		
	SE	Sensus trap (with CE for male captures and with 3C for female-biased captures)		
	ST	Steiner trap (with TML for male capture)		
	TP	Tephri trap (with 2C and 3C attractants for female-biased captures)		
	VARs +	Modified funnel trap		

<table>
<tr><th>Para. No.</th><th>Proposal for consistency change (underline = addition; strikethrough = deletion)</th><th>Explanation for change</th></tr>
<tr><td></td><td>YP Yellow panel trap</td><td></td></tr>
<tr><td>[258]</td><td>Table 4e. Trap densities suggested for Rhagoletis spp.</td><td></td></tr>
<tr><td>[259]</td><td>
<table>
<tr><th rowspan="2">Trapping</th><th rowspan="2">Trap type1</th><th rowspan="2">Attractant</th><th colspan="2">Trap density/km2 (2)</th><th colspan="2"></th></tr>
<tr><th>Production area</th><th>Marginal</th><th>Urban</th><th>Points of entry3</th></tr>
<tr><td>Monitoring survey, no control</td><td>RB/RS/PALz/YP</td><td>BuH/AS</td><td>0.5–1.0</td><td>0.25–0.5</td><td>0.25–0.5</td><td>0.25–0.5</td></tr>
<tr><td>Monitoring survey for suppression</td><td>RB/RS/PALz/YP</td><td>BuH/AS</td><td>2–4</td><td>1–2</td><td>0.25–0.5</td><td>0.25–0.5</td></tr>
<tr><td>Delimiting survey in an FF-ALPP after an unexpected increase in population</td><td>RB/RS/PALz/YP</td><td>BuH/AS</td><td>3–5</td><td>3–5</td><td>3–5</td><td>3–5</td></tr>
<tr><td>Monitoring survey for eradication</td><td>RB/RS/PALz/YP</td><td>BuH/AS</td><td>3–5</td><td>3–5</td><td>3–5</td><td>3–5</td></tr>
<tr><td>Detection survey in an FF-PFA to verify pest absence and for exclusion</td><td>RB/RS/PALz/YP</td><td>BuH/AS</td><td>1</td><td>0.4–3</td><td>3–5</td><td>4–12</td></tr>
<tr><td>Delimiting~~ation~~ survey in an FF-PFA after a detection in addition to detection survey4</td><td>RB/RS/PALz/YP</td><td>BuH/AS</td><td>20–50</td><td>20–50</td><td>20–50</td><td>20–50</td></tr>
</table>
1 Different traps can be combined to reach the total number.
</td><td></td></tr>
<tr><td>[260]</td><td>(2) Refers to the total number of traps.</td><td></td></tr>
</table>

<table>
<tr><th>Para. No.</th><th>Proposal for consistency change (underline = addition; strikethrough = deletion)</th><th>Explanation for change</th></tr>
<tr><td>[261]</td><td>3 Also other high-risk sites.</td><td></td></tr>
<tr><td>[262]</td><td>4 This range includes high-density trapping in the immediate area of the detection (core area). However, it may decrease towards the surrounding trapping zones.</td><td></td></tr>
<tr><td>[263]</td><td>Trap type

RB Rebell trap
RS Red sphere trap
PALz Fluorescent yellow sticky “cloak” trap
YP Yellow panel trap

Attractant

AS Ammonium salt
BuH Butyl hexanoate</td><td>Editorial correction (to match use in text).</td></tr>
<tr><td>[264]</td><td>Table 4f. Trap densities suggested for Toxotrypana curvicauda</td><td></td></tr>
<tr><td>[265]</td><td>
<table>
<tr><th>Trapping</th><th>Trap type1</th><th>Attractant</th><th>Trap density/km2 (2)</th><th></th><th></th><th></th></tr>
<tr><th></th><th></th><th></th><th>Production area</th><th>Marginal</th><th>Urban</th><th>Points of entry 3</th></tr>
<tr><td>Monitoring survey, no control</td><td>GS</td><td>MVP</td><td>0.25–0.5</td><td>0.25–0.5</td><td>0.25–0.5</td><td>0.25–0.5</td></tr>
<tr><td>Monitoring survey for suppression</td><td>GS</td><td>MVP</td><td>2–4</td><td>1</td><td>0.25–0.5</td><td>0.25–0.5</td></tr>
<tr><td>Delimiting survey in an FF-ALPP after an unexpected</td><td>GS</td><td>MVP</td><td>3–5</td><td>3–5</td><td>3–5</td><td>3–5</td></tr>
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Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	increase in population Monitoring survey for eradication GS MVP 3–5 3–5 3–5 3–5 Detection survey in an FF-PFA to verify pest absence and for exclusion GS MVP 2 2–3 3–6 5–12 Delimitingation survey in an FF-PFA after a detection in addition to detection survey4 GS MVP 20–50 20–50 20–50 20–50 1 Different traps can be combined to reach the total number.	
[266]	(2) Refers to the total number of traps.	
[267]	3 Also other high-risk sites.	
[268]	4 This range includes high-density trapping in the immediate area of the detection (core area). However, it may decrease towards the surrounding trapping zones.	
[269]	Trap type Attractant GS Green sphere trap MVP Papaya fruit fly pheromone (2-methyl-vinylpyrazine) **6. Supervision aActivities**	Editorial correction. Editorial correction.
[270]	Supervision of trapping activities includes assessing the quality of the materials used and reviewing the effectiveness of the use of these materials and trapping procedures.	
[271]	The materials used should perform effectively and reliably at an acceptable level	Editorial correction (spelling).

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	for a prescribed period of time. The traps themselves should maintain their integrity for the entire duration that they are anticipated to remain in the field. The attractants should be certified or bio-assayed by the manufacturer for an acceptable level of performance based on their anticipated use.	
[272]	The effectiveness of trapping should be officially reviewed periodically by individuals not directly involved in conducting trapping activities. The timing of review will vary by programme, but it is recommended to occur at least twice a year in programmes that run for six months or longer. The review should address all aspects related to the ability of trapping to detect targeted fruit flies within the time frame required to meet programme outcomes, for example, ~~e.g.~~ e~~E~~arly detection of a fruit fly entry. Aspects of a review include quality of trapping materials, record -keeping, layout of the trapping network, trap mapping, trap placement, trap condition, trap servicing, trap inspection frequency, and capability for fruit fly identification.	Editorial corrections.
[273]	The trap deployment should be evaluated to ensure that the prescribed types and densities of traps are in place. Field confirmation is achieved through inspection of individual routes.	
[274]	Trap placement should be evaluated for appropriate host selection, trap relocation schedule, height, light penetration, fruit fly access to trap, and proximity to other traps. Host selection, trap relocation and trap proximity to other traps can be evaluated from the records for each trap route. Host selection, trap relocation~~placement~~ and trap proximity to other traps can be further evaluated by field examination.	Editorial correction (for sense and accuracy).
[275]	Traps should be evaluated for their overall condition, correct attractant, appropriate trap servicing and inspection intervals, correct identifying markings (such as trap identification and date placed), evidence of contamination and proper warning labels. Evaluation~~This~~ is performed in the field at each site where a trap is placed.	Editorial correction.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
[276]	Evaluation of identification capability can occur via target fruit flies that have been marked in some manner in order to distinguish them from wild trapped fruit flies. These marked fruit flies are placed in traps in order to evaluate the operator's diligence in servicing the traps, competence in recognizing the targeted fruit fly species, and knowledge of the proper reporting procedures once a fruit fly is found. Commonly used marking systems are fluorescent dyes or wing clipping.	
[277]	In some programmes that survey for eradication or to maintain FF-PFAs, the fruit flies may also be marked by using sterile irradiated fruit flies in order to further reduce the chances of the marked fruit flies being falsely identified as a wild fruit flies and resulting in unnecessary actions being taken by the programme. A slightly different method is necessary under a sterile fruit fly release programme in order to evaluate personnel on their ability to accurately distinguish target wild fruit flies from the released sterile fruit flies. The marked fruit flies used are sterile and lack the fluorescent dye, but are marked physically by wing clipping or some other method. These fruit flies are placed into the trap samples after they have been collected in the field but before they are inspected by the operators.	Editorial corrections.
[278]	The review should be summarized in a report detailing how many inspected traps on each route were found to be in compliance with the accepted standards in categories such as trap mapping, placement, condition, and servicing and inspection intervals. Aspects that were found to be deficient should be identified, and sSpecific recommendations should be made to correct aspects found to be these deficienteies.	Editorial corrections (for sense: redundant to say both "found" and "identified" for deficient aspects).
[279]	Proper record -keeping is crucial to the appropriate functioning of trapping. The records for each trap route should be inspected to ensure that they are complete and up to date. Field confirmation can then be used to validate the accuracy of the records. Maintenance of voucher specimens of collected species of regulated fruit fly species is recommended.	Editorial correction.
[280]	**7. BibliographyReferences**	Change to correct terminology. As explained in IPPC Style Guide:

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
		"A bibliography is a list of publications the author has used in their study for the preparation of the document, but not necessarily to the extent that these need to be quoted or referenced in the document. A bibliography contains entries that may or may not be referenced in the text." "The *References* section contains a list of the sources of all references and quotations cited in the text."
[281]	~~This listing is for reference purposes only and it is not comprehensive.~~	Deleted as unclear what "reference purposes only" actually means. Also, it is known that bibliographies are not necessarily a complete list of all possible sources on a subject.
[282]	**Baker, R., Herbert, R., Howse, P.E. & Jones, O.T.** 1980. Identification and synthesis of the major sex pheromone of the olive fly (*Dacus oleae*). *Journal of the~~,~~ Chemical~~,~~ Society~~,~~, Chemical~~,~~ Communications~~,,~~* 1: 52–53.	Editorial correction.
[283]	**Calkins, C.O., Schroeder, W.J. & Chambers, D.L.** 1984. The probability of detecting the Caribbean fruit fly, *Anastrepha suspensa* (Loew) (Diptera: Tephritidae) with various densities of McPhail traps. *Journal of~~,~~ Economic~~,~~ Entomology~~,,~~* 77: 198–201.	Editorial correction.
[284]	**Campaña Nacional Contra Moscas de la Fruta~~,~~** (DGSV/CONASAG/SAGAR). 1999. *Apéndice Técnico para el Control de Calidad del Trampeo para Moscas de la Fruta del Género* Anastrepha *spp.* México D.F. ~~febrero de 1999.~~ 15 pp.	Editorial correction. Further corrections, if known, could add publisher name and clarify what the abbreviations in parentheses refer to.
[285]	**Conway, H.E. & Forrester, O.T.** 2007. Comparison of Mexican fruit fly (Diptera: Tephritidae) capture between McPhail traps with Torula ~~Yeast~~ and Multilure t~~T~~raps with Biolures in South Texas. *Florida Entomologist~~,~~* 90(3): 579~~–~~–580.	Editorial corrections.
[286]	**Cowley, J.M., Page, F.D., Nimmo, P.R. & Cowley, D.R.** 1990. Comparison of the effectiveness of two traps for *Bactrocera tryoni* (Froggatt) (Diptera:	Editorial correction. I found the article in a different journal.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	Tephritidae) and implications for quarantine surveillance systems. ~~*J.*~~ *Australian Journal of Entomol*ogy~~*, Soc.,*~~ 29: 171–176.	
[287]	**Drew, R.A.I.** 1982. Taxonomy. *In* R.A.I. Drew, G.H.S. Hooper & M.A. Bateman, eds. *Economic fruit flies of the South Pacific region*, 2nd edn, pp. 1–97. Brisbane, Australia, Queensland Department of Primary Industries. 150 pp.	Editorial corrections.
[288]	**Drew, R.A.I. & Hooper, G.H.S.** 1981. The response of fruit fly species (Diptera; Tephritidae) in Australia to male attractants. ~~*J.*~~ *Australian Journal of Entomology*~~*, Entomol. Soc.,*~~ 20: 201–205.	Editorial correction.
[289]	**Epsky, N.D., Hendrichs, J., Katsoyannos, B.I., Vasquez, L.A., Ros, J.P., Zümreoglu, A., Pereira, R., Bakri, A., Seewooruthun, S.I. & Heath, R.R.** 1999. Field evaluation of female-targeted trapping systems for *Ceratitis capitata* (Diptera: Tephritidae) in seven countries. *Journal of*~~*.*~~ *Econ*omic~~*.*~~ *Entomol*ogy~~*,*~~ 92(1): 156–164.	Editorial corrections.
[290]	**FAO/IAEA** (Food and Agriculture Organization of the United Nations/International Atomic Energy Agency). 2018. *Trapping guidelines for area-wide fruit fly programmes*, Second edition, by Enkerlin, W.R. and Reyes-Flores, J. (eds). Rome, Italy. 65 pp.~~2013. *Trapping manual for area wide fruit fly programmes.* Rome, FAO. (English only). 47 pp.~~ Available at https://www.iaea.org/about/insect-pest-control-section~~http://www-naweb.iaea.org/nafa/ipc/public/Trapping-Manual-Final-sept13.pdf.~~	Updated reference to the Trapping manual (previously noted under IAEA only) added. (new version available)
[291]	**Fay, H.A.C.** 2012. A highly effective and selective male lure for *Bactrocera jarvisi* (Tryon) (Diptera: Tephritidae). ~~*–Australian*~~*.* *Journal of*~~*.*~~ *Entomology*~~*,*~~ 51: 189~~–~~–187.	Reference added to support the inclusion of the male lure zingerone for *B. jarvisi*. Editorial correction.
[292]	**Heath, R.R., Epsky, N.D., Guzman, A., Dueben, B.D., Manukian, A. & Meyer, W.L.** 1995. Development of a dry plastic insect trap with food-based	Editorial correction.

Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	synthetic attractant for the Mediterranean and the Mexican fruit fly (Diptera: Tephritidae). *Journal of. Economic. Entomology.,* 88: 1307–1315.	
[293]	**Heath, R.H., Epsky, N., Midgarden, D. & Katsoyannos, B.I.** 2004. Efficacy of 1,4-diaminobutane (putrescine) in a food-based synthetic attractant for capture of Mediterranean and Mexican fruit flies (Diptera: Tephritidae). *Journal of. Economic. Entomology.,* 97(3): 1126–1131.	Editorial corrections.
[294]	**Hill, A.R.** 1987. Comparison between trimedlure and Ceapilure® – Aattractants for male *Ceratitis capitata* (Wiedemann) (Diptera Tephritidae). *J. Australian. Journal of Entomology., Soc.,* 26: 35–36.	Editorial corrections.
[295]	**Holler, T., Sivinski, J., Jenkins, C. & Fraser, S.** 2006. A comparison of yeast hydrolysate and synthetic food attractants for capture of *Anastrepha suspensa* (Diptera: Tephritidae). *Florida Entomologist*, 89(3): 419–420.	
[296]	**IAEA** (International Atomic Energy Agency). 1996. *Standardization of medfly trapping for use in sterile insect technique programmes*. Final report of Coordinated Research Programme 1986–1992. IAEA-TECDOC-883. Vienna, IAEA.	Editorial correction.
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Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
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[303]	**Lance, D.R. & Gates, D.B.** 1994. Sensitivity of detection trapping systems for Mediterranean fruit flies (Diptera: Tephritidae) in southern California. *Journal of Economic Entomology*, 87: 1377.	Editorial correction.
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Para. No.	Proposal for consistency change (underline = addition; strikethrough = deletion)	Explanation for change
	cerasi L.) (Diptera, Tephritidae).] *Növényvédelem*, 40: 229–236.	
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[317]	**Tóth, M., Tabilio, R., Mandatori, R., Quaranta, M. & Carbone, G.** 2007. Comparative performance of traps for the Mediterranean fruit fly *Ceratitis capitata* Wiedemann (Diptera: Tephritidae) baited with female-targeted or male-targeted lures. *International Journal of Horticultural Science*, 13: 11–14.	Editorial correction. Move this reference to just after the one at [313] (“Mandatori” before “Nobili”).
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[322]	**Wijesuriya, S.R. & De Lima, C.P.F.** 1995. Comparison of two types of traps and lure dispensers for *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae). ~~*J.*~~ *Australian~~.~~ Journal of Entomology~~., Soc.,~~* 34: 273–275.	Editorial correction.

ATTACHMENT 1

Table 2a. Attractants and traps for male fruit fly surveys

Fruit fly species	Attractant and trap ~~(see below for abbreviations)~~																									
	TML/CE											ME								CUE							
	CC	CH	ET	JT	LT	MM	ST	SE	TP	YP	VARs+	CH	ET	JT	LT	MM	ST	TP	YP	CH	ET	JT	LT	MM	ST	TP	YP
Anastrepha fraterculus																											
Anastrepha ludens																											
Anastrepha obliqua																											
Anastrepha striata																											
Anastrepha suspensa																											
Bactrocera carambolae												x	x	x x	x	x	x	x	x x								
Bactrocera caryeae												x	x	x x	x	x	x	x	x x								
Bactrocera ~~citri (B.~~ minax~~)~~																											
Bactrocera correcta												x	x	x	x	x	x	x	x								
Bactrocera cucumis																											
Bactrocera cucurbitae																				x	x	x	x	x	x	x	x
Bactrocera dorsalis												x	x	x	x	x	x	x	x								
~~Bactrocera invadens~~												~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~								
Bactrocera kandiensis												x	x	x	x	x	x	x	x								
Bactrocera latifrons																											
Bactrocera occipitalis												x	x	x	x	x	x	x	x								
Bactrocera oleae																											
~~Bactrocera papayae~~												~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~								
~~Bactrocera philippinensis~~												~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~								
Bactrocera tau																				x	x	x	x	x	x	x	x
Bactrocera tryoni																				x	x	x	x	x	x	x	x
Bactrocera tsuneonis																											
Bactrocera umbrosa												x	x	x	x	x	x x	x	x								
Bactrocera zonata												x	x	x	x	x	x x	x	x								
Ceratitis capitata		x	x	x	x	x	x	x	x	x	x																

Fruit fly species	Attractant and trap ~~(see below for abbreviations)~~																									
	TML/CE											ME								CUE							
	CC	CH	ET	JT	LT	MM	ST	SE	TP	YP	VARs+	CH	ET	JT	LT	MM	ST	TP	YP	CH	ET	JT	LT	MM	ST	TP	YP
Ceratitis cosyra																											
Ceratitis rosa		x	x	x	x	x	x	x	x	x	x																
Dacus ciliatus																											
Myiopardalis pardalina																											
Rhagoletis cerasi																											
Rhagoletis cingulata																											
Rhagoletis indifferens																											
Rhagoletis pomonella																											
Toxotrypana curvicauda																											

Attractant abbreviations

CE Capilure ~~TML Trimedlure~~
CUE Cuelure ~~CE Capilure~~
ME Methyl eugenol
TML Trimedlure ~~CUE Cuelure~~

Trap abbreviations

CC Cook and Cunningham ~~(C&C)~~ trap
CH ChamP trap
ET Easy trap
JT Jackson trap
LT Lynfield trap
MM Maghreb-Med or Morocco trap
SE Sensus trap~~ST Steiner trap~~
ST Steiner trap ~~SE Sensus trap~~
TP Tephri trap
VARs+ Modified funnel trap
YP Yellow panel trap

Table 2b. Attractants and traps for female-biased fruit fly surveys

Fruit fly species	Attractant and trap (see below for abbreviations)																								
	3C							2C-2					2C-1	PA			SK+AC		AS (AA, AC)				BuH			MVP
	ET	SE	MLT	OBDT	LT	MM	TP	ET	MLT	LT	MM	TP	MLT	ET	McP	MLT	CH	YP	RB	RS	YP	PALz	RS	YP	PALz	GS
Anastrepha fraterculus															x	x										
Anastrepha grandis															x	x										
Anastrepha ludens													x		x	x										
Anastrepha obliqua													x		x	x										
Anastrepha striata															x	x										
Anastrepha suspensa													x		x	x										
Bactrocera carambolae															x	x										
Bactrocera caryeae															x	x										
Bactrocera ~~citri (B. minax)~~															x	x										
Bactrocera correcta															x	x										
Bactrocera cucumis															x	x										
Bactrocera cucurbitae			x												x	x										
Bactrocera dorsalis			x												x	x										
~~Bactrocera invadens~~			~~x~~												~~x~~	~~x~~										
Bactrocera kandiensis															x	x										
Bactrocera latifrons															x	x										
Bactrocera occipitalis															x	x										
Bactrocera oleae														x	x	x	x	x			x	x				
~~Bactrocera papayae~~															~~x~~	~~x~~										
~~Bactrocera philippinensis~~															~~x~~	~~x~~										
Bactrocera tau															x	x										
Bactrocera tryoni															x	x										
Bactrocera tsuneonis															x	x										

Fruit fly species	Attractant and trap ~~(see below for abbreviations)~~																								
	3C							2C-2					2C-1	PA			SK+AC		AS (AA, AC)				BuH			MVP
	ET	SE	MLT	OBDT	LT	MM	TP	ET	MLT	LT	MM	TP	MLT	ET	McP	MLT	CH	YP	RB	RS	YP	PALz	RS	YP	PALz	GS
Bactrocera umbrosa															x	x										
Bactrocera zonata			x												x	x										
Ceratitis capitata	x	x	x	x~~X~~	x	x	x	x~~X~~	x	x	x	x		x	x	x										
Ceratitis cosyra			x						x						x	x										
Ceratitis rosa		x	x						x						x	x										
Dacus ciliatus			x												x	x										
Myiopardalis pardalina															x	x										
Rhagoletis cerasi																			x	x	x	x	x	x	x	
Rhagoletis cingulata																					x	x		x	x	
Rhagoletis indifferens																				x	x					
Rhagoletis pomonella																			x		x	x	x			
Toxotrypana curvicauda																										x

Attractant abbreviations

2C-1 (AA+Pt)~~3C (AA+Pt+TMA)~~

2C-2 (AA+TMA)

3C (AA+Pt+TMA)~~2C-1 (AA+Pt)~~

AA Ammonium acetate ~~PA Pprotein attractant~~

AC Ammonium (bi)carbonate

AS Ammonium salts ~~SK Sspiroketal~~

~~AC Aammonium (bi)carbonate~~

BuH Butyl hexanoate ~~AS Aammonium salts~~

MVP Papaya fruit fly pheromone~~AA Aammonium acetate~~

(2-methyl vinylpyrazine)~~BuH Bbutyl hexanoate~~

PA Protein attractant ~~MVP Ppapaya fruit fly pheromone~~

Pt Putrescine ~~(2-methyl vinylpyrazine)~~

SK Spiroketal

TMA Trimethylamine ~~Pt Pputrescine~~

~~TMA tTrimethylamine~~

Trap abbreviations

CH	ChamP trap	McP	McPhail trap	RS	Red sphere trap
ET	Easy trap	MLT	Multilure trap	SE	Sensus trap
GS	Green sphere trap	OBDT	Open bottom dry trap	TP	Tephri trap
LT	Lynfield trap	PALz	Fluorescent yellow sticky “cloak” trap	YP	Yellow panel trap
MM	Maghreb-Med or Morocco trap	RB	Rebell trap		

Table 3. List of attractants and field longevity

Common name	~~Attractant~~ aAbbreviation~~s~~	Formulation	Field longevity[1] (weeks)
Male lures~~Parapheromones~~			
Trimedlure	TML	Polymeric plug	4–10
		Laminate	3–6
		Liquid	1–4
		Polyethylene~~PE~~ bag	4-5
Methyl eugenol	ME	Polymeric plug	4–10
		Liquid	4–8
Cuelure	CUE	Polymeric plug	4–10
		Liquid	4–8
Capilure (TML plus extenders)	CE	Liquid	12–36
Pheromones			
Papaya fruit fly (*~~T~~Toxotrypana~~.~~ curvicauda*)	MVP	Patches	4–6
(2-methyl-6-vinylpyrazine)			
Olive ~~f~~Fly (spiroketal)	SK	Polymer	4–6
Food-based attractants			
Torula yeast/borax	PA	Pellet	1–2
Protein derivatives	PA	Liquid	1–2
Ammonium acetate	AA	Patches	4–6
		Liquid	1
		Polymer	2–4
Ammonium (bi)carbonate	AC	Patches	4–6
		Liquid	1
		Polymer	1–4
Ammonium salts	AS	Salt	1
Putrescine	Pt	Patches	6–10
Trimethylamine	TMA	Patches	6–10
Butyl hexanoate	BuH	Vial	2

Ammonium acetate + Putrescine + Trimethylamine	3C (AA+Pt+TMA)	Cone/patches	6–10
Ammonium acetate + Putrescine + Trimethylamine	3C (AA+Pt+TMA)	Long-lasting patches	18–26
Ammonium acetate + Trimethylamine	2C-2 (AA+TMA)	Patches	6–10
Ammonium acetate + Putrescine	2C-1 (AA+Pt)	Patches	6–10
Ammonium acetate / Ammonium carbonate	AA/AC	Polyethylene~~PE~~ bag with~~.~~ Aluminium foil cover	3–4

[1] Based on half-life. Attractant longevity is indicative only. Actual timing should be supported by field testing and validation.