EUROPEAN AND MEDITERRANEAN PLANT PROTECTION ORGANIZATION
ЕВРОПЕЙСКАЯ И СРЕДИЗЕМНОМОРСКАЯ ОРГАНИЗАЦИЯ ПО КАРАНТИНУ И ЗАЩИТЕ РАСТЕНИЙ
ORGANIZATION EUROPEENNE ET MEDITERRANEENNE POUR LA PROTECTION DES PLANTES

03-9957
PPM Point 7.11

PEST RISK ASSESSMENT SCHEME

Organism:	***Dryocosmus kuriphilus*** Yasumatsu
Assessor(s):	**Dott. Giovanni Bosio** **Settore Fitosanitario – Regione Piemonte**
Date:	**8/01/2003**
Approximate time spent on the assessment	**3 days**

PEST RISK ASSESSMENT

STAGE 1: INITIATION **Identify pest** *This section examines the identity of the pest to ensure that the assessment is being performed on a real identifiable organism and that the biological and other information used in the assessment is relevant to the organism in question.*		
1. Is the organism clearly a single taxonomic entity and can it be adequately distinguished from other entities of the same rank? *if yes go to 3* *if no go to 2*	**Yes**	*Insecta* *Hymenoptera* *Cynipidae* *Dryocosmus kuriphilus* Yasumatsu
2. Attempt to redefine the taxonomic entity so that the criteria under 1 are satisfied. Is this possible? *if yes go to 3* *if no go to 22*		
The PRA area *The PRA area can be a complete country, several countries or part(s) of one or several countries*		
3. Clearly define the PRA area. *go to 4*		EU and EPPO region
Earlier analysis *The pest, or a very similar pest, may have been subjected to the PRA process before, nationally or internationally. This may partly or entirely replace the need for a new PRA.*		
4. Does a relevant earlier PRA exist? *if yes go to 5* *if no go to 7*	**No**	
5. Is the earlier PRA still entirely valid, or only partly valid (out of date, applied in different circumstances, for a similar but distinct pest)? if entirely valid End if partly valid go to 6 if not valid go to 7		
6. Proceed with the assessment, but compare as much as possible with the earlier assessment. *go to 7*		

STAGE 2: PEST RISK ASSESSMENT **<u>Section A</u>: Pest categorization (qualitative criteria of a quarantine pest)**		
Geographical criteria *This section considers the geographic distribution of the pest in the PRA area.*		
7. Does the pest occur in the PRA area? *if yes go to 8* *if no go to 9*	**Yes**	Italy, Piedmont, Cuneo province
8. Is the pest of limited distribution in the PRA area? *<u>Note</u>: "of limited distribution" means that the pest has not reached the limits of its potential range either in the field or in protected conditions; it is not limited to its present distribution by climatic conditions or host-plant distribution. There should be evidence that, without phytosanitary measures, the pest would be capable of additional spread.* *if yes go to 18* *if no go to 22*	Yes	The pest is at present spread in a few localities near Cuneo city.
Potential for establishment *For the pest to establish, it must find a widely distributed host plant in the PRA area (do not consider plants which are accidental/very occasional hosts or recorded only under experimental conditions). If it requires a vector, a suitable species must be present or its native vector must be introduced. The pest must also find environmental conditions suitable for survival, multiplication and spread, either in the field or in protected conditions.*		
9. Does at least one host plant grow to a substantial extent in the PRA area, in the open, in protected conditions or both? *if yes go to 10* *if no go to 22*		
10. Does the pest have to pass part of its life cycle on a host plant other than its major host (i.e. obligate alternate host plant)? *if yes go to 11* *if no go to 12*		
11. Does the alternate host plant also occur in the same part of the PRA area as the major host plant ? *if yes go to 12* *if no go to 22*		

12. Does the pest require a vector (i.e. is vector transmission the only means of dispersal)? *if yes go to 13* *if no go to 14*		
13. Is the vector (or a similar species which is known or suspected to be a vector) present in the PRA area or likely to be introduced. If in doubt, a separate assessment of the probability of introduction of the vector (in section B1) may be needed? *if yes go to 14* *if no go to 22*		
14. Does the known geographical distribution of the pest include ecoclimatic zones comparable with those of the PRA area? *if yes go to 18* *if no go to 15*		
15. Is it probable, nevertheless, that the pest could survive and thrive in a wider ecoclimatic zone that could include the PRA area? *if yes go to 18* *if no go to 16*		
16. Could the ecoclimatic requirements of the pest be found in protected conditions in the PRA area? *if yes go to 17* *if no go to 22*		
17. Is a host plant grown in protected conditions in the PRA area? *if yes go to 18* *if no go to 22*		

Potential economic importance		
Economic impact principally concerns direct damage to plants but may be considered very broadly, to include also social and environmental aspects. The effect of the presence of the pest on exports from the PRA area should also be allowed for. *In deciding whether economically important damage or loss to plants may occur, it is necessary to consider whether climatic and cultural conditions in the PRA area are conducive to damage expression, which is not always the case even if both host and pest survive under these conditions.* *Note: when performing a PRA on a pest that is transmitted by a vector, consider also any possible damage that the vector may cause.*		
18. With specific reference to the host plant(s) which occur(s) in the PRA area, and the parts of those plants which are damaged, does the pest in its present range cause significant damage or loss? *if yes go to 21* *if no go to 19*	**Yes**	The pest is monophagous on *Castanea* spp. The wasps form galls on leaves and buds. The galls suppress shoots elongation and reduce fruiting (in U.S.A. chestnuts with severe infestations lose their vigor and often die).
19. Could the pest, nevertheless, cause significant damage or loss in the PRA area, considering ecoclimatic and other factors for damage expression? *if yes go to 21* *if no go to 20*		
20. Would the presence of the pest cause other negative economic impacts (social, environmental, loss of export markets)? *if yes go to 21* *if no go to 22*		
21. This pest could present a risk to the PRA area **Go To Section B**		
22. This pest does not qualify as a quarantine pest for the PRA area and the assessment can stop *However, if this is the first time that the decision-making scheme has directed you to this point, it may be worth returning to the question that led you here and continuing through the scheme in case the remaining questions strongly indicate categorization as a possible quarantine pest. In this latter case, seek a second opinion to decide whether the answers which led you to this point could be given a different reply.*		

<u>Section B</u>: Quantitative evaluation

The second part of the risk assessment process firstly estimates the probability of the pest being introduced into the PRA area (its entry and establishment) and secondly makes an assessment of the likely economic impact if that should happen. From these two aspects, it should be possible to consider the level of "pest risk" presented by the pest; this can then be used in the pest risk management phase to decide whether it is necessary to take phytosanitary measures to prevent the introduction of the pest, or if the measures chosen are appropriate for the level of risk. The questions in this section require an evaluation from minimum probability or impact (1) to maximum probability or impact (9). This must be done by an expert who can make an estimate according to the information provided (following the format of the check-list of EPPO (OEPP/EPPO, 1993a) and also according to comparison with other pests.
Answer as many of the following questions as possible, insofar as they are relevant to the pest concerned. If you cannot answer a particular question, do not give any score. Note whether this is because of lack of information or because the question is irrelevant to the pest concerned.

Questions marked with an asterisk (*) *are to be considered as more important than the others in the same section.*

1. Probability of introduction
Introduction, as defined by the FAO Glossary of Phytosanitary Terms, is the entry of a pest resulting in its establishment.

Entry

List the pathways that the pest could be carried on. *<u>Note</u>: a pathway can be any form of human activity that could transport the pest from a particular origin: e.g. plants and plant products moving in trade, any other traded commodity, containers and packing, ships, planes, trains, road transport, passengers, mail, etc. Note that similar means of pest transport from different origins can present greatly different probabilities of introduction, depending on the concentration of the pest in the area of origin. The pathways given should be only those already in operation, or proposed.*		Chestnut plants, cut branches, shoots, buds moving in trade or for scientific researches.
1.1 How many pathways could the pest be carried on? *few = 1* *many = 9*	**1**	
1.2 For each pathway, starting with the most important pathway identified above (i.e. that which carries the greatest trade or which is most likely to act as a means of introduction) and then in descending order of importance, answer questions 1.3 – 1.13. If one of the questions 1.3a, 1.5a, 1.7a or 1.12a is answered by 'no', the pathway could not act as a means of entry for the pest, and the scheme will return directly to this point, omitting later questions. Use expert judgement to decide how many pathways to consider. ***Go to 1.3***		

1.3a Could the pest be associated with the pathway at origin? *Note: does the pest occur in the area of origin? Is the pest in a life stage which would be associated with commodities, containers, or conveyances?* *if yes go to 1.3b* *if no go to 1.2*	**Yes**	
1.3b How likely is the pest to be associated with the pathway at origin? [i.e. are all areas infested or highly infested; will every consignment or part of it be infested?] *not likely = 1* *very likely = 9*	**7**	Widespread in some chestnut growing areas of China, Japan, Korea and U.S.A.(south-east).
1.4 Is the concentration of the pest on the pathway at origin likely to be high? [i.e. will there be many individuals associated with the consignment?] *not likely = 1* *very likely = 9*	**5**	Pest may be present as eggs in buds. Some buds contain 10-25 eggs.
1.5a Could the pest survive existing cultivation or commercial practices? *Note: these are practices mainly in the country of origin, such as pesticide application, removal of substandard produce, kiln-drying of wood.* *if yes go to 1.5b* *if no go to 1.2*	Yes	Pesticides are not very effective against this pest. Systemic insecticides are not effective because the galls block off translocation. Eggs into the buds are not affected by pesticides applications.
1.5b How likely is the pest to survive existing cultivation or commercial practices? *not likely = 1* *very likely = 9*	8	Eggs or first instar larvae into the buds can easily survive cultivation or commercial practices.
1.6 How likely is the pest to survive or remain undetected during existing phytosanitary procedures? *Note: existing phytosanitary measures (e.g. inspection, testing or treatments) are most probably being applied as a protection against other (quarantine) pests; the assessor should bear in mind that such measures could be removed in the future if the other pests were to be re-evaluated.* *The likelihood of detecting the pest during inspection or testing will depend on a number of factors including:* • *ease of detection of the life stages which are likely to be present. Some stages are more readily detected than others, for example insect adults may be more obvious than eggs;* • *location of the pest on the commodity. Surface feeders are more readily detected than internal feeders;*	9	Import of *Castanea* plants or parts of plants without leaves from third countries is admitted in U.E. While galls are readily detected on plants or parts of plants, eggs or first instar larvae into the buds cannot be detected by simple visual inspections.

• *symptom expression - many diseases may be latent for long periods, at certain times of the year, or may be without symptoms in some hosts or cultivars and virulent in others;* • *distinctiveness of symptoms - the symptoms might resemble those of other pests or sources of damage such as mechanical or cold injury;* • *the intensity of the sampling and inspection regimes;* • *distinguishing the pest from similar organisms.* *not likely = 1* *very likely = 9*		
1.7a Could the pest survive in transit? *Note: consideration should be given to:* • *speed and conditions of transport;* • *vulnerability of the life-stages likely to be transported;* • *whether the life cycle is of sufficient duration to extend beyond time in transit;* • *the number of individuals likely to be associated with a consignment.* *Interception data can be used to estimate the ability of a pest to survive in transit.* *if yes go to 1.7b* *if no go to 1.2*	Yes	Eggs or first instar larvae into the buds can survive for a long period through autumn and winter. Young chestnut plants or cut branches with buds moving on trade (during vegetative block) can contain pest's eggs or first instar larvae into the buds.
1.7b How likely is the pest to survive in transit? *not likely = 1* *very likely = 9*	9	
1.8 Is the pest likely to multiply during transit? *not likely = 1* *very likely = 9*	1	Pest can't multiply during transit. Adult female stage life is very short.
1.9 How large is movement along the pathway? [i.e. how much trade?] *not large = 1* *very large = 9*	2	Not very large. Import of chestnut part of plants (grafting materials) from third countries often occurs for scientific purposes (researchers, breeders, nurseries).
1.10 How widely is the commodity to be distributed throughout the PRA area? *Note: the more scattered the destinations, the more likely it is that the pest might find suitable habitats.* *not widely = 1* *very widely = 9*	4	Many EPPO countries are interested on chestnut growing and genetic improvement.

1.11 How widely spread in time is the arrival of different consignments? *Note: introduction at many different times of the year will increase the probability that entry of the pest will occur at a life stage of the pest or the host suitable for establishment.* *not widely = 1* *very widely = 9*	3	Young chestnut plants or grafting material moving occurs on autumn and winter.
1.12a Could the pest transfer from the pathway to a suitable host? *Note: consider innate dispersal mechanisms or the need for vectors, and how close the pathway on arrival is to suitable hosts.* *if yes go to 1.12b* *if no go to 1.2*	Yes	Young chestnut plants or grafting material are planted near suitable hosts (commercial groves, chestnuts woods, chestnut nurseries)
1.12b How likely is the pest to be able to transfer from the pathway to a suitable host? *not likely = 1* *very likely = 9*	9	Winged female can easily move from infested plants to new chestnut trees.
1.13 Is the intended use of the commodity (e.g. processing, consumption, planting, disposal of waste) likely to aid introduction? *Note: consider whether the intended use of the commodity would destroy the pest or whether the processing, planting or disposal might be done in the vicinity of suitable hosts.* *not likely = 1* *very likely = 9*	9	Yes, because the young chestnut plants or grafting material are planted near other chestnut trees.
Establishment		
1.14 How many host-plant species are present in the PRA area? *one or very few = 1* *many = 9*	**1**	The most important species is *Castanea sativa* Mill. Other species of little diffusion in EPPO region are eurojapanese hybrids (*Castanea crenata* x *C. sativa*).
1.15 How extensive are the host plants in the PRA area? *rare = 1* *widespread = 9*	**7**	*C. sativa* is widely spread in many EPPO countries in woods and commercial groves. Eurojapanese hybrids have a little diffusion on orchards for nut crop.
1.16 If an alternate host is needed to complete the life cycle, how extensive are such host plants in the PRA area? *rare = 1* *widespread = 9*		No alternate hosts.

1.17 *1If a vector is needed for dispersal, how likely is the pest to become associated with a suitable vector? *Note: is the vector present in the PRA area, could it be introduced or could another vector be found?* *not likely = 1* *very likely = 9*		No vectors.
1.18 Has the pest been recorded on crops in protected conditions elsewhere? (Answer this question only if protected cultivation is important in the PRA area.) *no = 1* *often = 9*		No protected cultivation.
1.19 How likely are wild plants (i.e. plants not under cultivation, including weeds, volunteer plants, feral plants) to be significant in dispersal or maintenance of populations? *not likely = 1* *very likely = 9*	**9**	Wild chestnut trees have a large spreading in south and central Europe woods.
1.20 *How similar are the climatic conditions that would affect pest establishment in the endangered area and in the area of origin? *Note: the climatic conditions in the PRA area to be considered may include those in protected cultivation.* *not similar = 1* *very similar = 9*	**7**	Climatic conditions of EPPO region and of the area of pest origin can be considered similar.
1.21 How similar are other abiotic factors in the PRA area and in the area of origin? *Note: the major abiotic factor to be considered is soil type; others are, for example, environmental pollution, topography/orography.* *not similar = 1* *very similar = 9*		Not answered
1.22 How likely is the pest to have competition from existing species in the PRA area for its ecological niche? *very likely = 1* *not likely = 9*	**9**	No competition from other species.
1.23 How likely is establishment to be prevented by natural enemies already present in the PRA area? *very likely = 1* *not likely = 9*	**9**	PRA area natural indigenous enemies (hymenopteran parasitoids) seem to be unable to get good control of the pest.

[1] Questions marked with an asterisk are to be considered as more important than the others in the same section.

1.24 *If there are differences in the crop environment in the PRA area to that in the area of origin, are they likely to aid establishment? *Note: factors that should be considered include time of year that the crop is grown, soil preparation, method of planting, irrigation, whether grown under protected conditions, surrounding crops, management during the growing season, time of harvest, method of harvest, etc.* *not likely = 1* *very likely = 9*		In the area of origin (China) chestnut growers collect and destroy the galls before the emergence of adult wasps. This is possible for the low cost of human work and for the small size of cultivated chestnuts in China. In EPPO region this method of control is not possible for high cost of human work and for the large size of wild and cultivated chestnuts.
1.25 Are the control measures which are already used against other pests during the growing of the crop likely to prevent establishment of the pest? *very likely = 1* *not likely = 9*	**9**	In U. E. wild or cultivated chestnuts are seldom treated with pesticides. Nut production could be often considered a "organic" cultivation. Present control measures can't prevent the establishment of the pest.
1.26 *Is the reproductive strategy of the pest and duration of life cycle likely to aid establishment? *Note: consider characteristics which would enable the pest to reproduce effectively in a new environment, such as parthenogenesis/self-crossing, duration of the life cycle, number of generations per year, resting stage, etc.* *not likely = 1* *very likely = 9*	**9**	*Dryocosmus kuriphilus* has only one generation per year, but it is a parthenogenetic telythocous species. Eggs laid inside buds aid establishment.
1.27 How likely are relatively low populations of the pest to become established? *not likely = 1* *very likely = 9*	**9**	Each female can lay more than 100 eggs into the buds. Pest spreading from low population is slow in the first years, but it becomes very fast in the next years.
1.28 How probable is it that the pest could be eradicated from the PRA area ? *very likely = 1* *not likely = 9*	**9**	It is nearly impossible to eradicate an insect which has established.
1.29 How genetically adaptable is the pest? *Note: is the species polymorphic, with, for example, subspecies, pathotypes? Is it known to have a high mutation rate? This genotypic (and phenotypic) variability facilitates the pest's ability to withstand environmental fluctuations, to adapt to a wider range of habitats, to develop pesticide resistance and to overcome host resistance.* *not adaptable = 1* *very adaptable = 9*	**7**	After the second World War Japanese breeders selected chestnut cultivars with some resistance to the insect, but the pest developed a new pathotype overcoming that resistance. (Now there are new Japanese and Korean chestnut cultivars resistant to the pest).

1.30 *How often has the pest been introduced into new areas outside its original range? *Note: if this has happened even once before, it is important proof that the pest has the ability to pass through most of the steps in this section (i.e. association with the pathway at origin, survival in transit, transfer to the host at arrival and successful establishment). If it has occurred often, it suggests an aptitude for transfer and establishment.* *never = 1* *often = 9*	**9**	The pest has been accidentally introduced in Japan (1941), Korea (1963) and U.S.A. (Georgia, 1974), probably as result of movement of infested twigs or shoots among growers and nurseries.

2. Economic Impact Assessment *Identify the potential hosts in the PRA area, noting whether wild or cultivated, field or glasshouse. Consider these in answering the following questions. When performing a PRA on a pest that is transmitted by a vector, consider also any possible damage that the vector may cause.* *According to the pest and host(s) concerned, it may be appropriate to consider all hosts together in answering the questions once, or else to answer the questions separately for specific hosts.* *Note that, for most pest/crop/area combinations, precise economic evaluations are lacking. In this section, therefore, expert judgement is asked to provide an evaluation of the likely scale of impact. Both long-term and short-term effects should be considered for all aspects of economic impact.*		
2.1 *How important is economic loss caused by the pest within its existing geographic range? *little importance = 1* *very important = 9*	**7**	In Japan, Korea and U.S.A. the pest caused severe economic loss to chestnut growers after its establishment. Not well known situation in China.
2.2 How important is environmental damage caused by the pest within its existing geographic range? *Note: environmental damage may be impact on ecosystem health, such as effects on endangered/threatened species, keystone species or biodiversity.* *little importance = 1* *very important = 9*		In some region of China, Japan and Korea damages to chestnut are little because the pest in now under control by indigenous or introduced parasitoids (*Torymus* spp.).
2.3 How important is social damage caused by the pest within its existing geographic range? *Note: social effects could be, for example, damaging the livelihood of a proportion of the human population, or changing the habits of a proportion of the population (e.g. limiting the supply of a socially important food).* *little importance = 1* *very important = 9*		Not answered

2.4 *How extensive is the part of the PRA area likely to suffer damage from the pest? *Note: the part of the PRA area likely to suffer damage is the endangered area, which can be defined ecoclimatically, geographically, by crop or by production system (e.g. protected cultivation).* *very limited = 1* *whole PRA area = 9*	**6**	Development would be possible in a great part of the PRA area. Chestnut woods are present in many EPPO countries (from Greece to Portugal, from southern Italy to southern England).
Spread potential is an important element in determining how fast economic impact is expressed and how readily a pest can be contained.		
2.5 *How rapidly is the pest liable to spread in the PRA area by natural means? *very slowly = 1* *very rapidly = 9*	**4**	Natural spread of the pest occurs by flights of the adult females. Female's life is not long.
2.6 How rapidly is the pest liable to spread in the PRA area by human assistance? *very slowly = 1* *very rapidly = 9*	**8**	Movement of infested young plants or shoots could spread the pest very quickly.
2.7 How likely is it that the spread of the pest could be contained within the PRA area? *Note: consider the biological characteristics of the pest that might allow it to be contained in part of the PRA area; consider the practicality and costs of possible containment measures.* *very likely = 1* *not likely = 9*	**7**	Control of pest is not easy. Chestnut nurseries must be inspected to avoid movement of infested plants. Perhaps biological control with introduction of parasitoid *Torymus* could slow the spread of the pest and reduce damages.
2.8 *Considering the ecological conditions in the PRA area, how serious is the direct effect of the pest on crop yield and/or quality likely to be? *Note: the ecological conditions in the PRA area may be adequate for pest survival but may not be suitable for significant damage on the host plant(s). Consider also effects on non-commercial crops, e.g. private gardens, amenity plantings.* *not serious = 1* *very serious = 9*	**7**	Ecological conditions in the PRA area are suitable for significant damage on chestnut.
2.9 How likely is the pest to have a significant effect on producer profits due to changes in production costs, yields, etc., in the PRA area? *not likely = 1* *very likely = 9*	**7**	Pest could strongly reduce nut production and quality.

2.10 How likely is the pest to have a significant effect on consumer demand in the PRA area? *Note: consumer demand could be affected by loss in quality and/or increased prices.* *not likely = 1* *very likely = 9*	**6**	Strong yield reduction could increase nut prices.
2.11 How likely is the presence of the pest in the PRA area to affect export markets? *Note: consider the extent of any phytosanitary measures likely to be imposed by trading partners.* *not likely = 1* *very likely = 9*	**5**	
2.12 How important would other costs resulting from introduction be? *Note: costs to the government, such as research, advice, publicity, certification schemes; costs (or benefits) to the crop protection industry.* *little importance = 1* *very important = 9*	**5**	To the government: costs for: chestnut nurseries inspections, pest researches and monitoring, chestnut growers information and advice, biological control attempt.
2.13 How important is the environmental damage likely to be in the PRA area? *little importance = 1* *very important = 9*	**7**	In EPPO area environmental damages could be important if pest attacks cause severe losses to chestnut woods.
2.14 How important is the social damage likely to be in the PRA area? *little importance = 1* *very important = 9*	**5**	Economic loss caused by pest attacks could reduce profits of little farmers living in mountain district.
2.15 How probable is it that natural enemies, already present in the PRA area, will affect populations of the pest if introduced? *very likely = 1* *not likely = 9*	**8**	Probably natural enemies present in the PRA area are unable to control the pest.
2.16 How easily can the pest be controlled? *Note: difficulty of control can result from such factors as lack of effective plant protection products against this pest, occurrence of the pest in natural habitats or amenity land, simultaneous presence of more than one stage in the life cycle, absence of resistant cultivars).* *easily = 1* *with difficulty = 9*	**9**	Lack of effective plant protection products against the pest, occurrence of the pest in natural habitats. Biological control with introduction of parasitoid *Torymus* from China could be the only effective measure.

2.17 How likely are control measures to disrupt existing biological or integrated systems for control of other pests? *not likely = 1* *very likely = 9*		Chemical treatments have been proved to be ineffective.
2.18 How likely are control measures to have other undesirable side-effects (for example on human health or the environment)? *not likely = 1* *very likely = 9*		Not answered
2.19 Is the pest likely to develop resistance to plant protection products? *not likely = 1* *very likely = 9*		Not answered
After completing this section, the assessor should comment on whether sufficient information exists to trust the answers given; or if he/she knows of other relevant factors that have not been considered in this evaluation		

3. Final Evaluation

At the end of the procedure, the assessor will have at his disposal:
(1) one or several sets of replies (1-to-9 scores) to questions 1.1-1.13, for one or several pathways (if no pathways have been retained, the probability of introduction will be zero);
(2) one set of replies (1-to-9 scores) to questions 1.14-1.30;
(3) one or several sets of replies (1-to-9 scores) to questions 2.1-2.19, for single, grouped or separate hosts (according to the manner of answering which has been chosen).

The assessor should first consider the quality and quantity of the information used to answer the questions, and give an overall judgement of how reliable the pest risk assessment can be considered. If other relevant information is available that has not been considered, this should be noted.

By the means of his choice, the assessor should attempt to make a separate estimate of the probability of introduction of the pest and its probable level of economic impact. As explained in the introduction, these estimates cannot, on the basis of the procedure used in the scheme, be expressed in absolute units. The numerical scores may be combined, weighted and averaged in appropriate ways that may enable the assessor who uses them consistently to make useful comparisons between pests, pathways and hosts. No particular mode of calculation is specifically recommended by EPPO. Certain questions have been identified as more important than others, and the assessor should take due account of this.

The assessor may then combine his estimates of probability of introduction and probable economic impact to formulate a single estimate of pest risk. This may usefully be compared with one or several reference levels of risk to decide whether the pest should be considered to be a quarantine pest, so that phytosanitary measures should be taken against it.

Finally, the scores given in answer to the different sections (particularly that on pathways) may be used again in pest risk management.

Conclusions

Dryocosmus kuriphilus , imenottero cinipide originario della Cina, è considerato uno degli insetti più dannosi per il castagno.
Finora non era ancora segnalato in Europa, mentre in altri Paesi in cui è stato accidentalmente introdotto, come Giappone, Corea e Stati Uniti, ha causato ingenti danni alle locali castanicolture. Infatti nel caso di infestazioni elevate sono state registrate perdite di produzione fino al 60-70 % nonché nei casi più gravi anche la morte delle piante.
Allo stato attuale non è ancora ben conosciuto il grado di sensibilità del castagno europeo (*Castanea sativa* Mill.) agli attacchi di questo insetto, ma dalle prime osservazioni nell'area infestata si può ritenere che anche questa specie possa subire danni rilevanti.
Anche se la castanicoltura non riveste più l'importanza economica di un tempo, certamente la diffusione di questo insetto dannoso potrebbe causare un forte degrado sia dei castagneti da frutto che dei boschi di castagno selvatici, già duramente colpiti da avversità quali il cancro corticale e il mal dell'inchiostro, vanificando le numerose iniziative di rilancio della castanicoltura intraprese negli ultimi anni anche con il contributo di finanziamenti comunitari.
Poiché la castanicoltura europea è localizzata spesso in aree marginali pedemontane o montane, eventuali estesi danni causati dalla diffusione di *D. kuriphilus* potrebbero portare all'abbandono della coltura e ad un ulteriore degrado economico e ambientale di queste zone, con riflessi negativi anche sugli equilibri idrogeologici.
Data la diffusione dell'insetto nelle aree dell'attuale ritrovamento (Piemonte, provincia di Cuneo, comuni di Boves, Peveragno, Robilante, Borgo S. Dalmazzo, Cuneo e Chiusa Pesio) si ritiene che non sia più possibile l'eradicazione nelle zone infestate, anche per la mancanza di validi mezzi di lotta . Infatti i trattamenti con insetticidi sono considerati da vari autori poco efficaci, mentre gli interventi di potatura e distruzione dei getti con galle sono praticabili solo su alberi giovani, di dimensioni ridotte. Nel Cuneese sono presenti alcuni vivai che commercializzano astoni di castagno in diverse regioni italiane, per cui il rischio di diffusione del cinipide potrebbe essere elevato. In particolare va evidenziata la impossibilità di rilevare facilmente la presenza di uova o dei primi stadi larvali di *D. kuriphilus* all'interno delle gemme di piantine o di marze in fase di riposo vegetativo, che potrebbero essere commercializzate o scambiate anche per scopi di ricerca scientifica.

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