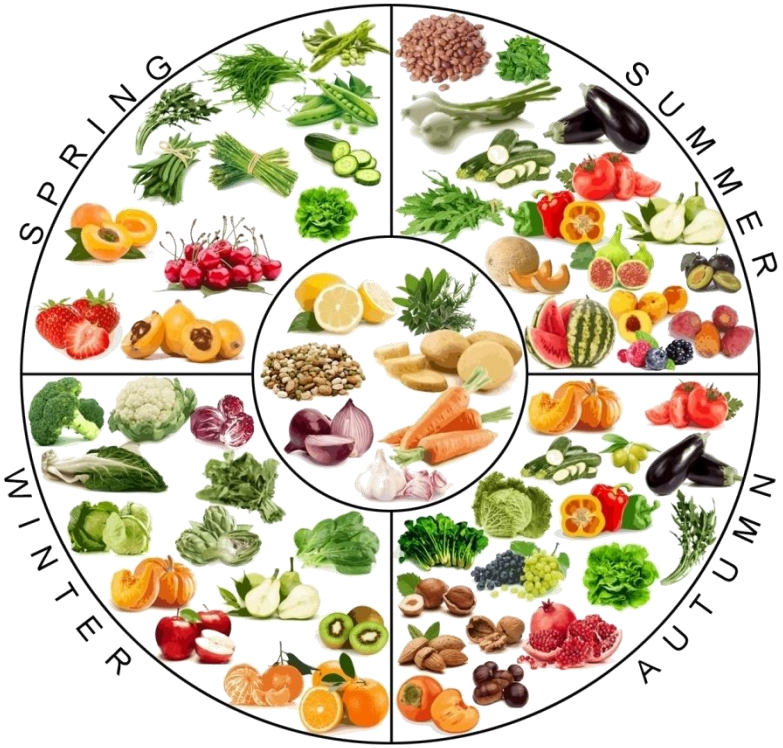
PRESENZA DI RESIDUI NEGLI ALIMENTI ED EFFETTI TOSSICI DEI P.F. SULLA POPOLAZIONE

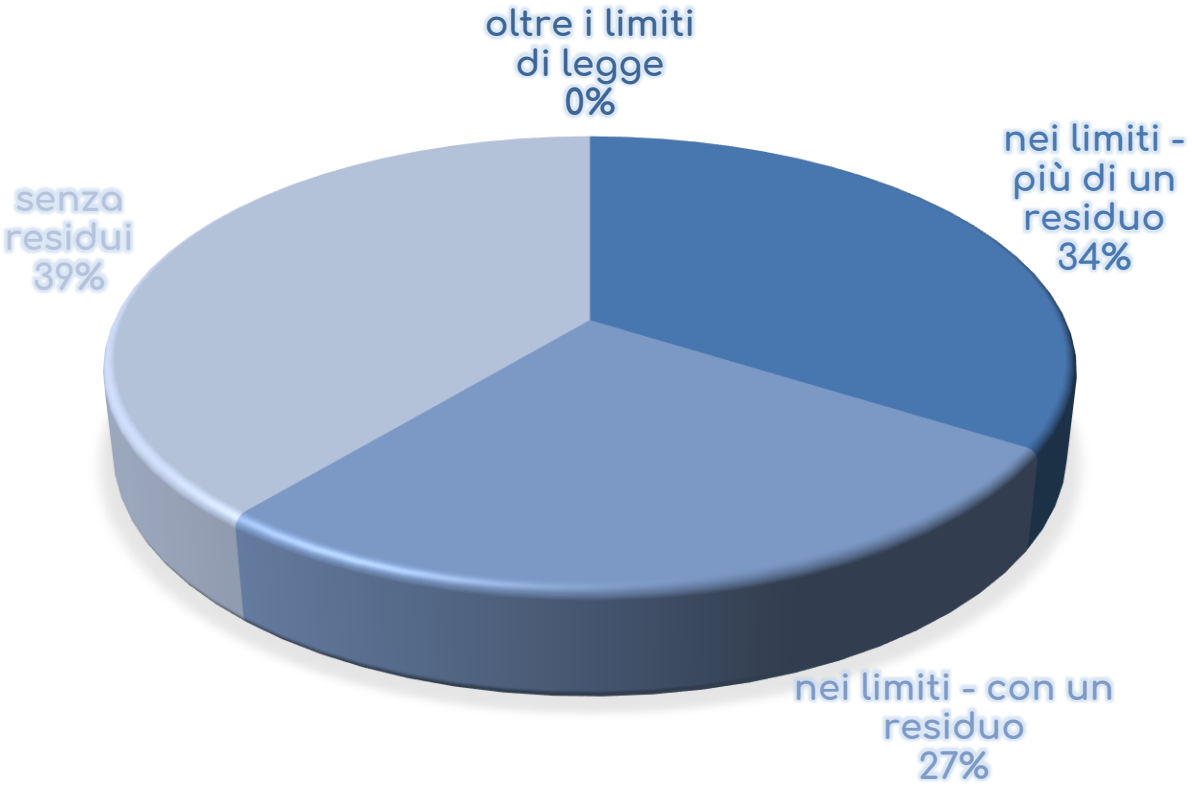
G. Di Fabio, D. Felice



SIAN

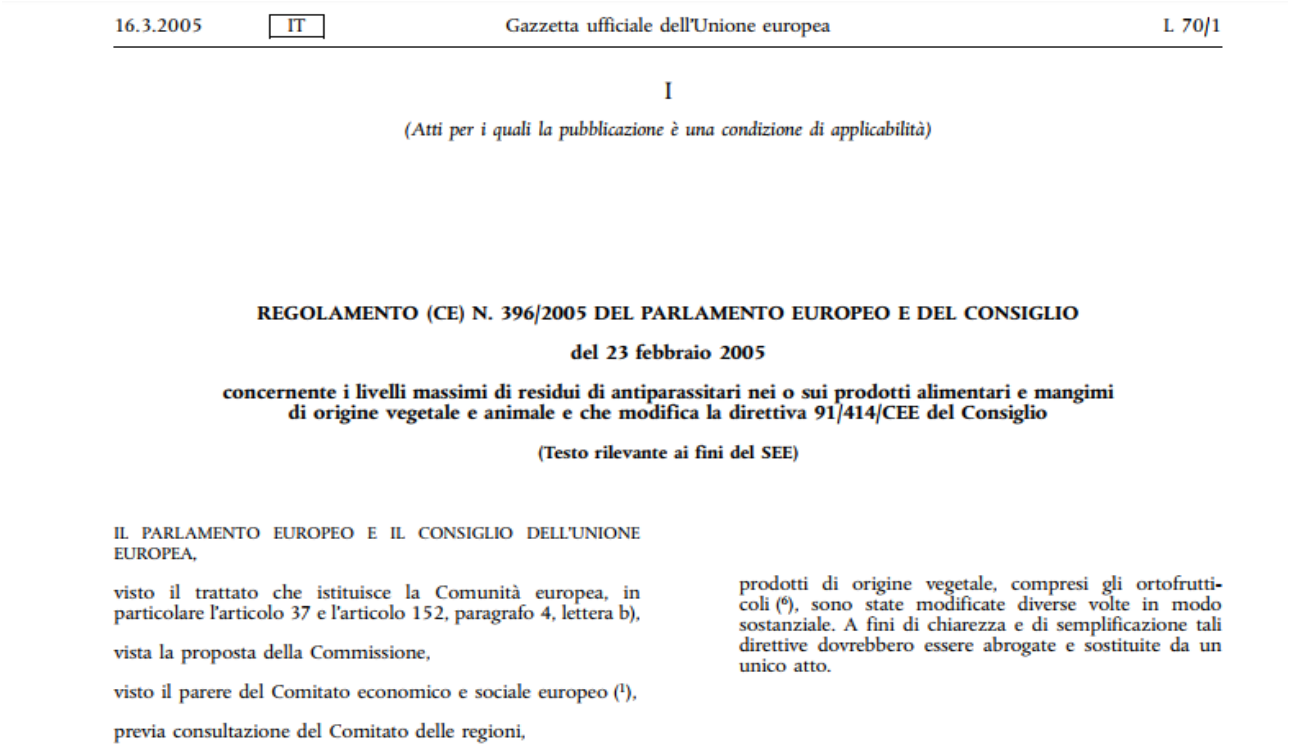
RAPPORTO SULL'ATTIVITÀ DI CONTROLLO UFFICIALE SUI RESIDUI DI P.F. NEGLI ALIMENTI DI ORIGINE VEGETALE

ASL n. 2 Lanciano - Vasto - Chieti
Anno 2016



IL CONTROLLO UFFICIALE SUI RESIDUI DI PRODOTTI FITOSANITARI

Nei prodotti alimentari rappresenta una delle **priorità** sanitarie più rilevanti della sicurezza alimentare ed ha la finalità di garantire un livello **elevato** di protezione del consumatore.



16.3.2005 IT Gazzetta ufficiale dell'Unione europea L 70/1

I

(Atti per i quali la pubblicazione è una condizione di applicabilità)

REGOLAMENTO (CE) N. 396/2005 DEL PARLAMENTO EUROPEO E DEL CONSIGLIO

del 23 febbraio 2005

concernente i livelli massimi di residui di antiparassitari nei o sui prodotti alimentari e mangimi di origine vegetale e animale e che modifica la direttiva 91/414/CEE del Consiglio

(Testo rilevante ai fini del SEE)

IL PARLAMENTO EUROPEO E IL CONSIGLIO DELL'UNIONE EUROPEA,

visto il trattato che istituisce la Comunità europea, in particolare l'articolo 37 e l'articolo 152, paragrafo 4, lettera b),

vista la proposta della Commissione,

visto il parere del Comitato economico e sociale europeo (1),

previa consultazione del Comitato delle regioni,

prodotti di origine vegetale, compresi gli ortofrutticoli (6), sono state modificate diverse volte in modo sostanziale. A fini di chiarezza e di semplificazione tali direttive dovrebbero essere abrogate e sostituite da un unico atto.

CONTROLLO UFFICIALE SUI RESIDUI

In Italia il Ministero della Salute coordina e definisce i **Programmi di Controllo** Ufficiale sui residui dei P.F. nei Prodotti Alimentari

Per ogni Regione e Provincia autonoma il Decreto prevede il **numero** ed il **tipo** di campioni da analizzare

La ripartizione dei campioni è calcolata in base ai **dati di consumo** e sulla **produzione** degli alimenti per ciascuna Regione e Provincia autonoma

RESIDUI DI PRODOTTI FITOSANITARI

Il Reg. 396/2005 del Parlamento Europeo e del Consiglio del 23 febbraio 2005 e s.m.i. fissa i **LMR** per tutti gli alimenti e mangimi

La quantità di residui riscontrata nel cibo deve essere sicura per i consumatori ed essere la più bassa possibile (**minima esposizione**)

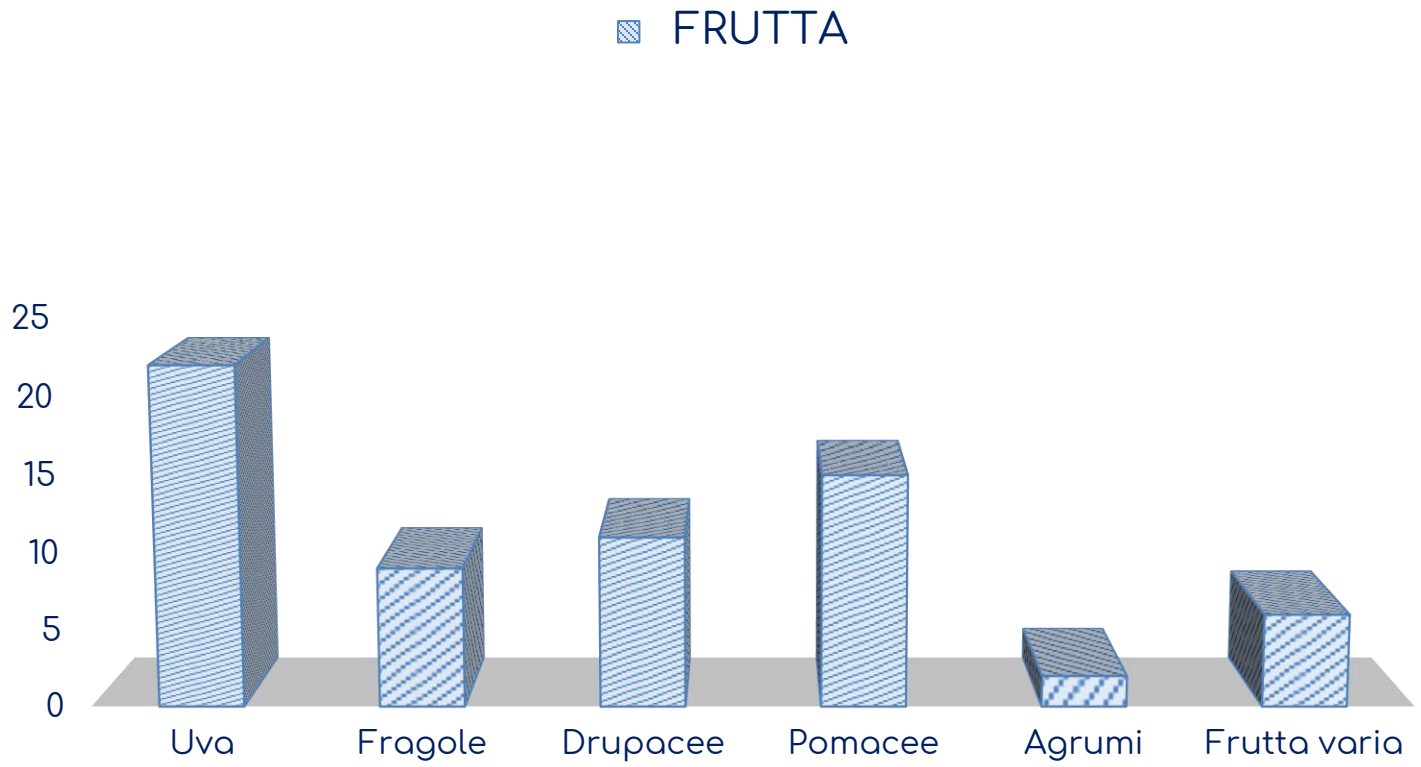
Il LMR **non** costituisce un **limite tossicologico** ma il livello più alto di residuo legalmente tollerato

Il **fattore di sicurezza** per la definizione delle soglie di esposizione per l'uomo è pari a 100

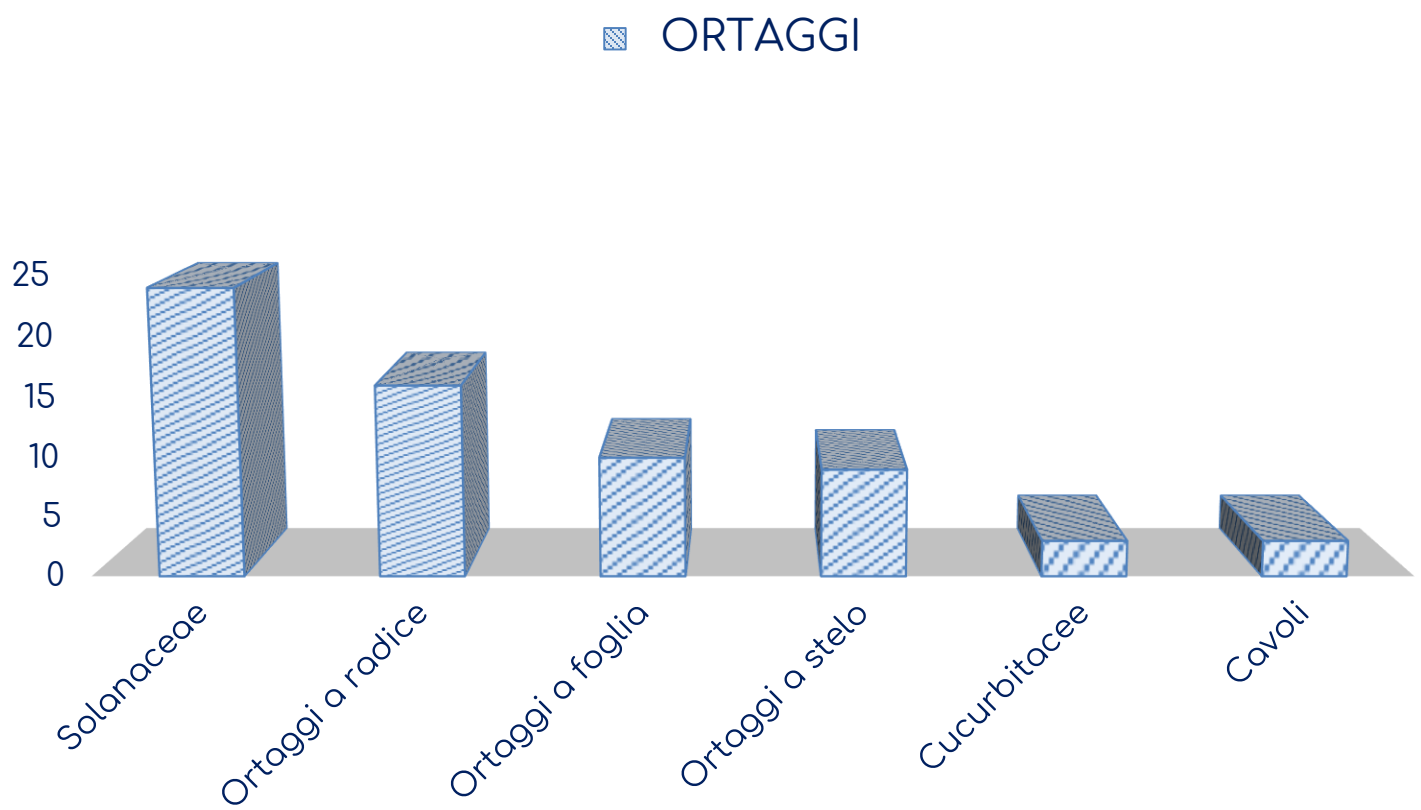
TIPOLOGIA DEI CAMPIONI ANALIZZATI
Anno 2016

MATRICI	N. CAMPIONI	%
Frutta	65	39,8
Ortaggi	62	38
Cereali e derivati	9	5,5
Vini	20	12,2
Oli	7	4,5
TOTALE	163	

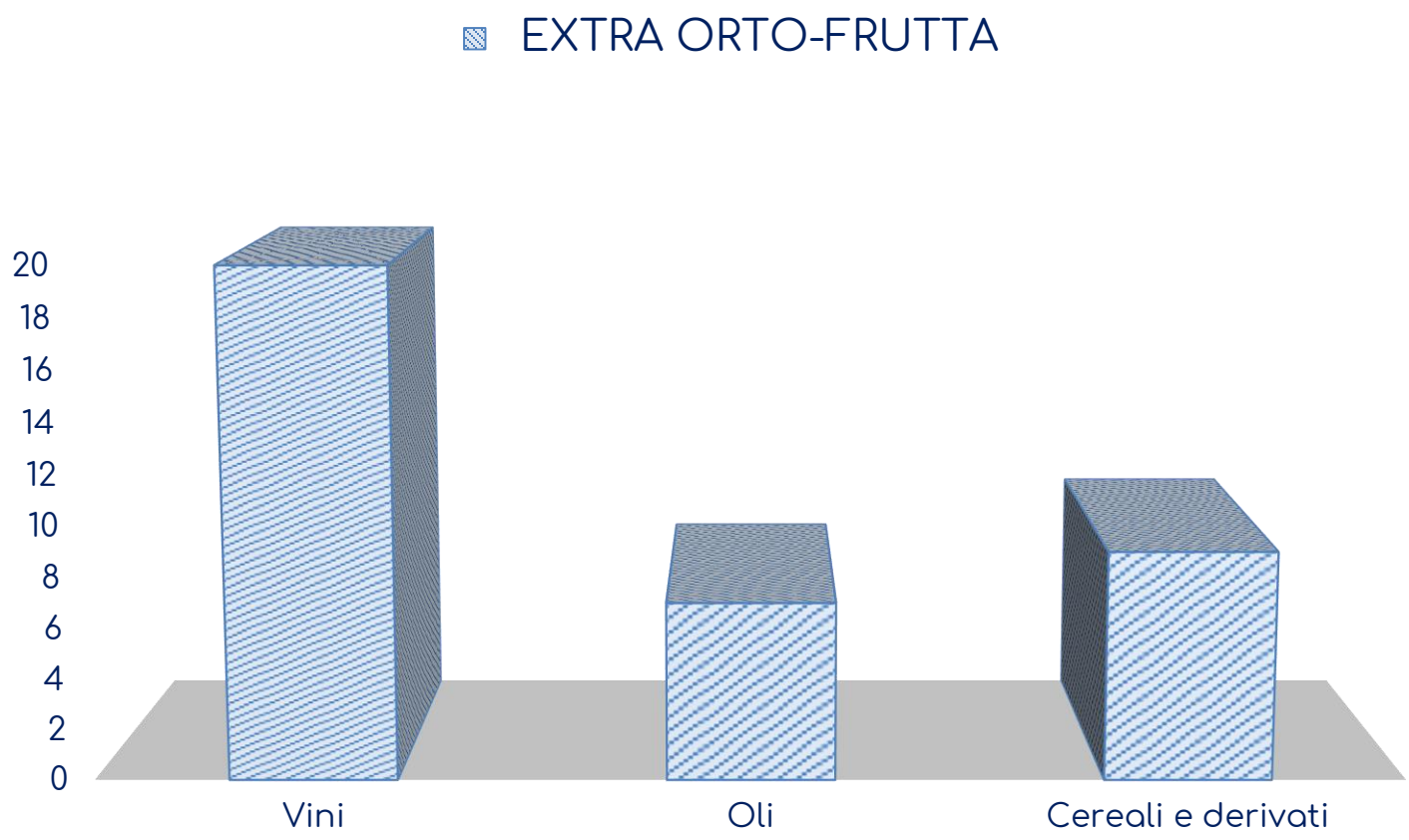
DISTRIBUZIONE DEI CAMPIONI APPARTENENTI ALLE CLASSI



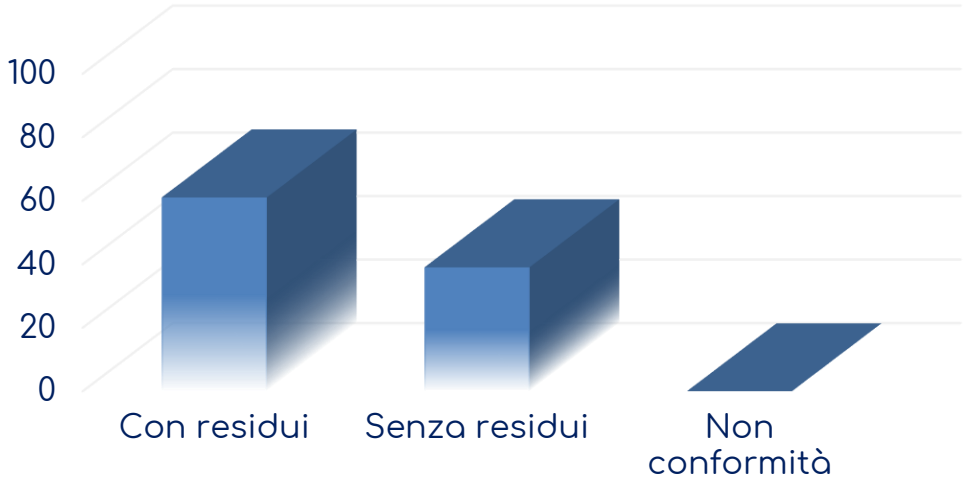
DISTRIBUZIONE DEI CAMPIONI APPARTENENTI ALLE CLASSI

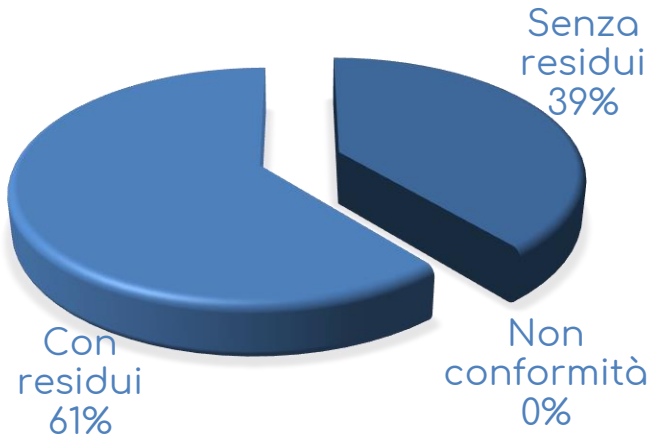


DISTRIBUZIONE DEI CAMPIONI APPARTENENTI ALLE CLASSI

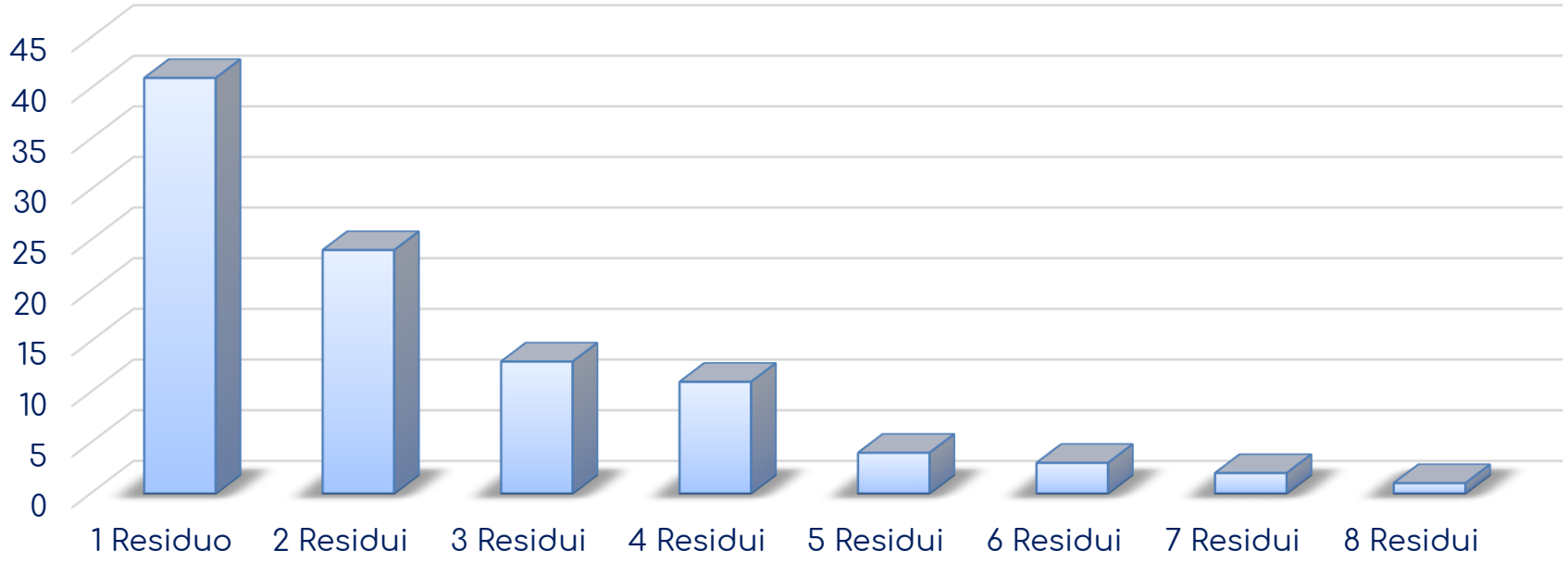


CONFORMITÀ - POSITIVITÀ

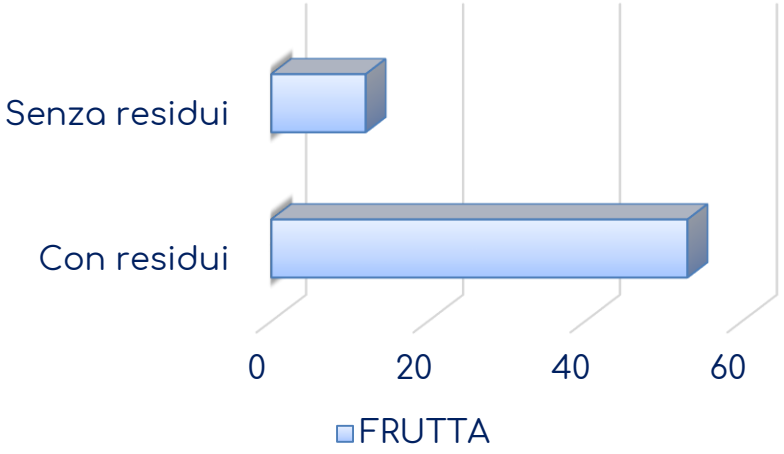


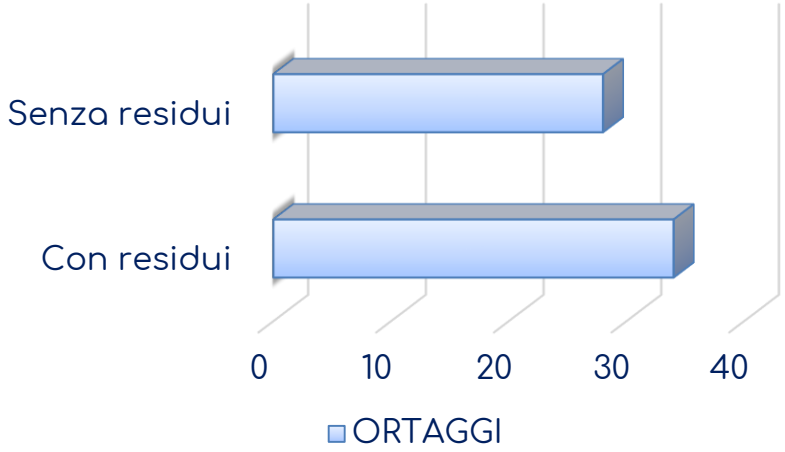


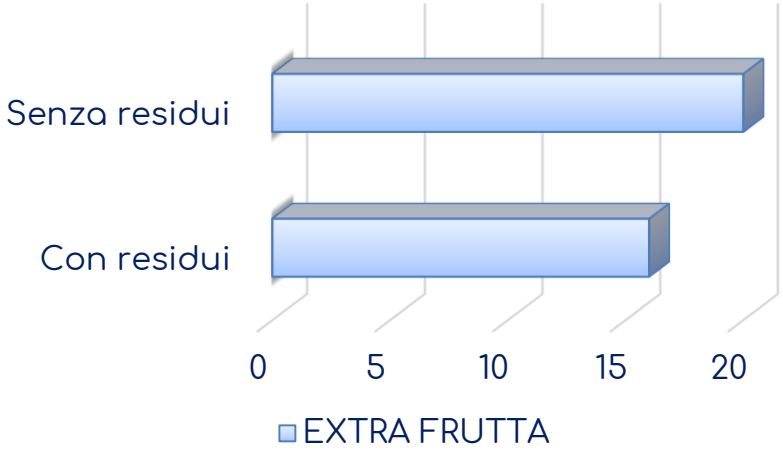
CAMPIONI CON RESIDUI



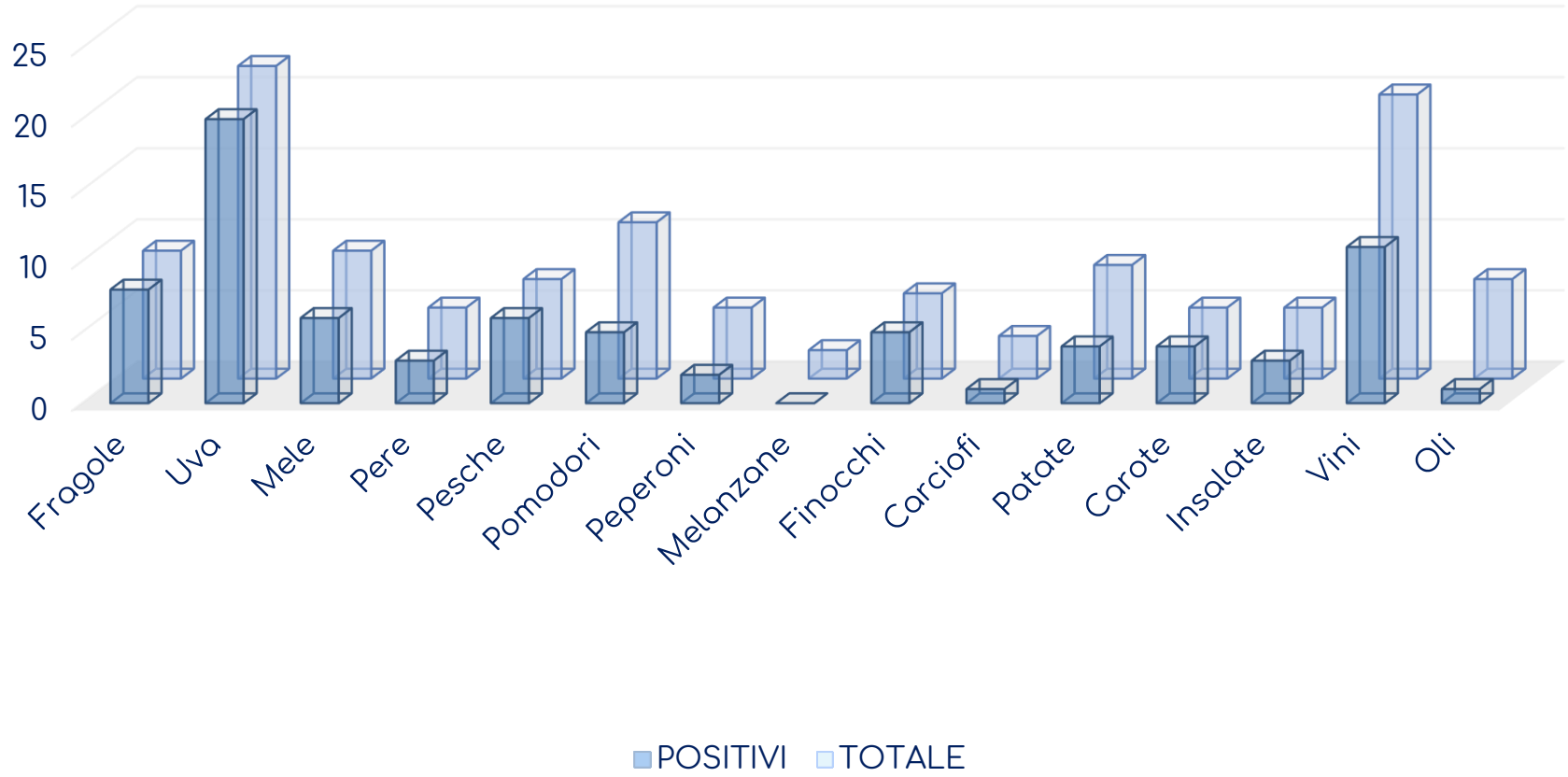
RESIDUI NEI CAMPIONI







PERCENTUALI DI POSITIVITÀ NELLE CLASSI



PRODOTTI CON PIÙ RESIDUI

PRODOTTI CON PIÙ RESIDUI

<----------> FINO A 8 RESIDUI

PRINCIPIO ATTIVO	CLASSE	mg/Kg
Azoxystrobin	Fungicida	0.25
Boscalid	Fungicida	0.026
Cyprodinil	Fungicida	0.016
Difenoconazole	Fungicida	0.21
Fenpyrazamine	Fungicida	0.063
Penconazone	Fungicida	0.014
Spinosad	Insetticida	0.096
Spiromesifen	Insetticida/Acaricida	0.020

RISULTATI TOTALI DEL CONTROLLO UFFICIALE SUGLI ORTOFRUTTICOLI
RIEPILOGO DEI RISULTATI ANALITICI SULLA CONFORMITÀ
ASL n. 2 Lanciano - Vasto - Chieti
Anno 2016

	TOTALE CAMPIONI	CAMPIONI REGOLARI			
		Campioni con residui assenti	Campioni privi di residui rilevabili (%)	Campioni con residui inferiori al limite di legge (LMR)	Campioni con residui inferiori al limite di legge (%)
FRUTTA	65	12	18.5	53	81.5
ORTAGGI	62	28	45	34	55
TOTALE	127	40	31.5	87	68.5

RISULTATI TOTALI DEL CONTROLLO UFFICIALE SUGLI ORTOFRUTTICOLI
RIEPILOGO DEI RISULTATI ANALITICI DEI CAMPIONI MULTIRESIDUO

ASL n. 2 Lanciano - Vasto - Chieti
Anno 2016

	TOTALE CAMPIONI	Campioni con residui assenti	Campioni privi di residui rilevabili (%)	Campioni mono - residuo	Campioni mono - residuo (%)	Campioni multi - residuo	Campioni multi - residuo (%)
FRUTTA	65	12	18.5	20	30.5	33	51
ORTAGGI	62	28	45	17	27.5	17	27.5
TOTALE	127	40	31.5	37	29	50	39.5

CONSIDERAZIONI

- ✓ Diminuzione delle **irregolarità**
- ✓ Aumento del numero di campioni con **presenza di residui**
- ✓ Aumento del numero di prodotti **multiresiduo**
- ✓ Aumento del numero di **principi attivi** riscontrati

CONSIDERAZIONI – COME SI GIUSTIFICA?

- ✓ Diminuzione delle **irregolarità**
- ✓ **Aumento** del numero di campioni con **presenza di residui**
- ✓ Aumento del numero di prodotti **multiresiduo**
- ✓ Aumento del **numero di principi attivi** riscontrati

CONSIDERAZIONI – COME SI GIUSTIFICA?

1

Nel **ciclo produttivo** di un prodotto le moderne tecniche di difesa prevedono l'uso di formulati contenenti sostanze attive con azioni specifiche; da qui l'impiego di **diverse sostanze attive contemporaneamente**

CONSIDERAZIONI – COME SI GIUSTIFICA?

1 Nel **ciclo produttivo** [...] l'impiego di **diverse sostanze attive contemporaneamente**

2 L'acquisizione di **nuova strumentazione (UPLC/HRMS)** ha permesso di ricercare e quindi rilevare la presenza di analiti in passato non riscontrabili
"...più si cerca , più si trova!"

CONSIDERAZIONI – COME SI GIUSTIFICA?

1 Nel **ciclo produttivo** [...] l'impiego di **diverse sostanze attive contemporaneamente**

3 **Aggiornamento** continuo dell'elenco dei principi attivi e conseguente incremento della conoscenza

2 L'acquisizione di **nuova strumentazione** [...] **"...più si cerca , più si trova!"**

CONSIDERAZIONI – COME SI GIUSTIFICA?

1 Nel **ciclo produttivo** […] l'impiego di **diverse sostanze attive contemporaneamente**

4 Le **combinazioni di pesticidi** vengono deliberatamente usate per aggirare i limiti massimi ammessi per le singole sostanze

2 L'acquisizione di **nuova strumentazione** […] **"…più si cerca , più si trova!"**

3 **Aggiornamento** continuo dell'elenco dei principi attivi e conseguente incremento della conoscenza

CONSIDERAZIONI – COME SI GIUSTIFICA?

1 Nel **ciclo produttivo** […] l'impiego di **diverse sostanze attive contemporaneamente**

4 Le **combinazioni di pesticidi** vengono deliberatamente usate per aggirare i limiti massimi ammessi per le single sostanze

5 Aumento del **numero dei campioni** controllati e **modalità** di campionamento

2 L'acquisizione di **nuova strumentazione** […] **"…più si cerca , più si trova!"**

3 **Aggiornamento** continuo dell'elenco dei principi attivi e conseguente incremento della conoscenza

CONCLUSIONI

Secondo la normativa attualmente vigente sugli LMR, un campione multiresiduo, purchè i singoli principi attivi non superino i limiti di legge, è da ritenersi **CONFORME**

Sono da anni in corso i lavori scientifici per arrivare ad una **VALUTAZIONE DEI RISCHI** derivanti dalla presenza simultanea di residui di più sostanze attive

efsa
European Food Safety Authority

Ci aspettiamo passi in avanti nello sviluppo di metodologie per la valutazione del **RISCHIO CUMULATIVO E SINERGICO**

OBIETTIVO: Tutelare la **salute** umana basandosi sul principio di **prevenzione**

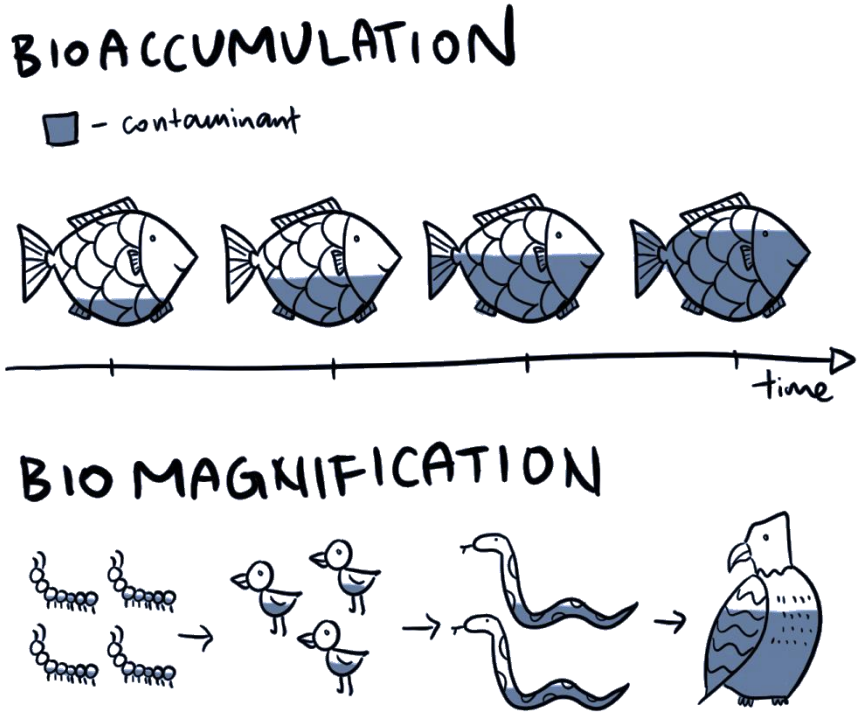
R (Risk) = P (Hazard) * E (Exposure)

- **R** → Rischio; probabilità che un evento si verifichi
- **P** → Pericolo; potenziale pericolosità di una sostanza
- **E** → Esposizione

ESPOSIZIONE

- A dose elevata
- A basse dosi
- DIRETTA
- INDIRETTA
- INTOSSICAZIONE ACUTA
- INTOSSICAZIONE CRONICA

BIOACCUMULO E BIOMAGNIFICAZIONE NELLA CATENA TROFICA



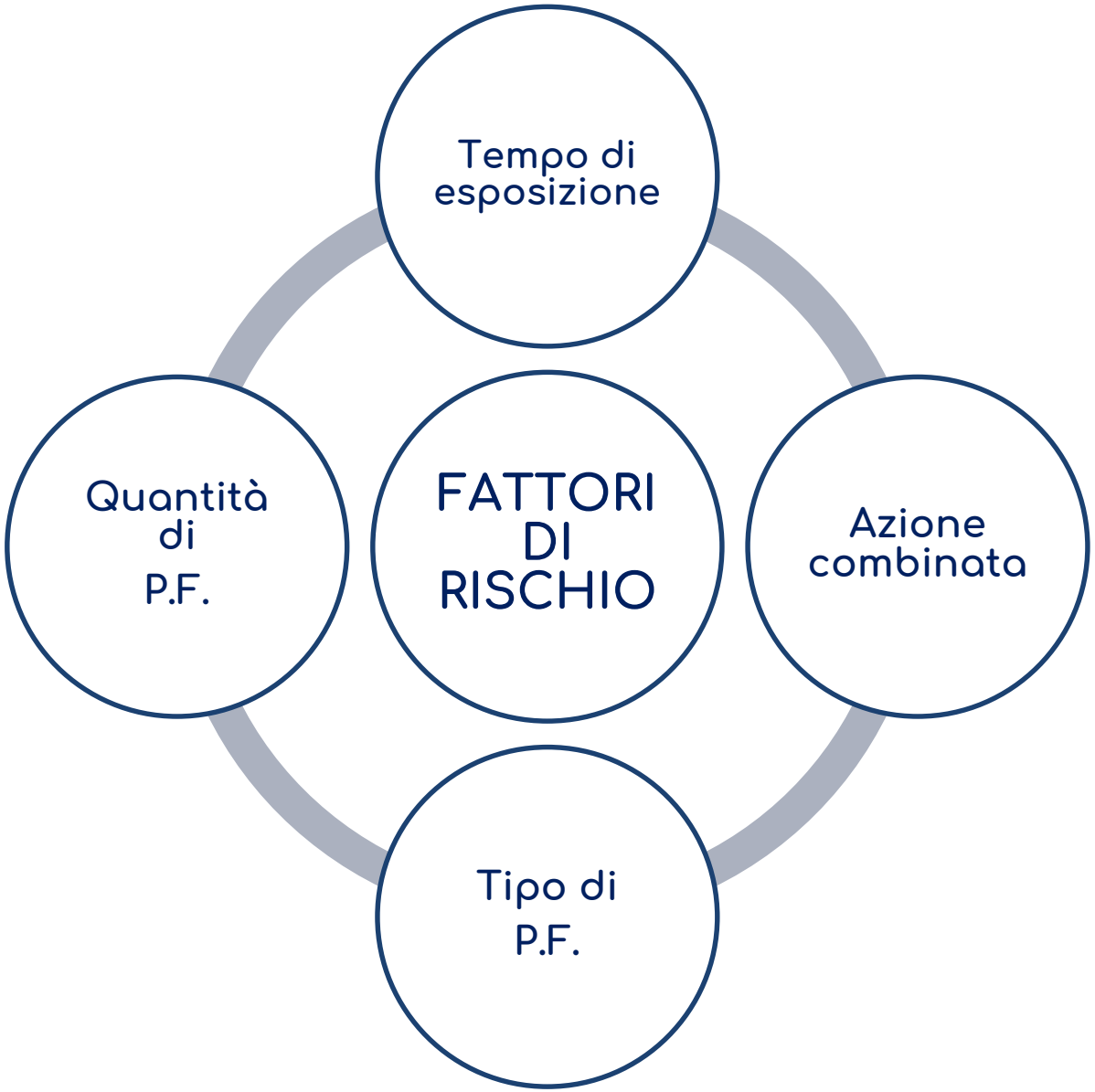
INTERAZIONE TRA SOSTANZE

Abstract

Pesticides almost always occur in mixtures with other ones. The toxicological effects of low-dose pesticide mixtures on the human health are largely unknown, although there are growing concerns about their safety. The combined toxicological effects of two or more components of a pesticide mixture can take one of three forms: independent, dose addition or interaction. Not all mixtures of pesticides with similar chemical structures produce additive effects; thus, if they act on multiple sites their mixtures may produce different toxic effects. The additive approach also fails when evaluating mixtures that involve a secondary chemical that changes the toxicokinetics of the pesticide as a result of its increased activation or decreased detoxification, which is followed by an enhanced or reduced toxicity, respectively. This review addresses a number of toxicological interactions of pesticide mixtures at a molecular level. Examples of such interactions include the postulated mechanisms for the potentiation of pyrethroid, carbaryl and triazine herbicides toxicity by organophosphates; how the toxicity of some organophosphates can be potentiated by other organophosphates or by previous exposure to organochlorines; the synergism between pyrethroid and carbamate compounds and the antagonism between triazine herbicides and prochloraz. Particular interactions are also addressed, such as those of pesticides acting as endocrine disruptors, the cumulative toxicity of organophosphates and organochlorines resulting in estrogenic effects and the promotion of organophosphate-induced delayed polyneuropathy.

Toxic effects of pesticide mixtures at a molecular level: Their relevance to human health

Antonio F.Hernández, TesifónParrón, Aristidis M.Tsatsakis, MarRequen, RaquelAlarcón, OlgaLópez-Guarnido – ANNO 2013


Tempo di esposizione
Quantità di P.F.
FATTORI DI RISCHIO
Azione combinata
Tipo di P.F.

EFFETTI DEI P.F. SULLA SALUTE UMANA

- Cancerogeno
- Neurotossico
- Immunotossico
- Teratogeno
- Mutageno
- Allergizzante

Abstract

Persistent organic pollutants comprised of organic chemicals like polychlorinated biphenyls, dibenzo-p-dioxins, dibenzofurans and organochlorinated pesticides which have many characteristics in common. Once released in the environment they resist physical, biological, chemical and photochemical breakdown processes and thus persist in the environment. They are subject to long transboundary air pollution transport. They accumulate in the food chain due to their lipophilicity, bioaccumulation and biomagnification properties. Human exposure occurs through inhalation of air, ingestion of food and skin contact. Because most of them bioaccumulate and remain preferentially in fat, their long-term effects are still a matter of public health concern. They are condemned for health adverse effects such as cancer, reproductive defects, neurobehavioral abnormalities, endocrine and immunological toxicity. These effects can be elicited via a number of mechanisms among others include disruption of endocrine system, oxidation stress and epigenetic. However most of the mechanisms are not clear thus a number of studies are ongoing trying to elucidate them. In this review, the underlying possible mechanisms of action and their possible roles in

Persistent organochlorinated pesticides and mechanisms of their toxicity

Ezra J.Mrema, Federico M.Rubino, GabriBrambilla, AngeloMoretto, Aristidis M.Tsatsakis, ClaudioColosio – ANNO 2012

EFFETTI DEI P.F. SULLA SALUTE UMANA

- Cancerogeno
- Neurotossico
- Immunotossico
- Teratogeno
- Mutageno
- Allergizzante

Abstract

Organochlorine and organophosphate pesticides are compounds that can be detected in human populations as a result of occupational or residential exposure. Despite their occurrence in considerably low levels in humans, their biological effects are hazardous since they interact with a plethora of enzymes, proteins, receptors and transcription factors. In this review we summarize the cell and molecular effects of organochlorine and organophosphate pesticides with respect to their toxicity, with particular emphasis on glucose and lipid metabolism, their interaction with some members of the nuclear receptor family of ligand-activated transcription factors, including the steroid and peroxisome proliferator activated receptors that changes the expression of genes involved in lipid metabolism and xenobiotic detoxification. More importantly, evidence regarding the metabolic degradation of pesticides and their accumulation in tissues is presented. Potential non-cholinergic mechanisms after long-term low-dose organophosphate exposure

A mechanistic overview of health associated effects of low levels of organochlorine and organophosphorous pesticides

P . Androutsopoulos, Antonio F. Hernandez, JyrkiLiesivuori, Aristidis M.Tsatsakis – ANNO 2012

EFFETTI CANCEROGENI

Abstract

We reviewed epidemiologic evidence related to occupational pesticide exposures and cancer incidence in the Agricultural Health Study (AHS) cohort.
Studies were identified from the AHS publication list available at http://aghealth.nci.nih.gov as well as through a Medline/PubMed database search in March 2009. We also examined citation lists. Findings related to lifetime-days and/or intensity-weighted lifetime-days of pesticide use are the primary focus of this review, because these measures allow for the evaluation of potential exposure–response relationships.
We reviewed 28 studies; most of the 32 pesticides examined were not strongly associated with cancer incidence in pesticide applicators. Increased rate ratios (or odds ratios) and positive exposure–response patterns were reported for 12 pesticides currently registered in Canada and/or the United States (alachlor, aldicarb, carbaryl, chlorpyrifos, diazinon, dicamba, S-ethyl-N,N-dipropylthiocarbamate, imazethapyr, metolachlor, pendimethalin, permethrin, trifluralin). However, estimates of association for specific cancers were often imprecise because of small numbers of exposed cases, and clear monotonic exposure–response patterns were not always apparent. Exposure misclassification is also a concern in the AHS and may limit the analysis of exposure–response patterns. Epidemiologic evidence outside the AHS remains limited with respect to most of the observed associations, but animal toxicity data support the biological plausibility of relationships observed for alachlor, carbaryl, metolachlor, pendimethalin, permethrin, and trifluralin. Continued follow-up is needed to clarify associations reported to date. In particular, further evaluation of registered pesticides is warranted.

A Review of Pesticide Exposure and Cancer Incidence in the Agricultural Health Study Cohort

Scott Weichenthal, Connie Moase, Peter Chan – ANNO 2010

EFFETTI CANCEROGENI

Abstract

The aim of this study was to investigate the association between Paraoxonase 1 (PON1) gene polymorphisms (M55L and Q192R) and lymphohaematopoietic cancers (LHC) in an agricultural region of Greece. A hospital-based case–control study was conducted. A structured questionnaire including information on demographics, residence, occupation, agricultural practices, pesticide exposure, family history, smoking, alcohol consumption and medical history, was used. Genotyping of 316 cases of LHC and 351 healthy controls by using standard laboratory methods was performed. To control for confounders, Binary and

Highlights

► We investigated the association between PON1 gene polymorphisms and LHC. ► Genotyping of 316 cases of LHC and 351 healthy controls was performed. ► The presence of the QQ genotype and Q allele were associated with LHC. ► The association was stronger in the groups with higher exposure to pesticides. ► We found no association between M55L polymorphism and LHC.

Relationship between the paraoxonase 1 (PON1) M55L and Q192R polymorphisms and lymphohaematopoietic cancers in a Greek agricultural population

MariaKokouva, MichalisKoureas, EfthimiosDardiotis, PavlinaAlmpanidou, AlexandraKalogeraki, DespoinaKyriakou, Georgios M.Hadjigeorgiou, ChristosHadjichristodoulou – ANNO 2012

EFFETTI CANCEROGENI

CANCER TYPE	PESTICIDES	CHEMICAL FAMILY	REFERENCES
Pancreas	EPTC Pendimethalin	Thiocarbamate Dinitroaniline	Andreotti et al. 2009
Colon	Aldicarb Dicamba EPTC Imazethapyr Trifluralin	Carbamate Benzoic acid Thiocarbamate Imidazolinone Dinitroaniline	Lee et al. 2007 Samanic et al. 2006 Van Bemmel et al. 2008 Koutros et al. 2009 Kang et al. 2008
Rectum	Chlordane Chlorpyrifos Pendimethalin Toxaphene	OC OP Dinitroaniline OC	Purdue et al. 2006 Lee et al. 2004 Lee et al. 2007 Hou et al. 2006 Lee et al. 2007
Leukemia	Chlordane/Heptachlor Chlorpyrifos Diazinon EPTC Fonofos	OC OP OP Thiocarbamate OP	Purdue et al. 2006 Lee et al. 2004 Beane Freeman et al. 2005 Van Bemmel et al. 2008 Mahajan et al 2006

EFFETTI CANCEROGENI

CANCER TYPE	PESTICIDES	CHEMICAL FAMILY	REFERENCES
Multiple Myeloma	Permethrin	Pyrethroid	Rusiecki et al. 2009
Prostate	Fonofos Methylbromide	OP Halogenated alkane	Mahajan et al 2006 Alavanja et al. 2003
Brain	Chlorpyrifos	OP	Lee et al. 2004
Melanoma	Carbaryl	Carbamate	Mahajan et al 2007

EFFETTI NEUROTOSSICI

Abstract

There has been a steep increase in the prevalence of dementia in recent decades, which has roughly followed an increase in pesticide use some decades earlier, a time when it is probable that current dementia patients could have been exposed to pesticides. This raises the question whether pesticides contribute to dementia pathogenesis. Indeed, many studies have found increased prevalence of cognitive, behavioral and psychomotor dysfunction in individuals chronically exposed to pesticides. Furthermore, evidence from recent studies shows a possible association between chronic pesticide exposure and an increased prevalence of dementia, including Alzheimer's disease (AD) dementia. At the cellular and molecular level, the mechanism of action of many classes of pesticides suggests that these compounds could be, at least partly, accountable for the neurodegeneration accompanying AD and other dementias. For example, organophosphates, which inhibit acetylcholinesterase as do the drugs used in treating AD symptoms, have also been shown to lead to microtubule derangements and tau hyperphosphorylation, a hallmark of AD. This

Linking pesticide exposure and dementia: What is the evidence?

IoannisZaganas, StefaniaKapetanaki, VassileiosMastorodemos, KonstantinosKanavouras, ClaudioColosio, Martin F.Wilks, Aristidis M.Tsatsakis– ANNO 2013

EFFETTI NEUROTOSSICI

Abstract

Da studi epidemiologici recenti è emersa, sebbene con risultati talvolta contrastanti, una possibile correlazione tra l'esposizione complessiva a pesticidi in ambito occupazionale e il rischio di sclerosi laterale amiotrofica (SLA). Abbiamo studiato questa ipotesi attraverso uno studio caso-controllo nella popolazione del Comune di Reggio Emilia. Abbiamo identificato i 41 nuovi casi di SLA diagnosticati nel periodo 1995-2006 e selezionato nella popolazione generale 82 controlli, appaiati per sesso e età ai pazienti. I soggetti inclusi nell'indagine (o uno stretto familiare quando non altrimenti possibile) hanno compilato un questionario sull'attività professionale e su alcuni fattori dello stile di vita. I pazienti sono risultati caratterizzati da una maggiore esposizione a pesticidi in ambito professionale rispetto ai controlli (rispettivamente 31,7% e 13,4%). Il rischio relativo di SLA associato all'esposizione a pesticidi è risultato pari a 3,6 (intervallo di confidenza al 95% 1,2-10,5), permanendo dopo aggiustamento per alcuni possibili fattori confondenti. Questi risultati suggeriscono nel complesso, nonostante la limitata stabilità statistica delle stime di rischio, una correlazione tra SLA ed esposizione professionale a pesticidi.

Esposizione a pesticidi e rischio di sclerosi laterale amiotrofica: uno studio caso-controllo di popolazione

Francesca Bonvicini, Norina Marcello, Jessica Mandrioli, Vladimiro Pietrini, Marco Vinceti – ANNO 2010

EFFETTI NEUROTOSSICI

Abstract

Parkinson's disease (PD) is the most common neurodegenerative movement disorder that is a consequence of premature death of dopamine-containing neurons in the substantia nigra. A number of observations have led to the hypothesis that environmental factors, including pesticides, play a significant role in the development of PD. Among pesticides, most commonly herbicides (paraquat in particular) and insecticides have been considered. The aim of this study is to address the uncertainties provided by epidemiological studies on the role of pesticide exposures in the development of PD, with the help of experimental toxicological data. Animal models that reproduce all clinical and pathological features of human PD are not available. In addition, the fundamental questions relate to the extrapolation from experimental to actual human exposure, taking also into account the role of genetic factors. Available measurements or estimates of human exposure levels that are significantly lower than those used in animal experimentation provide little support for a causal correlation between pesticide exposure and development of PD in humans. A possible role of acute poisonings or episodes of excessive exposure, and/or of combined exposures especially at early age and/or in the presence of certain genetic variants can be hypothesised. Follow up of survivors of acute

The role of pesticide exposure in the genesis of Parkinson's disease: Epidemiological studies and experimental data

Angelo Moretto, Claudio Colosio - ANNO 2013

EFFETTI NEUROTOSSICI

JORF n°0107 du 6 mai 2012 page 8149
texte n° 42

Décret n° 2012-665 du 4 mai 2012 révisant et complétant les tableaux des maladies professionnelles en agriculture annexés au livre VII du code rural et de la pêche maritime

3° Après le tableau n° 57 bis, il est ajouté un tableau n° 58 ainsi rédigé :

« Tableau n° 58. — Maladie de Parkinson provoquée par les pesticides (1)

DÉSIGNATION DE LA MALADIE	DÉLAI DE PRISE en charge	LISTE INDICATIVE DES PRINCIPAUX TRAVAUX susceptibles de provoquer cette maladie
Maladie de Parkinson confirmée par un examen effectué par un médecin spécialiste qualifié en neurologie.	1 an (sous réserve d'une durée d'exposition de 10 ans)	Travaux exposant habituellement aux pesticides : — lors de la manipulation ou l'emploi de ces produits, par contact ou par inhalation ; — par contact avec les cultures, les surfaces, les animaux traités ou lors de l'entretien des machines destinées à l'application des pesticides.

(1) Le terme "pesticides" se rapporte aux produits à usages agricoles et aux produits destinés à l'entretien des espaces verts (produits phytosanitaires ou produits phytopharmaceutiques) ainsi qu'aux biocides et aux antiparasitaires vétérinaires, qu'ils soient autorisés ou non au moment de la demande. »

EFFETTI NEUROTOSSICI

L'EFSA e i suoi partner europei hanno fatto un grande passo in avanti per quanto riguarda la valutazione dei rischi cumulativi derivanti dall'esposizione ai pesticidi. È stato infatti messo a punto uno strumento informatico per effettuare valutazioni dell'esposizione per più pesticidi insieme. Attualmente, con l'ausilio di questo strumento, si stanno eseguendo valutazioni dell'esposizione cui sono soggetti i consumatori in uno studio pilota su gruppi di pesticidi che possono compromettere la funzionalità della tiroide e del sistema nervoso.

I risultati di tali valutazioni saranno pubblicati entro la fine di quest'anno e verranno presi in considerazione dall'EFSA nella redazione di due relazioni scientifiche sulle valutazioni del rischio cumulativo per la tiroide e il sistema nervoso, che l'Agenzia pubblicherà nel 2017.

In una prospettiva a lungo termine l'EFSA spera d'iniziare a integrare progressivamente valutazioni del rischio cumulativo ad alto livello nella sua analisi annuale dei rischi cronici e acuti che i pesticidi comportano per i consumatori. L'analisi utilizza dati raccolti dagli Stati membri.

http://www.efsa.europa.eu/it/press/news/160127

EFFETTI IMMUNOTOSSICI

Abstract

The immune system can be the target of many chemicals, with potentially severe adverse effects on the host's health. In Western countries pesticides, together with new and modified patterns of exposure to chemicals, have been implicated in the increasing prevalence of diseases associated with alterations of the immune response, such as hypersensitivity reactions, certain autoimmune diseases and cancers. Xenobiotics may initiate, facilitate or exacerbate pathological immune processes, resulting in immunotoxicity by induction of mutations in genes coding for immunoregulatory factors, modifying immune tolerance and activation pathways.

The purpose of this article is to update the evidence of pesticide immunotoxicity. Even if experimental data as well as sporadic human studies indicate that some pesticides can affect the immune system, overall, existing epidemiological studies are inadequate to raise conclusions on the immunotoxic risk associated to pesticide exposure. The available studies on the effects of pesticides on human immune system have several limitations including poor indication on exposure levels, multiple chemical exposures, heterogeneity of the approach, and difficulty in giving a prognostic significance to the slight changes often observed. Further studies are necessary, and they should be preferably carried out through comparison of pre and post-exposure findings in the same group of subjects with a matched control group. Attempt should be made to define the

Pesticide induced immunotoxicity in humans: A comprehensive review of the existing evidence

E.Corsini, M.Sokooti, C.L.Galli, A.Moretto, C.Colosio - ANNO 2012

EFFETTI TERATOGENI

Abstract

Malignant brain tumors rank second in both incidence and mortality by cancer in children, and they are the leading cause of cancer death in children. Relatively little is known about the etiology of childhood brain tumor (CBT). While there are several studies which link pesticide exposure to increased risk of CBT, findings have been inconsistent. We performed a meta-analysis on 15 published epidemiological studies to test that in utero exposure to pesticides may be involved in the development of brain cancer in children. Meta-analysis was performed using the general variance-based method and homogeneity was tested by means of the Q statistic. Summary relative risk (RR) estimates were calculated for childhood brain cancer from (1) paternal exposure to pesticides prior to conception, (2) both maternal and paternal exposure to pesticides during pregnancy, (3) maternal exposure during pregnancy to: (a) agricultural and (b) non-agricultural activities, and (4) childhood exposure to: (a) agricultural and (b) nonagricultural activities up to date of diagnosis with CBT. The comparative toxicogenomics database (CTD) was used to identify gene-pesticide-CBT interactions.

Findings of meta-analyses revealed a significantly increased risk of CBT among children whose mothers had farm-related exposures during pregnancy (RR=1.48, 95% CI=1.18–1.84). A dose response was recognized

search of the CTD databases revealed association between herbicide and astrocytoma and more than 300 genes are altered by exposure to herbicide, fungicide, insecticide or pesticides. In summary, comparing

Increased Risk Of Childhood Brain Tumors Among Children Whose Parents Had Farm-related Pesticide Exposures During Pregnancy

Brian Kunkle, S. Bae, K. P. Singh, D. Roy- ANNO 2014

EFFETTI TERATOGENI

Abstract

A total of seven pesticides and eight alkylphenols were monitored using this method for the determination of their trace levels in human cord blood. The pesticides are lindane, diazinon, α-endosulfan, β-endosulfan, endosulfan sulfate, chlorpyrifos and endrin; while the alkylphenols are 4-n-butylphenol, 4-n-pentylphenol, 4-n-hexylphenol, 4-t-octylphenol, 4-n-heptylphenol, nonylphenol, 4-n-octylphenol and bisphenol A. The pesticides and alkylphenols in the cord blood samples were extracted with solid phase extraction IST C18 cartridges and analyzed by selected ion monitoring mode using quadrapole detector in Shimadzu QP-5000 gas chromatograph-mass spectrometer. Trace levels of pesticide and alkylphenols in the range of non-detectable to 15.17 ng ml−1, were detected in the human cord blood samples. This technique of monitoring the levels of endocrine-disruptors in blood samples is consistent, reliable and cost effective while reducing wastage of time and solvents.

Analysis of selected pesticides and alkylphenols in human cord blood by gas chromatograph-mass spectrometer

Benjamin L.L. Tan, Mustafa Ali Mohd - ANNO 2003

EFFETTI MUTAGENI

Abstract

The crisis ecological situation,which is accompanied by an increase in morbidity, reduction in the number of rare and endemic plants and animals,the destabilization of natural ecosystems,is characterized for many regions of Kazakhstan.The problem of environmental contamination by pesticides is relevant.In recent years phenylpyrazole insecticides,where the main active ingredient is fipronil,widely used against pests in Kazakhstan.Despite the information about the toxic effects of fipronil pesticides,their mutagenic effects are studied insufficiently.The purpose of this research was the study of mutagen activity of fipronil pesticide and its metabolite fipronil-sulphone.The objects of study were laboratory rats of various age groups and backgrounds rodent species from fipronil contaminated habitats.In this research work were used cytogenetic and biochemical methods.Fipronil and its metabolite fipronil-sulfone shown expressed genotoxic effect by repeated influence on rats.It aws established a significant increase of the frequency of structural and genomic mutations in the bone marrow cells of laboratory animals.It wasn't detected significant differences in the manifestation of genotoxic effect of fipronil and its metabolite fipronil-sulphone.The level of xenobiotic

Mutagenic effects ofphenylpyrazole pesticides

Kolumbaeva S.Zh., Begimbetova D.A., Kalimagambetov A.M., Lovinskaya A.V - ANNO 2011

EFFETTI ALLERGIZZANTI

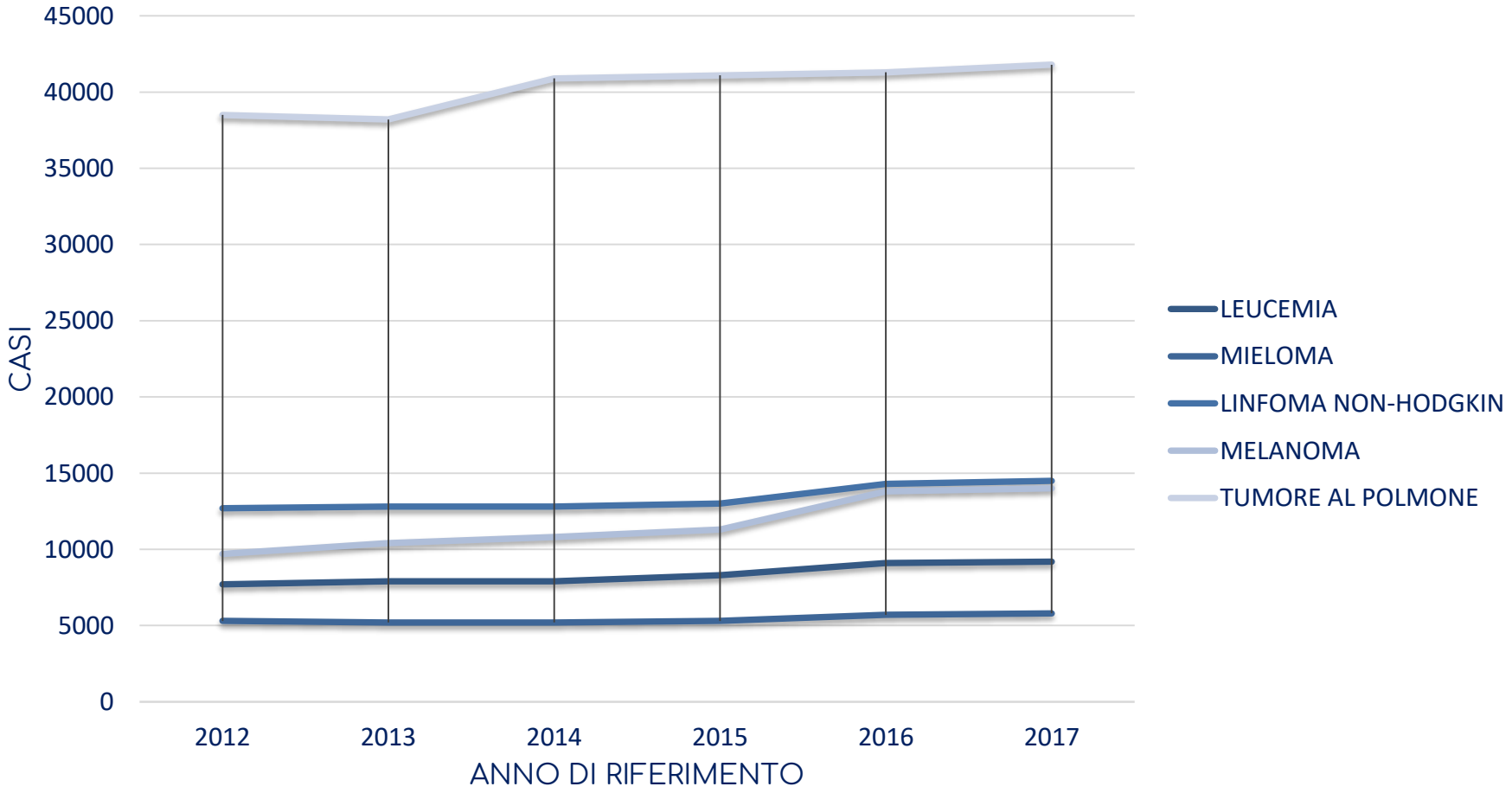
Abstract

We investigated the association of self-reported asthma and pesticide use in 1,939 male farmers. Regardless of age, smoking pack-years, and nasal allergic reactions, the prevalence of asthma was significantly associated with the use of carbamate insecticides (prevalence odds ratio = 1.8, 95% confidence interval: 1.1 to 3.1, p = 0.02). Self-reported asthmatics, in comparison with nonasthmatics, had significantly lower mean values for lung function test variables after adjusting for age and height and a higher prevalence of respiratory symptoms. These findings raise the possibility that exposure to agriculture chemicals could be related to lung dysfunction in exposed farmers.

Association of Asthma with Use of Pesticides: Results of a Cross-Sectional Survey of Farmers

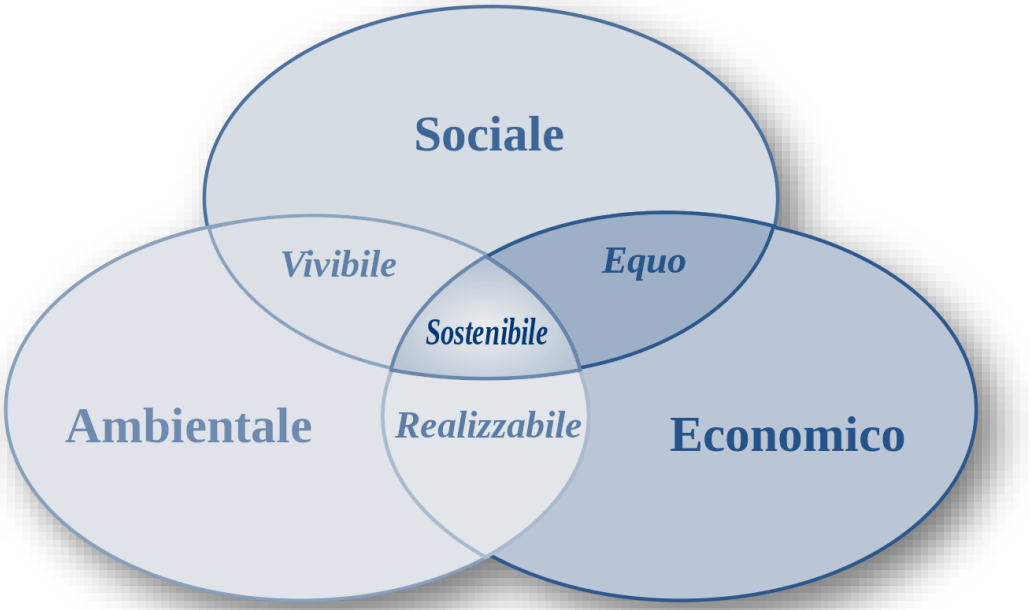
A. Senthilselvan , Helen H. Mcduffie , James A. Dosman - ANNO 1992

CONCLUSIONI



FONTE:AIOM,AIRTUM: I Numeri del cancro in Italia 2012/2013/2014/2015/2016/2017

CONCLUSIONI



"Lezioni imparate in ritardo da pericoli conosciuti in anticipo"

http://www.eea.europa.eu/publications/late-lessons-2

GRAZIE PER LA CORTESE ATTENZIONE

"Tutti i pensieri intelligenti sono già stati pensati.
Occorre solo tentare di ripensarli."

J. W. Goethe

SIAN