

Examrace

IAS 2012 Prelims Solved Paper II Aptitude (Part 2 of 18)

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Passage-2

Chemical pesticides lose their role in sustainable agriculture if the pests evolve resistance. The evolution of pesticide resistance is simply natural selection in action. It is almost certain to occur when vast numbers of a genetically variable population are killed. One or a few individuals may be unusually resistant (perhaps because they possess an enzyme that can detoxify the pesticide). If the pesticide is applied repeatedly, each successive generation of the pest will contain a larger proportion of resistant individuals. Pests typically have a high intrinsic rate of reproduction, and so a few individuals in one generation may give rise to hundreds or thousands in the next, and resistance spreads very rapidly in a population.

This problem was often ignored in the past, even though the first case of DDT (dichlorodiphenyltrichloroethane) resistance was reported early as 1946. There is exponential increase in the numbers of invertebrates that have evolved resistance and in the number of pesticides against which resistance has evolved. Resistance has been recorded in every family of arthropod pests (including dipterans such as mosquitoes and house flies, as well as beetles, moths, wasps, fleas, Lice and mites) as well as in weeds and plant pathogens. Take the Alabama leaf-worm, a moth pest of cotton, as an example. It has developed resistance in one or more regions of the world to aldrin, DDT, dieldrin, endrin, lindane and toxaphene.

If chemical pesticides brought nothing but, problem-if their use was intrinsically and acutely unsustainable then they would already have fallen out of widespread use. This has not happened. Instead, their rate of production has increased rapidly. The ratio of cost of benefit for the individual agricultural producer has remained in favour of pesticide use. In the USA insecticides have been estimated to benefit the agricultural products to the tune of around \$5 for every \$1 spent.

Moreover, in many poorer countries, the prospect of imminent mass starvation, or of an epidemic diseases, are so frightening that the social and health cost of using pesticides have to be ignored. In general the use of pesticides is justified by objective measures such as lives saved, economic efficiency of food production and total food produced. In these very fundamental senses, their use may be described as sustainable. In practice, sustainability depends on continually developing new pesticides that keep at least one step ahead of the pests. Pesticides that are less persistent, biodegradable and more accurately targeted at the pests

1. The evolution of pesticide resistance is natural selection in action. What does it actually imply?

- a. It is very natural for many organisms to have pesticide resistance.
- b. Pesticide resistance among organisms is a universal phenomenon.
- c. Some individuals in any given population show resistance after the application of pesticides.
- d. None of the statements a, b & c given-above is correct.

Answer: c

2. With reference to the passage, consider the following statement.

- a. Use of chemical pesticides has become imperative in all the poor countries of the world.
- b. Chemical pesticides should not have in role in sustainable agriculture.
- c. One pest can develop resistance to many pesticides.

Which of the statements given above is/are correct?

- a. 1 and 2 only
- b. 3 only
- c. 1 and 3 only
- d. 1, 2 and 3

Answer: c

3. Though the problems associated with the use of chemical pesticides is known for a long time, their widespread use has not waned. Why?

- a. Alternatives to chemical pesticides do not exist at, all.
- b. New pesticides are not invented at all.
- c. Pesticide are biodegradable.
- d. None of the statements a, b & c given above is correct.

Answer: d

4. How do pesticides act as agents for the selection of resistant individuals in any pest population?

- a. It is possible that in a pest population the individuals will behave differently due to their genetic makeup.
- b. Pests do possess the ability to detoxify the pesticides.
- c. Evolution of pesticide resistance is equally distributed in pest population.

Which of the statements given above is/are correct?

- a. 1 only
- b. 1 and 2 only
- c. 3 only
- d. 1, 2 and 3

Answer: b

5. Why is the use of chemical pesticides generally justified by giving the examples of poor and developing countries?

- a. Development countries can afford to do away with use of pesticides by adapting to organic farming, but it is imperative for poor and developing countries to use chemical pesticides.
- b. In poor and developing countries, the pesticides addressing the problem of epidemic diseases of crops and eases the food problem.
- c. The social and health costs of pesticides use are generally ignored in poor and developing countries.

Which of the statements given above is/are correct?

- a. 1 only
- b. 1 and 2 only
- c. 2 only
- d. 1, 2 and 3

Answer: c

6. What does the passage imply?

- a. Alternative options to chemical pesticides should be promoted.
- b. Too much use of chemicals is not good for the ecosystem.
- c. There is no scope for the improvement-of pesticides and making their use sustainable.
- d. Both the statements a & b above are correct.

Answer: d