By Alister Doyle, Environment Correspondent

OSLO (Reuters) - Many farmers in developing nations can double food production within a decade by shifting to ecological agriculture from use of chemical fertilizers and pesticides, a U.N. report showed on Tuesday.

Insect-trapping plants in Kenya and Bangladesh's use of ducks to eat weeds in rice paddies are among examples of steps taken to increase food for a world population that the United Nations says will be 7 billion this year and 9 billion by 2050.

"Agriculture is at a crossroads," according to the study by Olivier de Schutter, the U.N. Special Rapporteur on the right to food, in a drive to depress record food prices and avoid the costly oil-dependent model of industrial farming.

"Agroecology" could also make farms more resilient to the projected impact of climate change including floods, droughts and a rise in sea levels that the report said was already making fresh water near some coasts too salty for use in irrigation.

So far, eco-farming projects in 57 nations had shown average crop yield gains of 80 percent by tapping natural methods for enhancing soil and protecting against pests, it said.

Recent projects in 20 African countries had resulted in a doubling of crop yields within three to 10 years. Those lessons could mimicked elsewhere, it said.

"Sound ecological farming can significantly boost production and in the long term be more effective than conventional farming," De Schutter told Reuters of steps such as more use of natural compost or high-canopy trees to shade coffee groves.

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Benefits would be greatest in "regions where too few efforts have been put in to agriculture, particularly sub-Saharan Africa."

"There are also a number of very promising experiences in parts of Latin America and parts of Asia."

"The cost of food production has been very closely following the cost of oil," he said. Upheavals in Egypt and Tunisia have been linked to discontent at soaring food prices. Oil prices were around $115 a barrel on Wednesday.

"If food prices are not kept under control and populations are unable to feed themselves...we will have increasingly states being disrupted and failed states developing," De Schutter said.

Among examples, thousands of Kenyan farmers were planting insect-repelling desmodium or tick clover, used as animal fodder, within corn fields to keep damaging insects away and sowed small plots of napier grass nearby that excretes a sticky gum to trap pests.

Better research, training and use of local knowledge were also needed. "Farmer field schools" by rice growers in Indonesia, and Bangladesh had led to cuts in insecticide use of between 35 and 92 percent, the study said.
De Schutter also called for a push to diversify global farm output from reliance on rice, wheat and maize in diets.

Developed nations, however, would be unable to make a quick shift to agroecology because of what he called an "addiction" to an industrial, oil-based model of farming. Still, a global long-term effort to shift to agroecology was needed.

Cuba had shown that such a change was possible after the collapse of the Soviet Union in 1991 cut off supplies of cheap pesticides and fertilizers. Yields had risen after a downturn in the 1990s as farmers adopted more eco-friendly methods.

(Editing by Louise Ireland)