# BIOFUELS AND BIOLOGICAL INVASIONS

Many countries and investors are currently looking at using fast-growing and high-yielding crops for the production of biofuels as alternatives to traditional fossil fuels to address shortages, reduce reliance on petrol and diesel and reduce impacts of climate change. If these initiatives are not carefully assessed, however, promoting the cultivation of some popular species for biofuel production will increase two of the major causes of biodiversity loss on the planet: clearing and conversion of yet more natural areas for monocultures, and invasion by non-native species.

Habitat conversion is already the leading cause of biodiversity loss worldwide, and limiting the enthusiastic cultivation of new crops to areas already converted is not an easy or popular task. The issue addressed here, though, is that a number of the most commonly recommended species for biofuel production may also become major invasive species when introduced to other parts of the world. Thus, they need to be assessed for the likelihood of invasion before being cultivated on a large-scale for biofuels production. Some of these species are spread by birds, small mammals and other animals, making prevention of their "escape" from culture difficult or impossible, with impacts increasing over time and long-term production prone to more financial losses than gains.

This note is to draw attention to this possibility and provide recommendations to reduce this risk.

The characteristics that are sought after in plants to be used for (at least for first and second generation) biofuels include:

- Rapid growth rate, especially in monoculture or similar plantation combinations,
- Good growth in adverse or marginal conditions,
- Production of many and well-protected fruits and/or seeds (or other propagules) early in their growth and development,
- Effective competition with weeds and other plants

These are characteristics of "effective invasive plants".

The Global Invasive Species Programme has identified a number of actions to avoid impacts on biodiversity from the use of inappropriate species for biofuels and is ready to provide further support on this issue. Specifically, the development of biofuels projects should consider:

- Selection of low risk species: using information available on internet websites, from technical publications and organisations and individuals with experience of biological invasions;
- Information gathering: checking national noxious weed lists and lists of species of special concern, national, regional and global databases and websites for references relevant to the countries where biofuel plantations are proposed;
- Risk assessment: using risk assessment protocols to evaluate the risk of invasion by species in biofuel proposals, especially in countries with less experience in addressing biological invasions or screening for impacts on biodiversity;
- Risk management: including monitoring and contingency planning in proposals for biofuels, especially for control in cases of escape and according to results of risk assessments. Control procedures have to be viable and well-tested, so invading species dispersed by animals and other active means must not be used without a tried and tested contingency plan for escapes;
- Cost/benefit analysis: performing market studies and presenting business plans that can show real benefits for the proposed activities before funds are made available, as there are cases of introduced species that never achieved commercial value (some of which have been abandoned and remain as problems, sometimes including biological invasions);
- Use of native species wherever possible: creating incentives for the development and use of native and non-invasive species that pose the lowest risks to biodiversity;
- Use of development plans that reduce the risk of causing “degraded ecosystems” that can provide conditions for the target species and other introduced and native species to become invasive;
- Recalling that all introduced organisms come with their “own” pathogens, parasites and “hitchhikers”: ensure that phytosanitary procedures are followed and all necessary precautions taken to exclude associated species that could threaten the new environment, and

- Incentives and regulations of host country governments: promote compliance with national incentives, benefits and introduction procedures for alien species – i.e., “no short cuts” or exemptions from agreed practices to limit biological invasions.

Further information can be found at http://www.gisp.org/