Title registration for a review proposal:  
The effectiveness of crop targeting as a drug control strategy

Submitted to the Coordinating Group of:  
_X_ Crime and Justice  
__ Education  
__ Social Welfare  
_X_ Other: International Development

Plans to co-register:  
_X_ No  
__ Yes ___ Cochrane ___ Other  
__ Maybe

TITLE OF THE REVIEW

The effectiveness of crop targeting as a drug control strategy

BACKGROUND

Briefly describe and define the problem

Illegal drug use is a global public health problem with consequences for social and economic development. Recent estimates from the United Nations Office on Drugs and Crime (UNODC) estimate the global prevalence of illegal drug use at between 149 million and 272 million people per year, or 3.3 to 6.1 percent of the world’s population, and rising (United Nations Office on Drugs and Crime, 2011). Illegal drug use directly results in almost 200,000 deaths per year (United Nations Office on Drugs and Crime, 2011). However, direct users are not the only group affected. The indirect social and economic consequences of illegal drug supply are much greater.

At a country level, the violence associated with the use of illegal drugs is of primary concern (Finklea, Krouse, & Rosenblum, 2011). Research consistently shows a direct link between emerging violence and the illicit drug trade (International Centre for Science in Drug Policy, 2010). This is most evident in drug producing areas like Mexico, a country with which the U.S. shares a nearly 2,000-mile border (Beittel, 2011). International implications of the drug trade include the establishment of international organized crime networks (Schneider, 2010), an escalation in violence along trafficking routes (United Nations Office on Drugs and Crime and Latin America and the Caribbean Region of the World Bank, 2007), and
increased corruption in federal law enforcement agencies (Bronitt, 2004; United Nations Office on Drugs and Crime, 2007). In 2010 alone, the estimated number of deaths related to drug trafficking was 11,600, with an estimated 30,000 deaths occurring from December 2006 onwards (Trans-Border Institute, Justice in Mexico Project, 2010), highlighting the urgency of assessing the relative effectiveness of various drug-control strategies.

Countries throughout the world spend enormous amounts of money reducing the supply, demand and harms associated with illicit drugs. Whilst acknowledging the difficult task of estimating government drug policy expenditures (see Reuter, 2006), research consistently shows that the big ticket item in drug control expenditures is law enforcement supply-reduction strategies (Caulkins & Reuter, 2010). In 2010, for example, over 50 percent of the total federal expenditure on the control of illegal drugs in the U.S. was spent on domestic law enforcement and interdiction, and almost two-thirds (64.5%) of the total expenditure was spent on supply-reduction efforts (Office of National Drug Control Policy, 2010). In Australia, the law enforcement slice of the drug policy expenditure pie is approximately $740.4 million per annum (Moore, 2005). This demonstrable, unequivocal and sheer dominance of supply-side approaches to U.S. drug control policy suggests the timeliness of “taking stock” of what works in drug supply-reduction interventions.

Our review plans to examine the effectiveness of crop targeting as a supply-side drug-control strategy. Our review is timely, given the rationalizations in supply-side interventions accompanying the recent shift in U.S. drug policy. Indeed, on February 28, 2011, U.S. Drug Policy Director Gil Kerlikowske described a repositioning of U.S. drug control policy to promote a more balanced approach than previous drug policies, combining prevention, education, and promotion of “smarter use of law enforcement resources” (Kerlikowske, 2011). This shift in U.S. drug policy marks the first major move away from the law-enforcement-dominated “War on Drugs” in decades. Indeed, the “smarter use of law enforcement resources” comment by Kerlikowske serves as a reminder that supply-side, law-enforcement approaches to drug control should be evaluated for their effectiveness before being included in future portfolios of drug control interventions not just in the U.S., but also elsewhere in the world.

**Briefly describe and define the intervention**

Supply reduction is generally defined as strategies and actions which “prevent, stop, disrupt or otherwise reduce the production of supply of illegal drugs as well as efforts to control, manage and/or regulate the availability of legal drugs” (Collins & Lapsley, 2008; see also Fisher, 2009b; McSweeney & Turnbull, 2011). Literature suggests that illicit crop eradication is not only the centrepiece of the supply-side campaign in the “war on drugs,” but a highly contested and controversial issue (James, 2005). The United Nations (UN) is the prime proponent of crop eradication and is responsible for providing the current legislative measures for eradication of illicit crops.

For the purpose of this review, we will only consider supply-reduction interventions aimed at reducing illicit plant-based drugs through crop targeting interventions. We define crop targeting interventions as activities aimed at reducing the supply of drugs through destroying, suppressing or preventing the development of illegal drug crops. Such interventions could include burning, spraying, eradication, alternative development or substitution-based rural development aimed at reducing crops that yield illicit drugs.

An example of a well-known crop targeting initiative is the **Cannabis Crop Eradication Programme**, a New Zealand crop targeting initiative, involving a series of police operations designed to reduce the cultivation of cannabis by effectively destroying the supply at the source (Wilkins et al, 2002). Through the destruction of crops by fixed wing aircraft and helicopters, this operation resulted in an estimated destruction of 26–31% of New Zealand’s domestic cannabis crop.
A second example of a wholesale level crop targeting initiative is *Plan Colombia*, a Colombian and U.S. effort to reduce the supply of illegal drugs entering the U.S. market (Veillette, 2005). With U.S. support through the State Department’s Office of Interregional Aviation, the initiative involved aerial eradication through the spraying of coca and poppy crops with a glyphosate herbicide mixture (Veillette, 2005). Results of this study report a reduction in coca and opium poppy cultivation in the first three years and further demonstrate the strength of crop targeting initiatives as a method of reducing the supply of illicit drugs.

**Briefly describe and define the population**

Our proposed review will include evaluations of crop targeting interventions undertaken by any country, state or province and aimed at any state, province, region, country or countries in the world. We will not apply geographic limitations to the location of the interventions. We will also not apply a limitation to the sector initiating or undertaking the intervention: we will include any crop targeting intervention, including interventions initiated or undertaken by law enforcement agencies, military entities or other government organizations (such as customs, homeland security and other such agencies).

In our review, we are specifically interested in evaluating the effect of crop targeting interventions aimed at the wholesale level of the illicit drug market. A wholesale, or commercial activity, involves any method of generating the supply of the illegal substance itself (production and manufacture) and distributing it amongst the lower levels of the pyramid. As such, our review will not examine crop targeting interventions aimed at the “street level” of drug market activity. For example, interventions such as eradication by local police of personal or backyard plants will not be included in the review.

**Outcomes: What are the intended effects of the intervention?**

The aim of crop targeting interventions is to reduce the available supply of illicit drugs. Our review focuses on the impact of crop targeting interventions as a drug control strategy to reduce the wholesale supply of illicit plant-based drugs. Interventions that include a measure of illicit drug production, prevalence or availability will be included in the review. Direct outcome measures are expected to include consumption, production, cultivation, yield, net farm income, market availability and number of eradicated hectares. Indirect measures may include the impact of crop targeting interventions on crime rates, measures of improvement in democracy or the security of the country, economic outcomes, violence outcomes, harm outcomes and demand outcomes. Our review will also record information on displacement, spill-over or unintended consequences of any crop targeting intervention that seeks to control the supply of illegal drugs. We will also include outcomes that measure supply management on a societal and national level, including acts or policies established by a local or federal government.

**OBJECTIVES**

Our proposed systematic review seeks to provide policy makers with the research evidence to help guide a smarter use of scarce resources aimed at the wholesale level of efforts to control the supply of illegal drugs.

The main objective of this review is to systematically assess and synthesize all available research pertaining to the effectiveness of crop targeting as a drug control strategy to reduce the wholesale supply of illicit plant-based drugs. We seek to answer the following research questions:

1. How effective is crop targeting as a drug control strategy to reduce the wholesale supply of illicit plant-based drugs? Direct outcome measures are expected to include consumption, production, cultivation, yield, net farm income, market availability and number of eradicated hectares. Indirect measures may include the impact of crop
targeting interventions on crime rates, measures of improvement in democracy or the security of the country, economic outcomes, violence outcomes, harm outcomes and demand outcomes. Our review will also record information on displacement, spill-over or unintended consequences of any crop targeting intervention that seeks to control the supply of illegal drugs. We will also include outcomes that measure supply management on a societal and national level, including acts or policies established by a local or federal government.

2. What strategy characteristics differentiate effective crop targeting strategies from those that are ineffective?

3. How do the effects of crop targeting strategies vary according to the geographic location in which they are applied? In which regions and under which political conditions are crop targeting strategies most effective?

**METHODOLOGY**

**Inclusion criteria:**
To be eligible for inclusion in the review, studies must have examined the effectiveness of a crop targeting strategy aimed at controlling the supply of illicit, plant-based drugs. Both published and unpublished studies will be considered for the review. The interventions, studies, participants and outcomes are defined below.

**Types of interventions:**
Interventions that involve crop targeting and explicitly state that the initiative, program, policy, or legislation are aimed at managing, reducing, curtailing, stopping or eradicating the supply of illicit drugs will be included.

We will only include crop targeting activities that operate at the wholesale level of the drug activity.

The drugs that will be considered in crop targeting interventions are all drugs that are illegally grown and cultivated according to international agreements and local (national) laws. The drugs must be plant-based, thus any illicit drugs that are chemical based will be excluded from the review.

**Types of studies:**
To be included in our review as a high quality study, studies must use a quantitative evaluation design, with a valid comparison group. We will include randomized trials, natural experiments, time-series designs, regression discontinuity designs, and any quasi-experimental design with a matched or non-matched comparison group, including matched comparison groups, propensity score matched comparisons, and post-hoc statistically matched comparisons.

We recognize that because crop targeting interventions are a part of established government drug control policy, they can therefore be considered the business-as-usual treatment; consequently we anticipate that there may be very few high quality studies where crop targeting interventions are assessed against a control group. We anticipate that many evaluations may be in the form of time-series designs, and may not include a valid comparison group; for example, several studies identified in our preliminary investigations examine the impact of crop targeting over time within the one country, reporting as an outcome the annual estimated number of hectares under illicit drug cultivation. Similarly, we identified studies that report the correlation between the risk of crop eradication in one year and the change in net area of cultivation in the following year. We will include time-series pre–post test evaluations without a comparison group in our review, as well as correlation designs without comparison groups; however, we note that the quality of these
studies may be lower than of studies that include a valid comparison group, and we will conduct sub-group analysis using study quality as a predictor variable.

We will include evaluations where the comparison group is “business as usual”, or no intervention, but not where two treatments are compared with no baseline “business as usual” comparison, as these types of design are highly subject to bias.

**Types of participants:**
The units of analysis will be any geographic place (e.g. province, state, region, country or countries) that is the subject of crop targeting interventions. In order to obtain an accurate global overview of the effectiveness of crop targeting as a strategy for drug control, there will be no geographic limitations for inclusion.

**Types of outcomes:**
Interventions which deal with some outcome measure of drug production, prevalence and availability of the drug on the illicit market will be included in the review, including: consumption, production, cultivation, yield, net farm income, market availability and number of eradicated hectares.

We will include a number of indirect outcome measures in our review, for example, crime rates, measures of improvement in democracy or the security of the country, economic outcomes, violence outcomes and harm outcomes. Moreover, we will include any unintended outcomes in our review. All six types of displacement (spatial, target, temporal, tactical, perpetrator, and type of crime) will be coded. We will also include outcomes that measure supply management on a societal and national level, including acts or policies established by a local or federal government.

Outcome measures relating to harm reduction or demand reduction will be included in our review. We will include any study that reports a harm outcome (as an indirect outcome) resulting from a crop targeting intervention.

**Exclusion criteria:**
Since we are focusing primarily on the reduction of drug supply through crop targeting, any evaluation of interventions that are not plant-based and targeted toward activities to reduce/eliminate crops will not be included in the review.

We will also exclude all of the street-level drug law-enforcement interventions included in Mazerolle et al.’s earlier review of “street-level drug law enforcement” (Mazerolle et al., 2007). Interventions such as community-wide policing, problem-oriented policing and hotspots policing will all be excluded unless the evaluation explicitly states that the intervention approach is aimed at the wholesale level of the market and used to target crop cultivation activities.

**Method of synthesis:**
If the resultant search results in the extraction of suitable data for meta-analysis, we will use meta-analysis to synthesize the results of the included evaluations. We expect to use a random-effects model to combine study results, given the likely heterogeneity in the interventions and populations studied; however, we will decide on the most appropriate model once the studies have been coded. We will examine sources of heterogeneity in the intervention impact, including intervention strategy, location, implementing agency, population under study, and evaluation quality using subgroup analysis (analogue to the ANOVA) for categorical outcomes and meta-regression for continuous predictors. We will test and adjust for publication bias using a range of approaches suggested in Rothstein, Sutton, and Borenstein (2006); depending on the data collected, this may include funnel
plots and trim-and-fill analysis. We will use Comprehensive Meta-Analysis software for calculations and production of figures.

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DECLARATIONS OF INTEREST

None of the authors have any known conflicts of interest.

REQUEST SUPPORT

No additional specialist support is required. Advisory Group feedback and comments on scope and method is acknowledged and appreciated.

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**ROLES AND RESPONSIBILITIES**

- **Content:** Lorraine Mazerolle, Jenna Thompson, Angela Higginson
- **Systematic review methods:** Angela Higginson, Jenna Thompson, Adele Somerville
- **Statistical analysis:** Angela Higginson, Jenna Thompson, Adele Somerville
- **Information retrieval:** Jenna Thompson, Adele Somerville, Kathryn Ham

**PRELIMINARY TIMEFRAME**

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<tr>
<td>Form Advisory Group</td>
<td>November 2011</td>
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<tr>
<td>Seek feedback on Title</td>
<td>January 2012</td>
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<tr>
<td>Submit Title</td>
<td>April 2012</td>
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<tr>
<td>Submit Protocol</td>
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<td>Revision and approval of protocol</td>
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<td>Search for published and unpublished studies</td>
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<td>Relevance assessments and coding</td>
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REFERENCES


