



# Public funded field trials with transgenic plants in Europe: a comparison between Germany and Switzerland

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Field trials are indispensable for the scientific analysis of risks and potential benefits of genetically modified plants (GMP). The dramatic reduction of field trials in the European Union (EU) coincides with increasing safety demands, decreases in funding, and changes in the European directives. In parallel, opposition from non-governmental organizations (NGOs) has grown, and public acceptance has decreased. The cultivation of events approved by the EU is still allowed in principle, nevertheless, at least in Germany, there is a *de facto* moratorium on cultivation. In Switzerland, where development was much more hesitant compared to Germany, field trials are now possible, and a protected site has been established by the government. Public acceptance for scientific trials in Switzerland has risen, despite the continued moratorium on the cultivation based on a referendum.

## Addresses

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## Introduction

In October 2014, several prominent European scientists published an open letter to decision makers in Europe demanding that plant scientists must be able to perform field experiments with GMPs. Indeed, in most European countries field trials with GMP are completely blocked either by legislation or by systematic destruction of trials. The authors claim that ‘the *de facto* moratorium on transgenic plant approvals has been detrimental for applied plant science and has effectively eliminated possibilities for publicly funded research’ [1<sup>\*</sup>].

In 2014 only 12 field trials have been conducted in 5 EU partner countries [2], whereas it was once a driving force in GMP research with more than 250 trials in 13 countries in 1997. France had already conducted the first GMP trial in 1986 — the same year as the USA; however, while the number of trials in the EU was always below 300 (Figure 1), in the USA up to 1200 trials per year were conducted [2,3]. A potent and well-organized public opposition campaign on the part of a minority of citizens managed to stimulate legislation for an increasing regulatory burden on field trials [4]. Although European directives provide basic guidelines, the approval or rejection of the release of transgenic events and the conditions for field trials are delegated to national authorities, resulting in very divergent conditions [5]. The regulation in non-EU member states like Switzerland, however, is independent, and to illustrate this, we compare Germany and Switzerland. Germany conducted the first trial in 1989 (Figure 1), and the first projects on risk assessment were funded in 1990 [6<sup>\*</sup>]. Switzerland started a comprehensive national funding program in 2005 [7<sup>\*</sup>]. Currently, Germany has not approved any release request since 2012, whereas Switzerland installed a ‘protected site’ where field trials can be conducted, and the first trial began in 2014 [8,9].

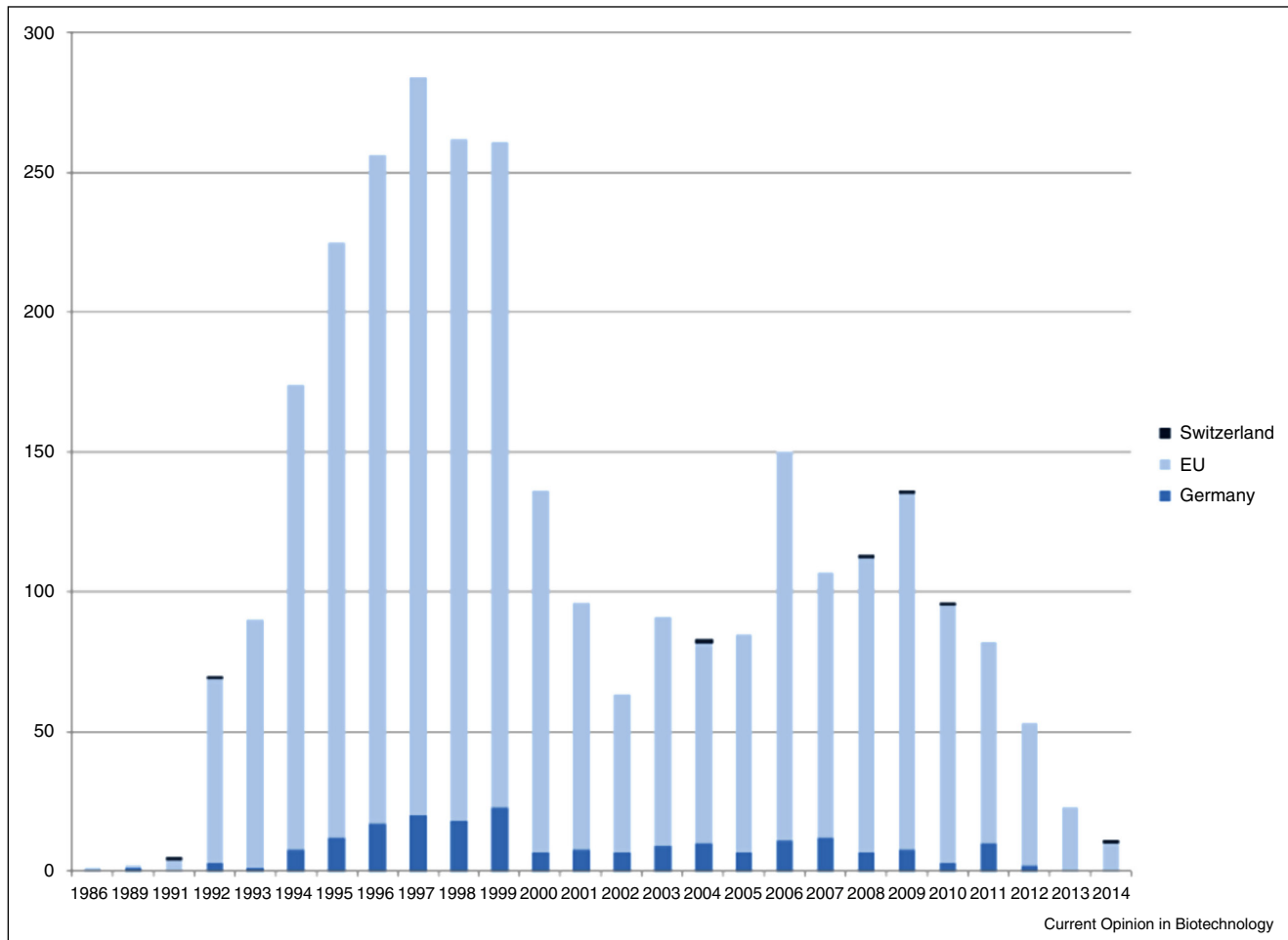
## Germany

### Historical development

Up to 2009, the German federal government stated in the coalition agreements that they aimed for a reasonable development of Green Gene Technology as important highly innovative technology [10–13]. However, in 2013, Green Gene Technology was not even mentioned in the coalition program [14]. This dramatic change coincides with the increasing success of NGOs and some small activist groups.

In the early nineties, NGOs in Germany, particularly Friends of the Earth Germany (BUND) and Greenpeace-Germany, established working groups that cooperated with local farmers’ associations and citizens’ initiatives in the regions where field trials were performed [15,16]. In addition to these subgroups of NGOs, citizens founded their own independent associations, dealing exclusively with GMPs and GMP-derived products, with the Gen-ethische Netzwerk e.V. as first one in 1986 [17]. Joint petitions against field trials were signed by several of

Figure 1



Deliberate releases in Europe, Germany and Switzerland.

these organizations, although they did not officially cooperate with one another [18,19]. Although in the beginning opposition focused mainly on safety issues, which were, as much as possible, addressed by scientific risk assessments, the denial was more and more based on defaming scientists, politicians, and competent authorities. This was initiated by two brochures published by a small activist group accusing scientists of corruption and cronyism (e.g. [20–23]). Although the big NGOs initially dissociated themselves, they increasingly began to adopt this strategy. For example in 2012 the Green Party [24] questioned the neutrality of the governmentally funded homepages (German: [www.biosicherheit.de/](http://www.biosicherheit.de/), English [www.gmo-safety.eu](http://www.gmo-safety.eu)) as well as the head of the program GRACE (GMO Risk Assessment and Communication of Evidence) in the German parliament.

In this climate, the German Law on Genetic Engineering was revised in major points to parallel changes in the

Directives of the European Commission (EC Directives), leading to increasingly stringent requirements (Table 1). In 2004 two new aspects were introduced: (a) liability without any fault or guilt and (b) a collective responsibility if the direct cause cannot be identified. Since 2005 a public registry precisely records all sites used for the field testing of transgenic plants (see Table 1). This has led to serious impediments of field trials and increasing field destructions (Figure 2) since fields are now easily identifiable. Even if destroyers were captured, the highest penalty was a 6-month imprisonment for the leading protagonist [25\*].

In addition, governmental funding changed. From 1987 to 2011 the Federal Ministry of Education and Research (BMBF) supported the program ‘Biological Safety Research’. Projects that dealt with GMP and the communication of the obtained scientific data [26] were funded with nearly 55.8 mn € [6\*]. After a funding

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