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Biocontrol Substances in Europe: A Slow Shift Towards Dominance

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Abstract

Following our survey on biocontrol of active substances under the plant protection products (PPP) Regulation EC 1107/2009, we show a constant progression of the BioControl Agents (BCA) in Europe since 2011 up to actual 48% of the total active substances in EU. However, comments on these data and results exhibit a lack of the full qualification of this increase in amount, percentage, and percentage of increase, in the last twelve years.

1. Introduction

Since 2018, we maintain a constant survey of biocontrol agents (BCA) under the plant protection products (PPP) Regulation EC 1107/2009 in term of amounts, ratio vs chemicals (Robin and Marchand, 2019a; Marchand, 2023a; Robin et al., 2023), their ability to be approved (Vekemans and Marchand, 2020) their mode of action (Anonymous, 2020), their acceptability (Katouzian-Safadi, 2020) and properties i.e. maximum residue limit (MRL) (Charon et al., 2019); regulatory status (Robin and Marchand, 2019b). This work allows us to measure the right implementation of BCAs and sometimes accompany their transfer or inclusion in EU Organic Production plant protection products (Marchand, 2017).

Following this survey on biocontrol of active substances we show a regular increase of the BioControl Agents (BCA) in Europe since 2011 up to actual 48% of the total PPP active substances in EU. This actual percentage seems to be not sufficient to fully characterize the claim of a real progression.

2. Materials and Methods

2.1. Legal support

2.1.1. European pesticides database

The raw data were retrieved from the European pesticides database. This database lists all the substances approved as well as those not approved and those where an approval is pending.

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2.1.2. Directives and Regulations

Regulation (EC) No 1107/2009 is the main and original document dealing with active substances (pesticides) and PPP since 2011. Implementing Regulation (EU) No 540/2011 is the main companion document of the PPP regulation as regards the list of approved active substances. The 5th renewal programme, guided by Implementing Decision (EN) C/2018/3434, Regulation (EU) 686/2012 (as amended by Regulation (EU) 2018/155) were also used. Following, Regulation (EC) No 396/2005 is managing the rules on maximum residue levels (MRL) of pesticides in or on food as well as plant and animal feed. Subsequently, all the information on one active substance is centralized on the EU pesticide database V3, including Review Reports which contain the Good Agricultural Practices (GAP) usage tables.

3. Results

BioControl Agents (BCA) in EU amount started with 123 active substances in 2011, up to 216 active substances actually (Figure 1) for each of the first semesters of each year.

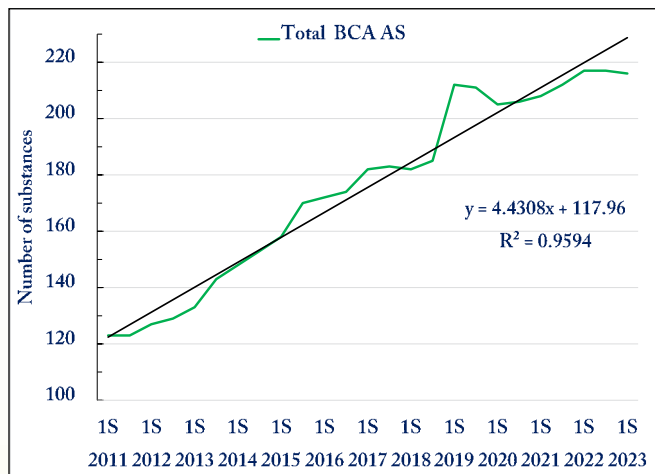


Figure 1: Number of BCA in EU since 2011

Annual average increase in amount is calculable from Figure 1 as 4.4 BCA per year over twelve years (linear). The curve in Figure 2 show important variations. These major variations outside the regular growth are due to the management of stains. In 2019 some groups of strains were separated into single strain, creating an artificial but still valid increase. Conversely, we proceeded to the removal of duplicates in the microorganisms, because in the previous process, the groups of strains were kept on the EU pesticide database.

The number of BCA is one important parameter, to show the increase of solutions. Another followed parameter is the percentage of BCA from total amount of active substance. The evolution of this parameter is exhibited in Figure 2.

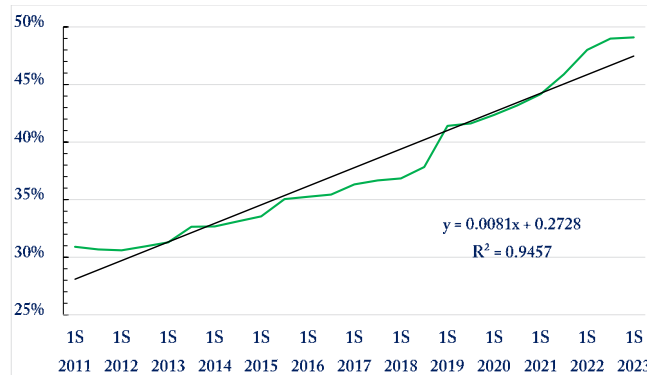


Figure 2: Percentage of BCA in EU since 2011

The average of the annual increase in amount is calculable from Figure 2 as + 0.8 % (in amount) per year over twelve years (linear). The curve in Figure 2 show less important variations than in Figure 1 but also a different profile. Indeed, these disparities depend not only on the BCAs but also on the total active substance which has varied greatly since 2011.

Another perspective is to measure the variations of the evolution: is the increase in the BCA amount accelerating or not? Figure 3 may answer this question, at least with tendency.

Indeed, the increase is not at all linear, even very unpredictable over time, even turning negative in 2020,

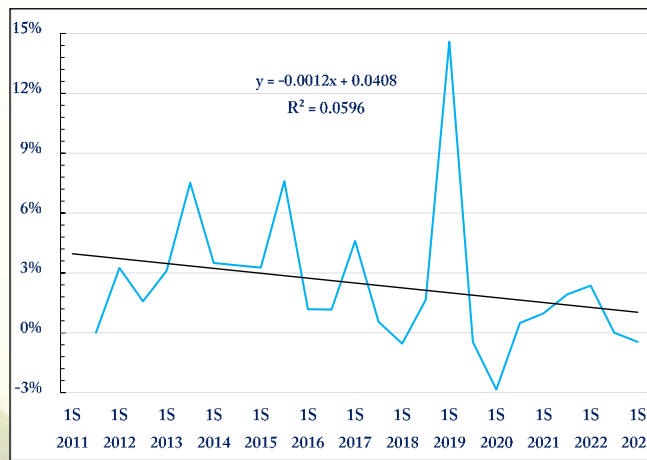


Figure 3: Percentage of annual augmentation of BCA in EU since 2011

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which means with a loss of BCA, principally not renewed because their renewal was not supported (mainly a negative cost vs market ratio). The slope of the point cloud is even negative, even if the R^2 coefficient makes it possible to speak more of a trend than of a real slowdown, but this observation is still globally visible in Figure 1.

4. Discussion and Perspectives

Both Figures 1 and 2 show an increase in BCAs, but a flattening of that increase over the last few years of the last twelve years, confirmed by the trend in Figure 3. Fortunately, the arrival of many pending BCA active substances is conducive to the recovery of Figures 1, 2 and 3 towards a real global “increase”. We are still confident that in Figure 2, the curve exceeds 50% this year and therefore BCAs would become the majority in the PPP active substances, once again due to the drastic reduction in PPP chemical active substances (Marchand, 2023b). However, the number of new BCA active substances (nb = 90) in Figure 4 in the last 12 years is really low compare to the global loss (nb = 123) of active substances (chemical + BCA) in the same period.

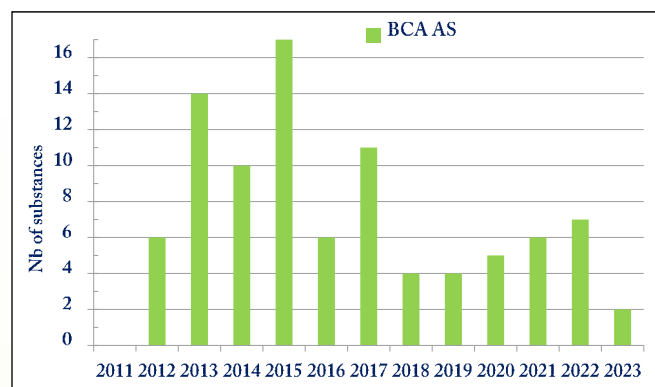


Figure 4: New BCA in EU since 2011

5. Conclusion

BioControl Agents plant protection products active substances (BCA) are increasing since 2011 both in amount and % of the total PPP active substances in Europe. This growth needs to intensify, as the decline in chemical and biocontrol PPP solutions over the past decade has been significant.

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