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Conflicting agricultural territories and unsolved public problems. The case of Val di Non in Italy

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Beginning with UN Agenda 2030, the European Commission has recently adopted many strategic policies, such as Farm to Fork, Biodiversity Strategy, and Common Agricultural Policy (CAP). These documents set up important objectives to cope with environmental and climate challenges. The study uses a quantitative and qualitative research methodology to provide an empirical analysis of the land-use changes and landscape modifications in an important area of apple production in Italy, such as Val di Non in the Trentino Region. The aim is to reflect upon the gap between policy formulation and implementation through spatial planning. Recently, some of the most important Italian agricultural associations protested against the forced reduction of the use of pesticides set in place by new common policies. A closer look at our case study tells us that the local system of production is unlikely to change if territorial planning does not problematize the rising social demand for more sustainable policies and practices in agriculture. Some empirical implications suggest the need for planning tools capable of addressing social demand. In other words, creating conditions for mutual interaction between planning and practices to imagine new ways of living together in a territory of monoculture.

Keywords: territories of monoculture; planning; social conflict; public problems; European policies

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Introduction

This paper presents the results of a case study conducted by the author in so-called “territories of monocultures” such as Val di Non in the Trentino Region, an important area of apple production in Italy. It aims to provide empirical evidence for the landscape and land-use modifications generated by the apple orchard expansion, which has resulted from many factors: such as, soil and climate factors, the territorialization of the Common Agricultural Policy (CAP) and the strong tradition of cooperation¹. To do so, the research will be conducted through a case-study analysis, to provide the first in-depth analysis of the phenomenon within the field of planning. More in general, the research is part of PhD research. To date, no attention has been devoted to the specific landscape and land-use changes generated by the intensified use of land for apple-growing. In recent years, an explicit concern has risen about the impact that intensive agriculture can generate on human settlements (Basso & Vettoretto, 2020). Some examples are the hills where wine is produced, the apple orchards, and hazelnut production areas. Agricultural practices are driven by economic interests with a capital-intensive approach, which often turns land use against the needs of local citizens. In what we call “territories of monocultures”, specialized agro-industry has triggered a significant environmental, landscape, and social impact, as well as health issues connected to the massive use of chemicals. Frictions and contradictions between different narratives, values, and territorial aspirations (i.e. economic development, promotion of tourism, landscape conservation, and citizens’ demand for a higher quality of life) have become evident through growing social conflicts and protests.

The first part will focus on the methodological approach. The PhD research activity was used as a moment of exploration and data collection. The “exploratory” approach of the case-study used both quantitative and qualitative analysis, to give a detailed description of apple production in the Trentino region. At a more general level, the second part of the article starts with an analysis of the main EU policies and strategies, in particular the CAP, to understand their contribution to the creation of monoculture, and to what extent territories of monocultures have been framed in those policies. Furthermore, the article seeks to expand the scientific research that specifically takes into account the relationship between fruit growing and land-use. Moreover, some relevant theoretical contributions in the field of territorial and social studies will offer various interesting interpretations within globalization and urbanization processes. The third part will discuss data collection and data analysis gathered from the statistical and geographic database. On the one hand, it seeks to reconstruct both the long-term historical factors that brought about the emergence of the specific fruit economy. On the other, quantitative information will be intertwined with interview excerpts to better comprehend the significance of the data collected. Preliminary results (fourth part) will be achieved by intuitive understandings gleaned from being in the field and data analysis. Finally, the conclusion will outline some key elements observed during the research: monocultures as factories, lack of planning tools capable of problematizing (social) demand, interaction between housing and agriculture, and the need for general regional development and safeguarding strategies in the drive to create a new way of living together in a territory under pressure.

¹ The history of cooperation in Trentino is long-established. The first cooperative was founded at the end of the XIX century by Don Lorenzo Guetti. The cooperation survived through two World Wars and the fascist regime. Nowadays, the system is organized on three levels: the cooperative, the consortium (with which cooperatives are associated), and the Federation through the role of political representation at institutional level, technical accounting assistance, auditing, supervision, and promotion of the territory. Both the cooperatives and the consortiums are part of the Federation. Four main sectors characterize the cooperation system: Consumer, Credit, Agriculture, Labour-Service-Social-Housing (Coop.Tre., 2006).

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Methodology

This study is based on both qualitative and quantitative analyses that were carried out in parallel between June 2022 and December 2022. The research methodology is based on an "exploratory" approach to the case-study (Yin, 2014). In the Italian context, the case study approach has been mainly used to inquire into problematic situations in urban contexts and project developments². The aim of the case-study is more about learning by probing rather than trying to prove anything. (Gelli, 2002). Moreover, the case-study attempts to understand how people experience their world at a particular point in time and in a particular context (Merriam & Grenier, 2019). Evidence in the case-study method is varied: documents, artifacts, interviews, and observations. In particular, the evaluation is based on:

- local and national newspapers such as: L'Adige, Il T Quodiano, Gazzetta delle Valli, La Voce del Trentino and Nos Magazine;
- information on the producer websites (Assomela, APOT and Melinda websites) regarding quantitative trends in apple production, and agricultural practices used;
- analysis of official planning documents and tools;
- a series of 16 in-depth interviews with people directly involved in the main events. An initial selection of subjects took place from an analysis of actors and stakeholders. Interviews were planned with local activists, traditional and organic farmers, representatives of trade associations, local political and institutional actors, and researchers involved in the area;
- direct observation and participation in events organized by activists and local producers³;
- a collection of quantitative data on production, exports, types and sizes of companies, land cover and their expansion over time, available on the provincial institute of statistics (ISPAT), and the regional geocartographic portal;

The case of Val di Non has brought to light interesting elements concerning the forms of land-use of the highly industrialized and densely equipped "hinterland" of monocultures. To succeed, the field of investigation will be set on a problematic situation or a social demand for public intervention. The public policy analysis forces the researcher to understand when there is a problem at stake, and who is dealing with it. In particular, in the explorative qualitative research analysis, findings are part of an inductive process, and the final product of inquiry is richly descriptive (Merriam & Grenier, 2019).

First theoretical interpretation for monocultures

Territorial and social studies have not sufficiently explored rural territories in terms of globalization and urbanization processes. For this reason, my research focuses on a different dimension and meaning of "rural"; it can be defined as "territories of monocultures". In these territories, the production of space has been shaped by economic and political forces. Nevertheless, social fractures are not rare, and different interests and narratives have come to light, related to different forms of power. Due to this, some authors argue that any locality is conceived as an expression of land-based elites (Molotch, 1976). Additionally, these territories have undergone massive land-use and socio-economic changes as a result of the intensification of specialized, export-oriented agricultural productions (Brenner & Katsikis, 2020, 2023). In what we call "territories of monocultures", specialized agro-industry has

² Some authors who apply this method are: Balducci (1988), Fareri (2009), Basso (2017).

³ I.e.: Pomaria 2022 (October 15-16th, 2022); *Dal fare al dire, come comunicare la sostenibilità* – APOT (January 27, 2023); *Primo Maggio Ecologista – Marcia Stop Pesticidi* (May 1, 2023).

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triggered significant environmental, landscape, and social impact, as well as health issues connected to the massive use of chemicals. As already said, friction and contradictions between different narratives, values, and territorial aspirations (i.e. economic development, promotion of tourism, landscape conservation, and citizens' demand for a higher quality of life) have become evident through growing social conflicts and protests.

Furthermore, the meaning of monoculture has been given little academic attention within urban studies so far. This is probably because the idea of monoculture is quite intuitive. Indeed, its negative meaning originated from the association with intensive agriculture which is often used as synonymous with the term "monoculture". The term "intensive" refers to those activities that make abundant use of chemical input, favouring a few crops or just one over others, with inevitable consequences on biodiversity, landscape, and the environment, such as hydro-geological disruption or water contamination problems (Reho, 2017). Likewise, the term monoculture correlates, on the one hand, to possible environmental impacts on agriculture; on the other, to economic advantages, economies of agglomeration, an industrial approach, and the concentration of a supply chain, etc. (Franco et al., 2022). Besides this, monoculture is also associated with the term rural. At first glance, rural recalls a mental space that offers seductive geographies for recreation and tourism, but also different scenarios for a renewed quality of life that balances farmers' and citizens' needs. Nonetheless, monocultures call for a repositioning of the term rural, when its meaning can no longer be attributed to the imaginary of a charming countryside populated by peasants, but to artisanal activities, product processing, industrial and commercial manufacturing, services or logistical activities, etc. (Vallerani, 2021).

From a policy point of view, it is important to consider why and how monocultures have managed to spread so widely in some parts of Europe. To answer this question, the paper starts from overall comprehension of the CAP key elements. CAP is the first *ante litteram* European policy before the establishment of the European Union itself. The point is to understand whether there is institutional awareness about the issues raised by "territories of monocultures" and if so, to what extent this has translated into concrete policies or if it remains merely a discursive-rhetorical tool.

Public policies at European level

In Europe, the Common Agricultural Policy (CAP) is the most important policy on agriculture and rural development. This paragraph will examine its origins and evolution. Before entry into force of the Maastricht Treaty in 1992, the CAP represented the most important European policy, because of its capacity to endure among European policies with a particularly relevant weight and role. Further, it remains unaltered in its market and income short-term support; and last, for its exceptional capacity to remain for some 25 years as the only European policy in economic and social fields. If the CAP had been abandoned, we would have lost the opportunity to keep alive the whole European common project (Sotte, 2021). Since its inception in 1962, the general structure has remained the same (Sotte, 2022). The CAP is based on two important pillars: the first is about economic farming support and Market Price Support (MPS); while the second is a structural policy for rural development. The historical core of the CAP was to develop farming capacity, knowledge, and technology to overcome the underdevelopment of agricultural and rural territories. Despite a gradual shift of policy focus from traditional market price support towards sector-wide and non-commodity policies, the MPS remains an important policy for Europe agriculture. According to OECD (2006), rural areas have undergone an important transformation due to an extraordinary increase in agricultural productivity, modernization of the supply chain, fewer farmer-producers, and

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concentration of production in relatively few places. Moreover, in some regions, farmers sign contracts with big food companies to deliver products on a pre-set schedule. This implies a supply chain and business re-organization of agriculture. Agricultural subsidies have contributed greatly to the abovementioned transformation. However, they were not intended to trigger rural development directly, because they focus on a small segment of the rural population (mainly farmers) rather than places. In fact, EU agricultural price support tends to favour the regions where farms are larger and more productive, rather than those more peripherally located.

MPS is the only type of support that simultaneously affects production and consumption of a commodity and as such has the greatest potential impacts on production, consumption and trade, and can have a negative effect on rural economy and the environment. (ibid., p. 45)

More recently, to enhance farmers' bargaining power, the EU has adopted two programmes for supply chain support: Producer Organizations (POs) and an Association of Producer Organizations (APOs). These programmes are at the basis of the success of the monocultural productions. Places such as Val di Non are great examples of cooperation models, and in some cases already existed before POs and APOs were created. This is demonstrated by the relative success over time of those agricultural sectors that have been less subsidized with direct income aid, and which have benefited from structural interventions or the organization of supply chains. This applies to sectors or products such as wine, fruit and vegetables, flowers, pork and poultry products, and agritourism. This has occurred when farmers have been able to become entrepreneurs, aiming at efficiency and competitiveness (Sotte, 2021).

After the launch of Farm to Fork (F2F) and Biodiversity (BD) strategies, several studies⁴ have analysed the possible effects of European policies directly related to agricultural systems and food production. Although these studies admit that they face some methodological limitations, they provide valuable insight into the possible threats and strengths of these new policies.⁵

The Italian Association of apple producers took this topic into serious consideration. They are concerned that the F2F and BD objectives will put the entire Italian sector of apple producers at risk. The Wageningen University pamphlet (Bremmer et al., 2021) has developed four scenarios in which the EU Green Deal, F2F, and BD objectives are combined. The study assessment shows that policies will have a strong impact. EU imports will have to compensate for the decline in EU exports and an increase in prices. Impacts on trade will be larger than production and product quality will be affected. The impact will be higher for perennial crops (orchards, vineyards, etc.) because annual crops will have more options to compensate and reduce negative impacts related to a decline in production. Farmers' revenues will be affected, and the need to develop protection mechanisms to cover the additional costs is recommended.⁶

The EU is trying to set a new vision for rural areas aiming to reassess their role in current society and to define a new life for them. This new vision is in synergy with the EU Green Deal objectives and the EU Territorial Agenda 2030. Despite the fact that the long-term vision is based on an integrated approach, demographics remain an essential and relevant territorial

⁴ The document is available at https://knowledge4policy.ec.europa.eu/publication/factsheet-green-deal-targets-2030-agricultural-production-studies_en

⁵ It is not the objective of this paper to cover the limitations declared by those studies, which offer a policy simulation analysis, while the present paper is based on empirical research.

⁶ The study declares some limitations on potential impacts on animal production as well as consumer behaviour. Therefore, results might be overestimated.

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indicator for the sustainable development of rural areas (Szydarowski et al., 2021). In contrast, demographics in territories of monoculture is not an issue.⁷ All these places are based on the globalized agro-industrial system of agricultural production. For example, monocultures are framed only in the context of their economic value through market policy, but they do not respond to the second CAP pillar on rural development and the EU Green Deal objectives. From this perspective, it can state that the issue of monoculture territories is still not clearly defined in the EU rural agenda.

The Trentino-Alto Adige/Südtirol Region

Apple production in Italy is mainly concentrated in the northern part of Italy, the Trentino-Alto Adige/Südtirol Region (Figure 1). The region produces about 1.5 mln ton/year of apples, which is about 75% of national production. Apple production is protected by the designation of origin label, approved by the Ministry of Agriculture, such as Protected Designation of Origin (PDO), or Protected Geographical Indication (PGI). The agriculture in this area is important from the point of view of exports and for its connection to the global value chain.

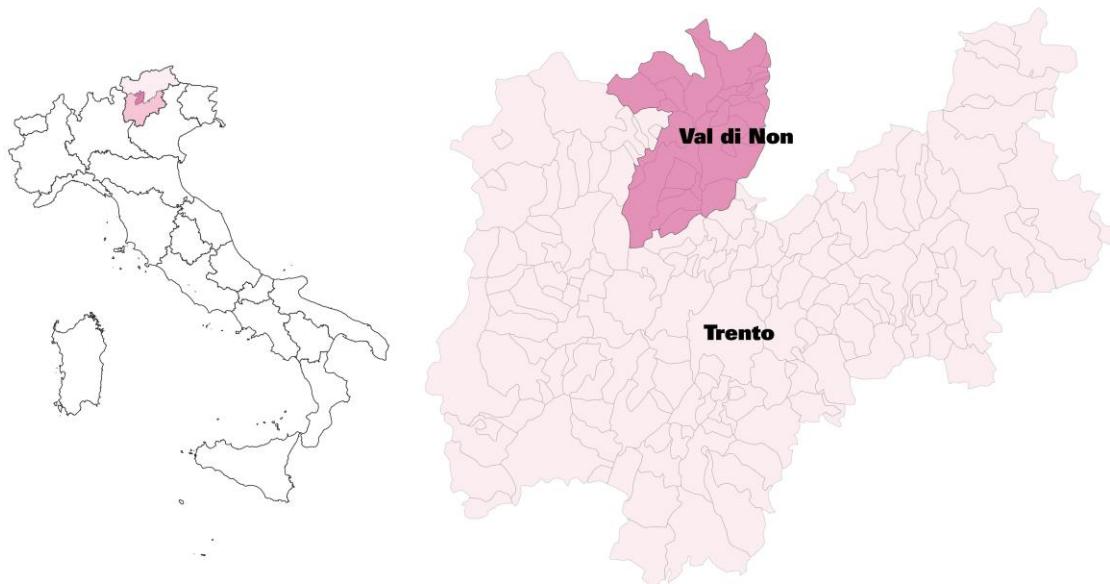


Figure 1. On the left part, the Trentino-Alto Adige/Südtirol Region in Italy. On the right, the Autonomous Province of Trento and the Val di Non community. Source: author

The Region is divided into two autonomous provinces: Trentino (Autonomous Province of Trento) and South Tyrol (Autonomous Province of Bolzano). Their special status of autonomy transfers the main competencies (political, legislative, administrative, and fiscal institutions) from the region to the two provinces. In particular, as regards Trentino the main actor in the territorial governance and planning is the Autonomous Province of Trento. Like the other Italian regions, the Province of Trento is responsible for planning and enacting laws for the government of the territory. As regards provincial planning, local bodies, in charge of local planning, must adapt their plans to the provincial's objectives and regulations. Concerning the financing system, it mainly derives from the State, through the devolution of fixed shares (a

⁷ Population (inhabitants) from ISPAT database: 38.257 (1951); 37.798 (1961); 35.980 (1971); 35.203 (1981); 35.204 (1991); 36.510 (2001); 38.938 (2011).

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very high percentage, usually 9/10 of the tax revenue collected locally) of state taxes and fees collected locally.

Since this territory has one of the highest levels of per capita GDP in Europe, and very high average household incomes, the agriculture GDP is about 13% of the total provincial amount. Two sectors contribute to the GDP: fruit-growing and viticulture. Within this framework, fruit-growing is about 33% of the total gross saleable production, mainly consisting of apples. As said at the beginning, the location of most of the apple production (at least 70%) is in Val di Non (Figure 1). According to the distribution of power among local actors, this concentration significantly marks the role of the apple system in the local, regional, and national policy-making game and impacts on social conflicts.

Val di Non: the Land of Apple

The Val di Non community consists of around 39.000 inhabitants, distributed in 23 municipalities (many of them below 1.000 inhabitants), where apple production is part of the traditional economy (Figure 2). In the middle of the Alps, this territory is a sprawling, low-density, socio-spatial region composed of small towns, villages, historical buildings, and rural and natural areas. The specificity of this apple-growing valley is the Protected Designation of Origin PDO “Mela Val di Non”, produced exclusively in this place, and nowhere else in the world. The internationally famous “Mela Val di Non” comprises the following varieties of apple: Golden Delicious, Renetta Canada, and Red Delicious. In Val di Non, the apple orchards have been present since the 19th century. Initially, the fruit-growing was made of isolated trees within polyculture agriculture and was mainly oriented toward self-consumption (Tizzoni, 2013).

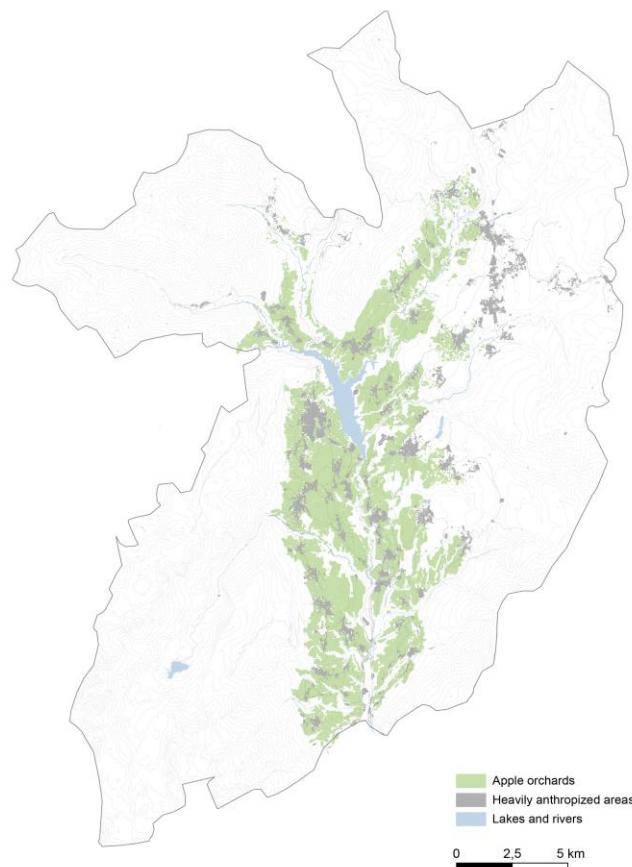


Figure 2. Apple orchards and heavily anthropized areas in Val di Non. Source: author

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After the Second World War, the agricultural activity was still highly diversified, but the valley gradually started to greatly increase its apple production. The industrial approach to apple production can be dated around the 1960s, with more than 5,000 independent farmers. During the 1970s, there were 40 small fruit warehouses in the valley. The apple orchards expansion can be dated to the same period, with a particular acceleration in the following decade. Major land reclamation began mainly in the 1980s, with 50-100 ha at a time (Figure 3 shows a small example of contemporary land reclamation in Val di Non). Meanwhile, 16 cooperatives were created to improve the cooperative system.



Figure 3. Deforestation of 2 hectares of public wood and geomorphological modifications to the mountain in 2019 for the planting of new orchards in Tuenno (TN). Source: Comitato per il Diritto alla Salute Val di Non. Used with permission

Another important step related to the transformation of Val di Non is associated with the foundation of the Melinda consortium in 1989 (the company name changed in 1996 as a result of an important CAP reform) through the association of all 16 cooperatives operating in the valley, while the Protected Designation of Origin (PDO) "Mela Val di Non" was recognized by European Union in 2003. During the 1990s, the supply chain was reorganized, and large-scale commerce was centralized; while in 1993 the producer organizations in the Trentino region were gathered under an "umbrella" organization called APOT⁸. Today, the Melinda consortium includes more than 4,000 producers (farmers), with almost 7,000 hectares of apple orchards

⁸ APOT stands for "Association of Producer Organisations of Trentino" founded in 1993. Today, members of APOT are: Melinda, La Trentina, Società Frutticoltori Trento (SFT), and Co.P.A.G. consortium. With this membership base, APOT represents about 90% of the total fruit-growing sector in Trentino.

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in the whole valley (Figure 2). Apple governance is structured locally through Melinda, regionally through APOT, and nationally and at European level through Assomela⁹.

Land use changes and territorial organization

According to the Province of Trento Institute of Statistics (ISPAT), we observe an almost unchanged situation since the 2000s. In 2010, the Utilised Agricultural Area (UAA)¹⁰ in Val di Non amounts to 14.921 hectares, of which permanent crops account for about 46%. More specifically, the apple orchards occupy 6.738 hectares, accounting for 45% of the UAA. From 2000 to 2010, the area occupied by apple orchards was reduced by a few units, from 6.827 ha to 6.738 ha (-0.0016%), but the total area under permanent crops increased slightly from 6.877 ha to 6.899 ha (+0.003%) (Figure 4).

Today, fruit farming can be defined as the most traditional agricultural practice, with the presence of about 6.898 ha¹¹, most of them cultivated with apple trees, accounting for about 46,24% of the UAA (Figure 5). Ninety-nine per cent of the orchards' surface is served by a drip irrigation system which means around 27.000 km of pipe length¹². It is interesting to note that the incidence of apple cultivation is roughly the same as in the Prosecco DOC¹³ area which is 47,84% of the total agricultural area (Basso, 2018). Based on the latest available census of 2010, land use in the valley does not show great diversification, but rather substantial uniformity concerning apple production.

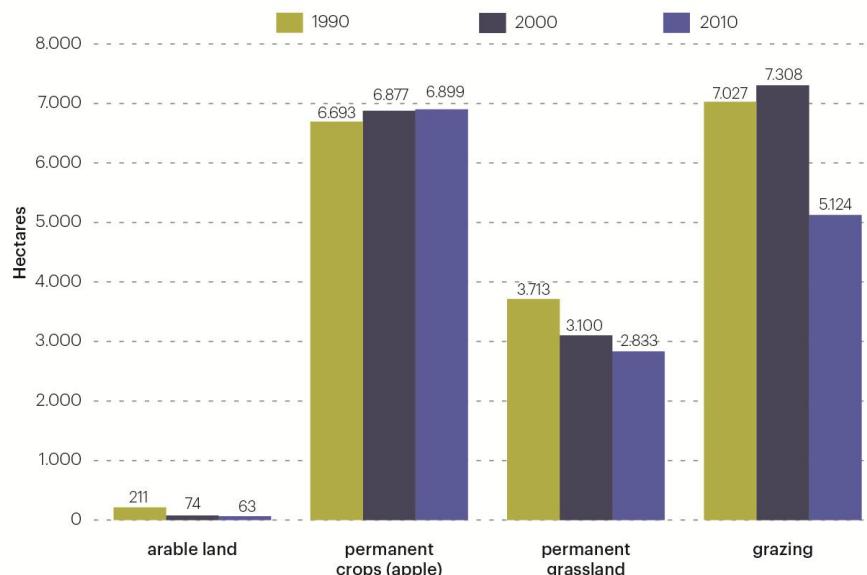


Figure 4. Land-use changes that occurred between 1990 and 2010 – Val di Non. Source: author's elaboration on ISPAT data

⁹ See http://www.assomela.it/index_en.html

¹⁰ For further information about the meaning: [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Utilised_agricultural_area_\(UAA\)](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Utilised_agricultural_area_(UAA))

¹¹ This data is updated to 2014. See "Allegato 5 – Piano Territoriale di Comunità" available at <https://www.comunitavaldinon.tn.it/Servizi/Piano-Territoriale-di-Comunita>

¹² The transition from slow sprinkler irrigation to drip irrigation is well explained in this article available at this link: <https://www.reterurale.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/23799>

¹³ Italian sparkling wine produced in the province of Treviso, an area 50 km north of Venice (north-eastern Italy).

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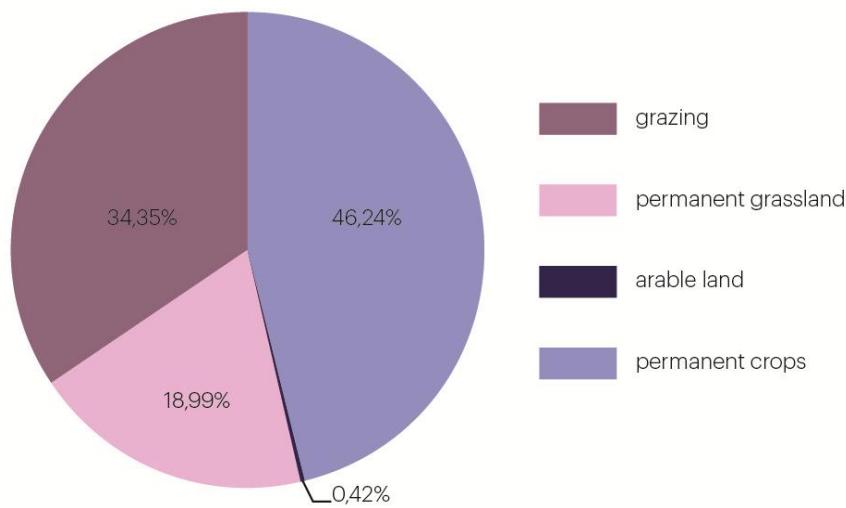


Figure 5. Utilized Agricultural Area in 2010 – Val di Non. Source: author's elaboration on ISPAT

Regarding the relationship with the urbanized area, the apple orchards still have a significant impact on the territory. If we compare 2.079 ha of "Heavily anthropized areas" (*Aree fortemente antropizzate*)¹⁴, which is about 3,49% of the total surface of the valley (around 59.700 ha), with the total amount of orchards, around 6.898 ha, we observe a much higher percentage of land-use, around 11,50 %, of apple production. The relevance of orchards reveals a clear necessity to relate agriculture and housing in terms of space in the organization of the land-use of the valley.

Val di Non has the highest number of agricultural enterprises, with 2,339 units, while its predecessor, Vallagarina, has just 969 agro-enterprises. The following graph shows how the vocation of the Val di Non is clearly agricultural and particularly related to fruit-growing, when compared to the other 16 valley communities. Through interviews with local farmers, it was possible to ascertain the different types of farms, according to the average dimension of their fruit orchards: 1) Agricultural farmer with orchards of approximately 3-6 ha (more than 300 hours/year); 2) Agricultural and livestock farmer with orchards of approximately 3-6 ha (more than 300 hours/year); 3) agricultural farmer with orchards of approximately 0.5-1 up to 2 ha (less than 300 hours/year). On average, 1 hectare of orchard costs 50 €/m² up to a maximum of 80-100 €/m², while woodland costs 2 €/m², and grassland around 10 €/m². Yet, in one hectare 3.000-4.000 apple trees can be planted; and production can reach 500 to 900 cwt (hundredweight), according to apple variety. A standard orchard can hold 598 cwt of wood, 300 cwt of concrete stakes, 14 cwt of steel wire and 6 cwt of polyethylene for the nets.¹⁵

Export and supply-chain

The global economic and commercial success of the "Mela Val di Non" is the result of a long-term social construction process. In the last 20 years, apples have become a worldwide product on global markets, and their demand has increased both nationally and internationally.

¹⁴ According to the Trentino Landscape Observatory (*Osservatorio del paesaggio trentino*) "Heavily anthropized areas" represent those territorial contexts in which agricultural use or a condition of naturalness is no longer detectable, regardless of their physical state and surface treatment. This indicator includes historical settlements, new urbanized areas, industrial areas, mobility network, quarries, landfill and waste management plants.

¹⁵ This information was gathered through interviews with farmers and local activists.

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In 2021, Trentino Alto-Adige's exports were worth €97.3m (+21.6% in 2019 to €547m) and went to Germany, the Czech Republic, the UK, India, and Saudi Arabia. Jams and fruit juices grew by 4.5% in 2019, thanks mainly to France, Belgium, and Spain. In addition, as of 2016-17 Melinda and Assomela (the Italian Apple Producers Association) have been negotiating/trading with South-East Asia.

We [Melinda] have 70% of the Italian market, the ratio is the reverse for them [VOG and VIP]¹⁶, 30% in Italy and 70% abroad. Everyone would aspire to the Italian market, but that's clearly where we have been investing in communication for more than 20 years, and in the mind of the Italian consumer is Melinda the first brand they recognize (interviewee 12).

The apple supply chain is organized through local and regional input (machinery and tools of production), and global output (apples and processed products). Some on-field observations about the supply-chain functioning mechanisms suggest an increasing role of machinery in agricultural production (Galli, 2023). It is possible to state that the agricultural and economic set up is structured in such a way as to invite comparison to Benetton, making it a sort of "Benetton of apples"¹⁷, where one actor, in this case, Melinda consortium, manages a whole series of small, microscopic actors. Half a hectare of land is indeed a very small portion, but the overall effect is important.

Preliminary results from on-field research

An unsolved public problem

The first explorations through interviews and on-site visits have led to a greater awareness of the territorial/spatial relevance of apple growing. The first interviews were with members of grassroots movements (the longest-lived, starting in 2007, being the Committee for the Right to Health in Val di Non - *Comitato per il Diritto alla Salute in Val di Non*, followed a few years later by the Association Alta Val di Non – Sustainable Future - *Associazione Alta Val di Non – Futuro Sostenibile*) and the economic sector, widely documented in the local, national and foreign press and reporting the advancing of apple orchards and the massive use of pesticides, putting the public health of valley residents at risk. Indeed, the main problem perceived by local movements concerns public health, and they demand public intervention, which is addressed mostly by APOT and the Melinda consortium, and not by the authorities. The local committees work scientifically and produce dossiers and presentations with data to support their claims. In a standard Val di Non apple orchard, the average number of chemical treatments in 2009 of formulated products (f.p.) was 81.1 kg/ha, while of active ingredients (a.i.) was 51.5 kg/ha (Ioratti et al., 2011, p. 547), against a national a.i. average in agriculture of 8.38 kg/ha (ISTAT, 2009). Despite the high quantity of chemicals used in Val di Non orchards, from 2009 to 2021 the average amount of active ingredients in agriculture in the Province of Trento decreased from 47.01 kg/ha to 38.82 kg/ha (ISTAT, 2021). This reduction has concerned Val di Non too.

¹⁶ VOG and VIP are the two main Producer Organizations in South-Tyrol region.

¹⁷ Benetton is a global fashion brand based in Ponzano Veneto (Treviso province), founded in 1965. The reference to the Benetton multinational enterprise is related to its productive organization model made of an important network of small and medium enterprises. This network is an example of the so-called industrial districts developed in the mid '60s, in the Northeast region of Veneto, and in many other parts of Italy. Today, the brand owns a worldwide network of shops, with a centralised model of management.

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Figure 6. Apple landscape. Source: author

In describing briefly, the problematic situation perceived as a public issue, we can easily recognize the traditional collective structuring process problem.¹⁸ Besides that, we also find a tendency to “proceduralize” conflict, pitting internal parties against each other to seek consensus (Crosta, 2010), the result being that the situation has not found any solution yet. Nevertheless, the divergence among groups becomes an opportunity to address the different interests at stake and the diverse means of living in the valley. Therefore, the call is to find a new way of co-habiting (citizens, housing, and orchards).

The data on the infrastructure discussed in the paragraph “Land use changes and territorial organization” has a clear impact on the landscape (Figure 6), but its planting does not require any kind of landscape authorization at municipal level. Moreover, the infrastructure is facilitated by incentives and subsidies from provincial public funds. For example, a drip irrigation system can be subsidized by up to 80%. The major critical issue highlighted by the interviews and field observations is the mix of orchards and houses: spreading techniques using atomizers that generate the so-called “aerosol” effect causes great disturbance to

¹⁸ Crosta (2010, p. 134) in his text recalls the five stages outlined by Herbert Blumer (1971) about the definition of the collective problem, briefly reported as follows: 1) The recognition of the problem's existence; 2) The legitimization of the social problem; 3) The transition to action through public debate, events, and the use of mass media. All this helps the problem's redefinition; 4) Arrangement of an official plan of intervention; 5) Implementation.

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homes or public spaces in the proximity of the fields. The mingling of orchards and housing leads to the question of how urban planning (does not) treat(s) fruit-growing.

Town planning is a tool in the hands of politicians, who act according to the demands of the moment. If a farmer wants to build his house near the field he owns, he asks the administration, and the administration approves a variant to the plan that allows him to build. The problem of not turning into building area the land enclosed in the urban fabric is that you have to pay the local municipal tax on that land, and this tax becomes a hindrance to cultivation (interviewee 2)

After many protests and public events, APOT scheduled a series of round tables that lasted from 2016 to 2021. The local committee and many other stakeholders were invited, and the meetings are part of the annual project *Trentino Frutticolo Sostenibile*¹⁹. The project includes annual meetings (such as external audits) with local actors, in order to discuss fruit-growing. At these six round tables, the committee made proposals, but they went partially unheeded. The producers tried to demonstrate their efforts in improving the productive process and the use of pesticides in relation to the European, national, and local rules. Nevertheless, no agreement was found, and according to the local committee, the round tables turned out to be a total failure because the use of chemicals in orchards still disturbs homes, damages health and the environment, and impacts the landscape. Besides that, a tacit request from the local committee was to rethink the interaction between settlements and agriculture (Figure 7), which indirectly calls into action the role of the public institutions, especially the Autonomous Province of Trento and local municipalities, in charge of planning and programming. Except for some agreements between apple producers and the Provincial Environmental Protection Agency for water discharge quality monitoring, in the last few years other public institutions have never actively participated in the debate. The external audit continued but in 2021 the last meeting between producers and the committee was held.



Figure 7. The image illustrates the interaction between apple orchards and urban settlements, detailing the territorial organization of the valley. Source: adapted from Google Earth

¹⁹ The project started in 2016 and is still ongoing. It is promoted by APOT, CIF (Consorzio Innovazione Frutta) and FEM research centre (Fondazione Edmund Mach).

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Planning in the Land of apple

In the EU and North America, the history of planning has always conceptualized the relationship between city and countryside from an anti-urban or pro-rural point of view. However, planning policies and regulations aimed at protecting agricultural areas from city expansion have never had a clear and explicit concern about the impact that intensive agriculture can generate on human settlements (Basso & Vettoretto, 2020). Sometimes, when the countryside is linked to global networks and becomes an agro-industry, the pro-rural vision can be challenged. Starting from these assumptions, the study examines whether the issue of fruit monoculture is problematized in the local planning tools and laws. Reading the Provincial Law n. 15/2015 for the government of the territory (Legge Provinciale di Governo del Territorio, 2015), it is clear how the gap lies upstream of the regional planning process: the issue of land occupation due to apple cultivation does not enter the text of the law.²⁰ We can therefore state that the problem does not exist, or at least is not perceived by the planning tools; for instance, highlighting how land policies do not deal with the issue of apple monoculture.

The Provincial Urban Plan 2022 keeps the layout of agricultural land unchanged by dividing it into “agricultural areas” (Art. 37) and “valuable agricultural areas” (Art. 38). The difference between them is minute. The central issue is that Provincial Law 15/2015 exempts orchards, or any other land preparation work, from any landscape assessment unless they are included in the “environmental protection area” (Art. 64, P.L. 15/2015) (Figure 7 shows clearly the impact of hail on the landscape). However, orchards included in these protected areas are quite a small portion of the total. Moreover, the apple orchard planting phases clearly show a process of urbanization: for example, the irrigation system involves around 4km of polyethylene pipes per hectare which is about 27.000 km covering 99% of the total orchards’ surface, and land reclamation works may involve up to one-metre-deep excavation. In the latest Provincial Urban Plan (PUP), the focus on agricultural areas is mainly on the possibility of building agricultural or agritourism facilities.

This aspect is a handicap, because under the previous Provincial Law of 2008, agricultural areas could not be built on; but with the latest law of 2015, the possibility was introduced for the farmer, with reference to the hectares he owns, to build a productive structure of a maximum of 400 cubic metres, to be used for housing. (interviewee 5)

The sense of the Provincial Law and the Provincial Urban Plan is perhaps more productive and does not problematize agricultural area under the issue of landscape. Basically, the current PUP simply follows the direction traced with the first one in 1967, maintained in the subsequent updates of 1987 and 2008, where the aim was to find a new balance between mountain areas and urban centres, supported by lively social mobility, through the concept of “urbanized countryside”²¹ (Zanon, 2018).

Conclusions: what future awaits the land of apple?

This paper has briefly traced the origins and recent evolution of one of the most important regions for apple production in Italy, using both qualitative and quantitative methods. The previously illustrated land transformation shows a greater and capillary organization of the agricultural sector in the Trentino region. The strong cooperation tradition added to important

²⁰ In art. 78 land reclamation works connected with normal agricultural activity (lower than one-metre-deep) do not require permission.

²¹ The first mention of the concept of “urbanized countryside” (*campagna urbanizzata*) was made by Giuseppe Samonà, an important Italian architect and urbanist. He was also the project leader of the first Provincial Urban Plan dated 1967.

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investments from the Common Agricultural Policy has transformed this area into a literal “green factory” with a perfect and flawless supply-chain. So, the capillary agricultural structure, a long tradition of cooperation practices, and a well-established supply chain might provide some interesting points for reflection. For instance, in the context of the global market, these types of areas have been stimulated like never before.

As said, territories of monocultures are becoming “factories” completely incorporated into “metropolitan devices”. However, it is interesting to see how the development model of widespread production is articulated in many ways, according to local specificity. Analogies can be drawn with the diffuse industrial development model that existed in the Veneto region between the 1970s and 1980s, which showed a similar organization. Besides that, the representatives of the apple economy show their great capacity to assure quality and sustainability of fruit. Thanks to their producers and network of technical expertise, Melinda can control the sustainability of the production process and the biodiversity of the entire valley²². Nevertheless, a counter-narrative has emerged from a network of environmental organizations, committees and associations who have been speaking out for many years against the geomorphological modifications of the valley, the hydrogeological risks connected with the expansion of apple orchards, the impoverishment of the landscape, and the impact of chemical products on public health and the environment. Accusations include the fact that they limit individual mobility, and cause noise and smell during the treatment period. From the clash of the two visions about the development of the valley, we can consider a couple of aspects: on the one hand, the planning devices do not take into sufficient consideration the interaction between urban settlements and agricultural practices; on the other, public institutions, in particular the Autonomous Province of Trento, should extend their approach beyond simple control and monitoring and be willing to enter into the public debate. In addition, the planning system shows clear a contradiction between the general conception of agriculture as an element at risk to be protected and the problems created by agricultural practice revealed by the empirical evidence. Furthermore, the existing apple market is sometimes more convenient than traditional building, which imposes significant levels of infrastructure on the ground and landscape. For this reason, we can again affirm that – today – this kind of agriculture is nothing but urbanization; additionally, territorial planning does not problematize the rising social demand for more sustainable policies and practices in agriculture.

To sum up, planning tools often construct an upstream knowledge that separates depictions (land uses that it depicts in its documents) from practice (i.e. the actual land use that emerges from social conflicts). Thus, the case study demonstrates a common aspect in Italian town planning, where planning activity fails to implement what it represents. Following Crosta’s reasoning, if policies (including urban planning policies) are collective construction, what is depicted in the plan must be considered a hypothesis and not just an affirmative statement.²³ All this generates a tendency to reduce policy-making to decision making, separating the construction of knowledge from decision and action, with the consequence of not problematizing the plan’s choices and without reducing impairments in society either. A final recommendation would be to tackle the issue of fruit growing within ordinary urban planning schemes to integrate sectorial decisions on land-use into the general strategies of regional development and protection able to challenge the (conflictual) practices and to imagine a new way of living together in the valley.

²² In the last few years, Melinda has added another layer to their sustainability discourse related to energy saving thanks to the unique underground warehouses in the Dolomite caves.

²³ The statement “policies as hypothesis” (Crosta, 2010, p. 135) is an explicit reference to John Dewey’s approach to public problems.

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