

## **Drought, environmental degradation, work and education: A brief comment on the current reality of agricultural communities in the Limarí Province, Chile**

*Sequía, degradación ambiental, trabajo y educación: un breve comentario  
sobre la realidad actual de las comunidades agrícolas  
de la provincia del Limarí, Chile*

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### ABSTRACT

Located in the transverse valleys, the inland creeks, and the dry coastal land, the agricultural communities in the Limarí Province, Chile, strive for survival in a semi-arid climate characterized by ever more frequent droughts and a subsequent water demand that grows year after year, menacing their main economic activities: goat farming and small-scale agriculture and mining efforts. This scientific note refers to the current state of the agricultural communities in the Limarí Province, more particularly, to the agri-environmental and socio-cultural problems these communities are facing. Cerro Blanco Agricultural Community (located 50 km to the south of Ovalle) and nearby areas, for example, are undergoing the effects of drought, desertification and erosion, exacerbated by climate change, affecting crops and goat farming. This fact, alongside the socio-cultural problem characterized by lack of opportunities for development, scarce jobs within the communities, and few institutions to proceed with secondary and vocational studies, is causing the migration of the younger generations to the cities. Serious efforts should be made to help these communities attain a higher level of personal and cultural development, establish a more sustainable relationship with their natural environment, and hence, maintain their ancient agricultural traditions.

**Key words:** agricultural communities, environmental degradation, human development, Limarí Province.

### RESUMEN

*Situadas en los valles transversales, las quebradas interiores y el secano costero se encuentran las comunidades agrícolas de la provincia del Limarí, Chile. Con un clima semiárido y sequías periódicas que se agravan por una demanda hídrica que crece año tras año, sus principales actividades productivas son la agricultura de pequeña escala, la capricultura y la pequeña minería. Esta nota científica presenta el estado actual de las comunidades agrícolas de la provincia del Limarí, en especial, las problemáticas agroambientales y socioculturales que estas comunidades enfrentan. Tomándose como ejemplo la Comunidad Agrícola Cerro Blanco (ubicada a unos 50 km al sur de Ovalle) se observa en ella y en localidades cercanas una problemática agroambiental caracterizada por la sequía, desertificación y erosión, exacerbada por el cambio climático, afectando a los cultivos y a la capricultura. También coexiste una problemática sociocultural, caracterizada tanto por la falta de oportunidades de desarrollo y escasez de trabajo en las comunidades así como por la falta de establecimientos educacionales cercanos donde proseguir estudios, hecho que lleva a la migración de los jóvenes hacia las ciudades. Se debe apoyar a estas comunidades a fin de que logren un mayor desarrollo, tengan una mejor relación con el ambiente y mantengan sus tradiciones campesinas centenarias.*

**Palabras clave:** comunidades agrícolas, degradación ambiental, desarrollo humano, provincia del Limarí.

### Introduction

Agricultural Communities grouping Chilean peasants in rural areas are based on a tradition dating back to Colonial Times, specifically to a system of subdividing the land known as “mercedes de tierras”

(land grants) (Alexander, 2006). These communities can be found in Region of the Araucanía and, mainly, in the *Norte Chico* (Small North) –especially in the Limarí Province, Region of Coquimbo (Castro & Bahamondes, 1986; Alexander, 2006). The area occupied by these agricultural communities

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is characteristically semi-arid and, therefore, agriculture, goat farming (capriculture for artisanal cheese making process) and mining efforts capture most of the labour force (Monzó, 2003; Alexander, 2006; Cortés *et al.*, 2015).

The objective of this scientific note is to provide the current state of some agricultural communities in the Limarí Province, mainly focusing on the agri-environmental and socio-cultural problems these communities are facing.

### **Current status about agro-environmental and socio-cultural issues in agricultural communities**

In the last decades, the ecosystem of agricultural communities located in the Limarí Province, specially the district (*comuna*) of Ovalle, has undergone dramatic degradation due to caprine overgrazing (Figure 1), native tree logging for firewood and coal, hunting of wild animals, and mining (Fuentes & Hajek, 1978; Fuentes & Hajek, 1979). Such overexploitation of the natural resources led to the development of a subsistence agriculture highly affected by water shortage, exacerbated by

important reductions in the water levels of Recoleta and La Paloma dams (Olivares & Treimun, 2014), and, recently, by the 16th September 2015  $M_w$  8.4 earthquake, with epicentre 37 km south of Canela Baja (Choapa Province) (Heidarzadeh, 2016), destroying wells and artesian wells, damaging water tanks, and affecting the water flow in the communities' water springs, hence limiting the available water for irrigation and drinking of both peasants and their livestock.

In view of this scenario one could wonder about the peasants' perception of their quality of life, specifically in regards to the changing and ever-more-limited possibilities of development their agricultural communities are facing. A recent study (Alfaro *et al.*, 2015), carried out at Cerro Blanco Agricultural Community and surrounding areas, found that a considerable proportion of peasants agree or totally agree (88.2% in total) that their chances of development and access to education have increased over the past three decades (Figure 2). However, a general perception is shared that search for job offers entails travelling farther and farther away from their agricultural community, for example, to work on a seasonal basis to harvest pisco grapes



Figure 1. Excessive goat grazing has strongly degraded the ecosystem of the agricultural communities in the Limarí Province. Goats of the breed called "criolla" grazing the typical species thorn *espino churqui* (*Acacia caven*, Mol.).

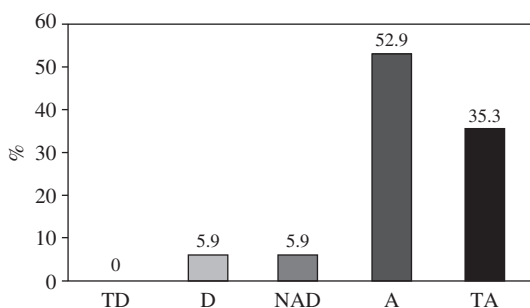


Figure 2. Responses of peasants of the Cerro Blanco Agricultural Community (53 km south of the city of Ovalle) to the question: *Have the possibilities of development (for example, working and educational opportunities) improved in the Community over the past 30 years?* TD: totally disagree; D: disagree; NAD: neither agree nor disagree; A: agree; TA: totally agree.  $N = 21$ .

or other crops, an endeavour appealing only to the young; as the elderly members of the community state, “only the old stay here”, “we, the old folk, live from farming” (Alfaro *et al.*, 2015). In addition, peasants say that those who work away from their community for lack of local opportunities often need to take the bus at 5 am in order to get to their jobs on time; the latter is the consequence of the heavy drought: “there has been work and education, but we don’t know where this drought is leading us,” say some. On the other hand, after finishing primary school, many teenagers have to migrate to nearby cities, such as Ovalle, to go to high school, and later on, seeks jobs in agriculture, mining or services (Alfaro *et al.*, 2015). Very few continue their studies in tertiary education (vocational, technical and university studies). Certainly, various Chilean state programmes currently support the development of rural family farming (Monzó, 2003), specially low-scale farming and goat farming communities, with subsidies and loans from INDAP aimed at building water tanks and pond dams, and recovering eroded soil by building filtration ditches and small farming terraces (Pérez, 2012). Other public efforts

include SAG support to planting cacti to form hedges, CONAF reforestation programmes, and PRODEMU initiatives to encourage female peasant training and development. Nevertheless, the prolonged droughts, increased erosion, scarce job opportunities and educational development in the communities, and other factors derived from climate change have caused the migration of the younger population to urban areas in search for better and more stable working conditions (Alfaro *et al.*, 2015). Worth mentioning, the latter has brought about the depopulation of the agricultural communities and the disappearance of some of their cultural traditions.

### Concluding Remarks

Awareness of the environmental reality facing the agricultural communities in the Limarí Province, characterized by the drought, desertification and erosion (Fuentes & Hajek, 1979) negatively influenced by climate change; as well as of the socio-cultural context offering few opportunities of development within the community, working and educational perspectives to pursue secondary and tertiary studies (Alfaro *et al.*, 2015), demand urgent further efforts to actively assess these agricultural communities to help their members access a higher degree of development, improve their relationship with the environment and preserve their century-old traditions.

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### Literature Cited

- Alexander, W.L.  
2006. Cowboys and Indians and Comuneros: policy-positioned ascriptions of ethnicity, identity and history in Chile. *Social Identities*, 12: 139-165.
- Alfaro, A.A.; Catalán, M.S.; Cortés, M.E.C.  
2015. Cambio climático, desertificación, pobreza y calidad de vida: el drama de una Comunidad Agrícola de la Provincia del Limarí, Chile. En: *Educación Ambiental desde la Innovación, la Transdisciplinariedad e Interculturalidad*, *Tópicos Selectos de Educación Ambiental*. Tepetla, J. & Pulido, C. (eds.). ECORFAN, Veracruz, México, pp. 116-127.
- Castro, M.; Bahamondes, M.  
1986. Surgimiento y transformación del sistema comunitario: Las comunidades agrícolas, IV Región, Chile. *Ambiente y Desarrollo*, 2: 111-126.
- Cortés, M.E.C.; Catalán, M.S.; Zamorano, S.A.; Alfaro, A.A.  
2015. Aspectos sanitarios en la elaboración de quesos de cabra en una comunidad agrícola chilena afectada por la

- sequía y la desertificación. En: *Educación Ambiental desde la Innovación, la Transdisciplinarietà e Interculturalidad, Tópicos Selectos de Educación Ambiental*. González-Hernández, M.A., Domínguez-Basurto, M., García-Durán, A. (eds.). ECORFAN, Veracruz, México, pp. 116-126.
- Fuentes, E.R.; Hajek, E.R.
1978. Interacciones hombre - clima en la desertificación del Norte Chico chileno. *Ciencia e Investigación Agraria*, 5: 137-142.
- Fuentes, E.R.; Hajek, E.R.
1979. Patterns of landscape modification in relation to agricultural practice in Central Chile. *Environmental Conservation*, 6: 265-271.
- Heidarzadeh, M.; Murotani, S.; Satake, K.; Ishibe, T.; Gusman, A.R.
2016. Source model of the 16 September 2015, Illapel, Chile,  $M_w$  8.4 earthquake based on teleseismic and tsunami data. *Geophysical Research Letters*, 43: 643-650.
- Monzó, E.
2003. Estrategias individuales y colectivas de capital social: el impacto de programas públicos en dos comunidades campesinas. Los casos de Ajjal de Quiles y Cerro Blanco, IV Región de Chile. En: *Capital Social: Potencialidades Analíticas y Metodológicas para la Superación de la Pobreza*. CEPAL - Serie Seminarios y Conferencias, N° 31, United Nations Publications, Santiago, Chile, pp. 243-258.
- Olivares, P.; Treimun, J.
2014. Diagnóstico del recurso hídrico en contexto de sequía y dependencia agrícola. Cuenca del Limarí, Coquimbo. Período 2000-2011. *Tiempo y Espacio*, 33: 49-45.
- Pérez, P.
2012. Proyecto 4-G-045-2012 - Construcción de amunas como sistema de cosecha de aguas en la CCAA Cerro Blanco. Línea Temática, Cambio Climático y Descontaminación Ambiental. Fondo de Protección Ambiental. Organismo Ejecutor: Comunidad Agrícola Cerro Blanco. [http://www.fpa.mma.gob.cl/expediente/expediente.php?id\\_expediente=1277411](http://www.fpa.mma.gob.cl/expediente/expediente.php?id_expediente=1277411) Consultado 16-05-2016.