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SELECTED PROBLEMS OF SUBURBAN AGRICULTURE IN THE CENTRAL
PART OF THE LOWER VISTULA REGION

Introductory remarks

The region of the Lower Vistula is an important area, characterized by an intensive development of urbanization processes and highly developed industrialization processes. Its principal urban-industrial centres are: Płock /91 thousand inhabitants/, Włocławek /93 thousands/, Toruń /160 thousands/, Bydgoszcz /334 thousands/, Grudziądz /87 thousand/ and Elbląg /100 thousands/.

Detailed investigations of the problem of transformations in agriculture were carried out in the area of the central part of the Lower Vistula region /spreading from Włocławek to Grudziądz/. This is a belt about 30 km wide, which lies in the region, of Włocławek, Toruń and Grudziądz, and up to 50 km wide in the region of Bydgoszcz. Its area is almost 10 thousand sq. km and its inhabitants amount to almost 1.5 million people.

A commune village was established as the basic statistical unit for individual farming and the separate State or collective farms for socialized economy. In principle, the period under investigation was 1960-1975, however, in certain cases changes in suburban agriculture were shown for longer periods.

The principal cognitive tasks were as follows: 1 - to determine changes in the spatial structure of suburban agriculture and present them on the basis of an overall analysis and evaluation of the natural conditions, as well as social and ownership, organizational and technical, and production characteristics of agriculture; 2 - to put forward suggestions and proposals for units responsible for prognosing and steering the further development of agriculture; 3 - to specify the premises underlying the theory of the influence exerted by urbanization and industrialization on qualitative and spatial changes in suburban agriculture.

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1. Evaluation of natural conditions

The analysed area is a territory on which the three physiographical units, that is the lakelands of Pomerania, Mazuria and Greater Poland-Cuiavia, meet. The separating unit is the Lower Vistula Valley, widening into the Bydgoszcz-Toruń and Włocławek Basins.

Natural conditions are very varied there. Land most suitable for agriculture lies in the Chełmno Heights, Cuiavia Plain, Łasin Hills and partly the Krajna Heights as well as the Świecie Plain. These are the areas where flat or undulating morainic heights dominate /their average height is 80-100 m over sea level/, built of morainic clays, with prevalent brown or black marshy and grey podzolic soils /where classes I-IV account for 80-100 % of the total agricultural land/, with infiltration and discharge of ground waters, which makes it possible that very good wheat complexes as well as very good rye complexes should develop.

On the heights of Dobrzyń, Krajna and Żnin natural conditions are medium favourable; very good and good ryecomplexes and also poor wheat complexes can develop there. In the basin-like broadened parts of the Vistula Valley, in the valleys of the rivers Brda, Drwęca and Noteć, and also in Tuchola Forests, natural conditions are mostly unfavourable for practising agriculture. The principal material of which these units are built is fluvio-glacial sand which causes that the percentage of soils of class V and VI /podzol and cryptopodzolic soils/ is 80-90 %. Part of the bottom of the Vistula Valley is covered by fertile alluvial clays, favouring a development of a strong cerealfodder complex, vegetable cultures and fruit growing. A majority of permanent grassland in the valleys of the Vistula, Noteć and Drwęca is classified in the categories 2z and 3z, i. e. poor and very poor. On the basis of an analysis of natural conditions it is possible to assume that areas, situated at a distance of over 10 km from the biggest urban centres, do not favour the development of agriculture.

Transformations which take place in the natural environment under the influence of the growing urbanization and industrialization of this area are an important issue. A growing threat has been observed of the acidification of the soil with sulphuric acid produced by the emission of sulphur dioxide, or by industrial and communal sewage /in particular in the region of Bydgoszcz, Janikowo, Świecie, Inwrocław and Włocławek/. The flora is threatened by extensive dust, produced by the Cement Works "Kujawy" at Barcin and the Nitrogen Works in Włocławek, which pollutes the atmosphere. Other factories, like the Cellulose and Paper Works at Świecie, the sugar plant at Chełmża, a pig farm at Krąplewice, poison also ground water and sewages. The increased amounts of production refuse /for example of beech bark in cellulose and paper works, "white seas" in soda production / cause a rapid extension of territories which are temporarily or permanently out of agriculture use.

2. Social and ownership characteristics

Of special importance among characteristics of agriculture on the area which is being urbanized are labour resources, ownership of holdings, and their size structure.

The number of people earning their livelihood in farming or those employed in agriculture is steadily falling down, especially in the vicinity of urban-industrial centres, along important transport lines and railway junctions, as well as in the regions of local service centres. In villages around the towns of Bydgoszcz, Grudziądz, Toruń and Włocławek /subsequently referred to as BGTW/, inhabitants earning their livelihood in agriculture account for only 10-30 %, while in the area with natural and economic conditions favouring agriculture /for example the Chełmno Heights, Świecie Plain, Cuiavia Plain/, or where small-scale individual economy prevails /for example, the Dobrzyń Heights/ this percentage is 70-90 in relation to the total population.

People professionally active in agriculture amount on the investigated area to 27-28 people per 100 ha of agricultural land; in the area with a strong fragmentation of holdings, dominance of intensive, labour-consuming orientations, etc. their numbers are bigger and reach 30-40 people.

Urbanization and industrialization have a clear effect on the increased percentage among agricultural population, farm holders including, of people who follow two professions. In the suburban zones of Bydgoszcz and Toruń peasant-workers account for 50-70 % of professionally active population. Because of powerful outflows of young labour from agriculture, the number of farmers of over 60 years of age, largely increased in the zones with widespread urbanization /BGTW, the micro-region Świecie-Chełmno, the Western Cuiavia Industrial region/: this percentage was 15 in 1950, and 25 in 1975. A natural consequence of this process is that many holdings lack a successor while land owned by the State Land Fund increases.

The index of the feminization of the agricultural profession is also going up, especially in the regions of increased employment of male workers in industry /for example, in the Amalgamated Cement-Lime Works "Kujawy" at Barcin, the Cellulose and Paper Works at Świecie, the Nitrogen Works in Włocławek/.

In the current agrarian structure of the Lower Vistula region, together with fundamental changes induced by the agrarian reform of 1944, certain traces of former structures, relics of the period of partitions and the interwar period, can still be visible. Socialized farming /mainly the State Agricultural Farms/ is best developed in the Cuiavia Plain, Świecie Plain and Krajna Heights, where it spreads over 20-40 % of agricultural land. However, in the Dobrzyń Heights /a part of land formerly occupied by Tsarist Russia, with a large dominance of small farms/ this percentage is only 5.

Traditionally land with best natural conditions belongs to big land estates/situated mainly on the plains and morainic heights/. However, the tendency to take over large parts of land from the State Land Fund, caused that big farms in the discussed area were granted land with less favourable natural conditions for example, near the valley of the Vistula. Certain of those big farms were consciously redirected towards practising other forms of agriculture and started fruit growing market gardening, dairying and poultry breeding. This happened mostly in the farms, situated near to absorptive urban markets, like the State farms at Górsk, Łysomice, Kusowo, or collective farms at Górsk, Plebanka, etc.

In the area under discussion on the average 80 % of the total agricultural land are owned by individual farmers. The number of private farms amounts to 100 thousands, which meant that in relation to 1950 this is an increase of over 20 %. The average size of a farm, lying within a town, is 1-1,5 ha elsewhere 6-8 ha.

The greatest concentration of small farms/up to 2 ha/ occurs in the regions of the biggest urban development and industrialization /BGTW and the Union of Productive Agricultural Farms/, along transport lines, where the number of peasant-workers, commuting to work, is big /for example: Bydgoszcz-Laskowice, Bydgoszcz-Inowrocław, Toruń-Bydgoszcz, Włocławek-Toruń/ and in the vicinity of local industrial and service centres /e.g. Mełno, Czerniewice, Unisław etc./. A big fragmentation of holdings characterizes also territories with unfavourable natural conditions /e.g. in the Vistula Valley, in Tuchola Forests/. The percentage of farms under 2 ha amounts to 40-60 in those regions, in the towns it goes up to 80-90. Small farms are principally run by people with two professions; the intensity, productivity and commercialization of their production are low. However, some of them specialize in the production of vegetables, tobacco, or herbs, which are highly commercial and bring high profits. Almost all small farms play an important role as producers of food for their own use.

Holdings of a medium size, which in principle dominate outside the area of the strongest urbanization, occupy 30-40 % of the total number of the holdings and over 40 % of the whole area under individual farms. After 1970, the number of holdings over 10 ha /occupying approximately 40 % of the area owned by the private sector/ has increased. Those holdings are quite well equipped with fixed assets and working capital; they specialized in intensive and commercial orientations of vegetable and livestock production.

3. Organizational and technical characteristics

Organizational and technical characteristics of the discussed area are highly varied, mainly under the influence of natural conditions, the agrarian structure and the level of socio-economic progress attained so far. A characteristic,

which has induced very big changes, is land use. In the structure of land utilization of the investigated region agricultural land accounts for 65 %, forests for 24 % and the remaining ground, including unproductive land, for 10 % of the total area. In turn, within the agricultural land utilization arable land averages 83,7 %, orchards 1,8 %, meadows and pastures 14.5 % of agricultural land. The percentage of arable land in the Chełmno and Dobrzyń Heights, as well as in the Cuiavia and Świecie Plains, is even 95 in relation to the area of agricultural land. In the valleys of the Vistula, Drwęca and Noteć, however, permanent grassland, forests and unproductive land are the prevalent forms.

The area under orchards increases systematically, in particular near Bydgoszcz, Toruń, Inowrocław and Włocławek, as well as in the region of fruit and vegetable processing /in Bydgoszcz, Gniewkowo, Unisław, Lipno/. In the last period socialized farms have shown an increased interest in developing fruit growing /for example, the State Farms at Łysomice, Kokocko, the Collective Farms at Plebanka, Sadki, Strzelce Górne, etc./.

The effect of urbanization on such factors intensifying agriculture as fertilization, mechanization, construction is an important problem. The number of tractors increased in the analysed area in the period 1965-1975 by 200 %. Irrespective of that in the suburban zones of BGTW mechanization remained on a rather low level /80-120 ha of agricultural land per tractor/ as a result of not only unfavourable natural conditions but also great fragmentation of the holdings and a very small number of socialized farms. In the remaining area the index of mechanization is 20-30 ha of agricultural land per tractor, and where the number of socialized farms is big, it is only 20 ha of agricultural land per tractor.

Fertilization is also unequally practised for the same reasons. The index of fertilization in the suburban zones of BGTW is 120-150 kg NPK per ha of agricultural land, over 200 in the remaining area, and 300 in the socialized and private farms practising a highly intensive agriculture.

Over 70 % of permanent grassland and 50 % of arable land is ameliorated. However, the state of the ameliorated meadows, especially along the rivers Vistula and Noteć, is unsatisfactory. Drainage ditches and canals should be renovated, and numerous rivers and flows should be regulated /i.e. the Drwęca, Osa, Zgłowiączka/. Because of that situation hay yields are only 30-40 q per ha, instead of 100 q or more, obtained by the leading farms in the Vistula Valley /e.g. the State Farm at Sartowice, or Grabowo/.

For over a decade construction was developing rapidly in the area under discussion, and in particular in the suburban zones. All types of buildings, residential, service, farm, were built or redeveloped. As far as residential construction is concerned a majority of buildings were built for non-agricultural population, or peasant-workers; 70-90 % of buildings in the suburban areas /e.g. in the villages of Michelin, Szpetal Górny, Grębowin, Lubicz Górny, Mysłęcinek, Brzoza, Owczarki, Wielkie Tarpno/ date from after 1960.

As far as farm buildings are concerned, pig farms and poultry farms in particular, their greatest number was built in the suburban zones of Bydgoszcz and Toruń /e.g. in the villages of Białe Błota, Brzoza, Myślęcinek, Osielesko, Górsk, Łysomice, Lubicz Dolny/. Glasshouse gardening was expanded in private farms lying within the region of influence exerted by Grudziądz /e.g. in the villages of Owczarki, Wielkie Tarpno, Nowa Wieś, Świerkocin/ and in socialized farms /The Gardening Combine at Nasiegniewo near Włocławek/. The number of tobacco drying houses, fodder mixing houses and other agricultural objects increased also in the investigated period.

4. Production characteristics

As far as production characteristics of the analysed area are concerned not only effects resulting from its natural and economic predispositions, should be indetified but also those exerted by the neighbouring and absorptive urban markets, especially as regards production of foodstuffs which cannot be transported too far, like vegetables, fruit, milk, new potatoes, poultry.

Extractive crops /50-55 %/ and intensifying crops /25-30 %/ dominate in the sowing structure. In the Chełmno Heights and the Cuiavia Plain wheat accounts for 20-30 % and barley for 10-30 % of the sown area. Rye is the main extractive crop in the Bydgoszcz-Toruń and Włocławek Basins, the Dobrzyń Heights as well as partially in the Krajna Heights and the Świecie Plain, where it accounts for 15-30 % of the sown area. The Chełmno and Krajna Heights and the Cuiavia and Świecie Plains sell the biggest amounts of the four cereals /600-700 kg per ha of the sown area/, while sales from the Vistula Valley amount to 300-400 kg only.

Among industrial crops an important role is played by sugar-beet, together with barley for breweries. These crops on best soils of the type of black and brown soils are cultivated in an area up to 15 % of the sown area. Sugar-beet is processed in 7 big sugar plants, producing annually several scores of thousand tons of sugar. Out of the remaining industrial plants attention should be paid to rape seed and turnip /Cuiavia Plain/, flax and tobacco /Grudziądz, Toruń, the region of Pakość/, and mint /Unisław Basin/.

Potato cultures are favoured in a large area of light soil; a fragmented agrarian structure is also a favourable factor, so potatoes occupy on the average 15-20 % of the sown area; this percentage is much higher in the suburban zones of BGTW the Dobrzyń Heights, the Krajna Heights, and the eastern part of the Cuiavia Plain.

Ground vegetables and those planted under covers play an important role in the sowing structure. These cultures are mainly concentrated in towns /for example, in Bydgoszcz 698 ha = 46.4 % of the sown area, in Grudziądz

225 ha = 35,1 % and in Toruń 280 ha = 28.0 %/, in the suburban zones and regions of fruit and vegetable processing, where they account for 2-5 % of the sown area. In the structure of field vegetables dominate: cabbage /20-35 %/, carrots /12-15 %/, cucumbers /10-12 %/, tomatoes /10-12 %/, and in Cuiavia also onions. Tomatoes account for 90 % of vegetables grown under covers.

Though the area under orchards gradually increases, fruit production is uneven, not only because of changes in weather conditions in the separate years, but also owing to a great fragmentation and dispersal of orchards, as well as to a low quality and fertility of fruit trees. Among trees able to bear fruit apple trees account for 50 %, plum trees for 15-20 %, cherry trees for 15-18 % and pear trees for 8-10 %. In the suburban zones the area under fruit bushes is on the increase, especially under black currants and strawberries.

The consumption of vegetables and fruit amounts in the investigated area to approximately 100 and 40 kg per person respectively, which means that a deficit in this regard is quite big, and that this type of production should be further developed, especially in the area with proper climatic and soil conditions.

In livestock breeding the production of pork and beef, as well as of milk, is important. The average number of pigs oscillates between 50-100 per 100 ha of agricultural land in the Vistula Valley and 150-200 in the Dobrzyń Heights and the Świecie Plain. In pork production the orientation meat-fat dominates /70 %/.

The average number of cattle amounts to 85 units per 100 ha of agricultural land; in the Chełmno Heights, however, it is 80-100, while in the Vistula, Drwęca and Noteć valleys, because of the low quality of meadows and their inadequate development, only 50-80 units per 100 ha of agricultural land. In the structure of a herd the percentage of cows is about 60, which is, on the one hand, a proof that milk production is well developed, but, on the other, it indicates that the holdings are highly fragmented /the percentage of cows in the herds owned by the holdings up to 2 ha is even 99, and by the holdings from 2 to 10 ha almost 75/. In the area where the percentage of socialized farms is big, meat production dominates, and the number of cows falls down to 40 %. Breeding for reproduction is also on the increase.

The third branch of livestock breeding is poultry breeding, developing quite rapidly in the suburban zones of larger towns. Poultry meat and eggs have become an important foodstuff for the inhabitants of towns and a raw material for factories processing them.

In the region of the Lower Vistula the total value of agriculture amounted in 1975 on the average to 25 thousand zlotys per ha of agricultural land. However, where soils are less fertile, as in Tuchola Forests, the Bydgoszcz-Toruń and Włocławek Basis, this value was 15-18 thousand zlotys only, while in the Chełmno Heights and the Cuiavia Plain the figure was 30-40 thousand

zlotys per ha of agricultural land.

In the structure of the total vegetable production the biggest share was taken in 1970-1975 by cereals /25-30 %/, potatoes /17-20 %/, sugar-beet /5-8 %/, vegetables /5-7 %/, and meadow hay /3-5 %/. In livestock production the sequence was as follows: pork and milk 30 % each, beef and eggs 8-10 % each, poultry 5-7 %.

The commercial agricultural production in 1975 was for the whole area about 10 thousand million zlotys, of which livestock production accounted for 60 % and 70 % in the Chełmno and Dobrzyń Heights as well as the Cuiavia Plain. Vegetables, fruit, milk, poultry meat, and eggs were playing in increasing role in the commercial production alongside the traditional production of cereals and pork meat.

5. An attempt at determining the level of agriculture and the range of influence of urbanization on suburban agriculture

The level of agriculture in the Lower Vistula region in 1976 was determined by the method of the global index P_i /after J. Perkal/ on the basis of the following formula:

$$P_i = \frac{1}{n} \sum_{j=1}^n a_{ij} = \frac{1}{n} a_{i1} /+ a_{i2} \dots\dots\dots + a_{in}/$$

where: n - denotes the number of characteristics

j - the number of a characteristic

i - the investigated unit /commune/

a - the value of the normalized characteristic.

In the index P_i 16 diagnostic characteristics were taken into account ; they include social and ownership characteristics /e.g. the average size of holdings, the percentage of socialized farms/, organizational and technical characteristics /percentage of arable land in the total area, percentage of industrial plants in the sown area, the level of fertilization, the level of mechanization/, and production characteristics /the size of livestock per 100 ha of agricultural land, the size of purchase of the 4 cereals, life weight, milk, etc. per ha of agricultural land/.

A unit, all characteristics of which equal, zero, has been adopted as a statistical unit /commune/ with a medium level of agriculture. Units with the lowest level oscillate between zero and -3, in accordance with the law of the three sigmas, while those with the highest level are close to +3. Communes with the lowest agricultural level are situated in the Vistula Valley, Tuchola Forest, the Dobrzyń and Żnin Heights. The greatest number of communes with the highest agricultural level are in the Chełmno Heights /the communes

of Radzyń Chełmiński, Płużnica, Lisnowo, Chełmża, Łubianka and Kowalewo/, and in the Cuiavia Plain /the communes of Inowrocław, Pakość, Janikowo).

The dominance of private farming /80 % of agricultural land/ causes that the agricultural level is, to a large extent, a reflection of natural conditions, so very varied in the investigated region of the Lower Vistula. At the same time no clear influence of bigger urban and industrial centres can be observed on the general agricultural level.

The same method was used to determine the influence of urbanization on agriculture of the suburban type. Seven diagnostic characteristics were taken into account, namely: the percentage of farms under 2 ha, the percentage of the area under fruit trees and vegetables, construction of residential and farm buildings per 100 ha of agricultural land, agricultural population per 100 ha of agricultural land. The highest values of the index P_i indicate that the influence of urbanization on agriculture is the strongest in the suburban zones of Bydgoszcz and Toruń /they are situated around those towns and spread as far as Nakło, Szubin, Unisław, Kowalewo and Inowrocław/. The zone around Grudziądz /to Nowe and Świecie/ and Włocławek /to Ciechocinek and Dobrzyń/, though not so wide, is also strongly influenced. The scale of research units, that is of the communes, is too general; however, it can be observed that there is also a dependence between the value of the global index and the transport pattern /e.g. Bydgoszcz-Toruń, or Toruń-Inowrocław/; about 10 % of the investigated area lies outside the zone of clear influence of urbanization on changes in the selected characteristics of suburban agriculture. This is especially true of the Chełmno and Dorzyń Heights.

In the development of urbanization processes, occurring so far, and of their influence on the internal characteristics of agriculture the following three, clearly delineated, zones can be differentiated: 1 - a zone of direct influence, with a radius of 10-20 km around Bydgoszcz and Toruń, and with a radius of several kilometers around Grudziądz and Włocławek; with a dominance of small farms, mainly owned by peasant-workers, where production is oriented towards vegetables and fruit, construction activity is well developed, etc., 2 - a zone of indirect influence, with a decreasing number of population earning its livelihood in agriculture, partial adaptation of production to the needs of urban markets, an easy access to services of a higher rank, etc., and 3 - a zone of not clear influence of urbanization on agriculture.

Final remarks and conclusions

In summing up the findings of the analyses of suburban agriculture in the region of the Lower Vistula one can state that transformations which occurred in the investigated period, 1960-1975, under the influence exerted by the general agricultural policy and under the influence exerted by the urban and industrial centres, are distinct enough they differ in their spatial picture.

This difference has been caused predominantly by the natural conditions, diametrically different, unfavourable or little favourable for agriculture in the Vistula Valley /that is in the closest hinterland of the biggest towns in the investigated area/, and very favourable in the area of the morainic heights. The set of internal characteristics of agriculture reveals that it has adapted itself to the natural conditions. The agricultural standard is therefore the highest in the area with most favourable natural and economic conditions, which is situated far from the towns and important transport lines. At the same time, urbanization and industrialization exert both positive and negative effects. The outflow of the surpluses of labour from agriculture, increased intensification of agriculture /especially construction and mechanization/, partial adaptation of production orientations to the needs for foodstuffs in the towns /especially for vegetables, fruit, milk and poultry/, and a further development of processing industries and agricultural commercial production, are positive effects in the scale of the investigated area. Negative effects are: a growing threat to the natural environment /pollution of soil, air, ground and surface water/, a decrease in the area producing food, increased fragmentation of the holdings, unfavourable changes in the potential of labour, etc.

All the transformations induced in agriculture by urbanization are clearly distinct in the suburban zones of Bydgoszcz and Toruń /mainly an increased fragmentation of the holdings, percentage of farmers engaged in two professions, intensive construction of residential and farm buildings, orientation of production on fruit, vegetables, and poultry/. Less transformations occurred in the region of Włocławek and Grudziądz, along the main transport lines, and in the vicinity of service centres.

A further development of suburban agriculture in the analysed area, based on the intensification of natural conditions /i.e. by a proper development of the meadows lying along the Vistula and the Noteć/, changes in the agrarian and ownership structures /an increase of the number of socialized farms and well-run private holdings/, as well as on increased outlays on mechanization, fertilization, and serviced for agriculture, should be directed towards lowering the barrier of unfavourable conditions, even partially. In result this will bring about an active participation of the region of the Lower Vistula in the overall economic development.

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IZBRANI PROBLEMI OBMESTNEGA KMETIJSTVA V SREDNJEM DELU
SPODNJE VISLE

Za pokrajino ob spodnji Visli je značilna močna urbanizacija in visoka stopnja industrializacije. Najpomembnejša mestna in hkrati industrijska središča so: Ptock (91 000 preb.), Włocławek (93 000 preb.), Torún (160 000 preb.), Bydgoszcz (334 000 preb.), Grudziądz (87 000 preb.) in Elbląg (100 000 preb.). To je območje, kjer se stikajo tri jezerske pokrajine: Pomeransko, Mazuri in Velikopoljski Kujavi. Ločuje jih dolina spodnje Visle. Naravni pogoji so zelo različni. Na kratko lahko rečemo, da območja, ki so več kot 10 kilometrov oddaljena od največjih mest, niso primerna za razvoj kmetijstva. Zaradi močne industrializacije in urbanizacije doživlja regija velike spremembe v socialno-ekonomski sestavi prebivalstva. Večina kmetij je v rokah polkmetov, število nad 60 let starih kmetov je vse večje, vse več kmetij ostaja brez naslednikov, kmečko delo pa vse bolj prehaja na ramena ženske delovne sile.

Najbolj rodovitne površine tradicionalno pripadajo velikim kmetijskim obratom. Vse več zemlje prehaja v državne roke, predvsem tako, da večje kmetije odstopajo površine z manj ugodnimi naravnimi pogoji (na primer mokrotne predele v dolini Visle). Del večjih kmetij v bližini mest je preusmeril kmetijsko proizvodnjo v sadjarstvo, mlečno govedorejo in perutninarstvo.

Na obravnavanem območju je povprečno 80 % kmetijske zemlje v privatni lasti. Število kmetij narašča, zato je sestava posestva vse bolj neugodna. Največja zgoščitev najmanjših kmetij (do 2 ha) je v bližini industrijskih središč. Te kmetije so pomembni proizvajalci hrane za lastno potrebo. Srednje velike kmetije obsegajo preko 40 % kmetijskih površin v privatni lasti. Po l. 1970 se je število kmetij z več kot 10 ha povečalo. Obsegajo enak delež kmetijskih površin kot srednje velike kmetije, nastopajo pa kot pomembni tržni proizvajalci.

Učinki urbanizacije na usmerjenost kmetijske proizvodnje so različni. Tako se površine s sadovnjaki neprestano širijo, in to v privatnem kot v državnem sektorju. Število traktorjev se je v razdobju 1965–1975 povečalo za 200 %. Močno se je povečala uporaba umetnih gnojil. Na posejanih površinah prevladujejo ekstraktivne (50–55 %) in intenzivne kulture (25–30 %). Od industrijskih rastlin imata pomembno mesto sladkorna pesa in oves. Pri živinoreji sta v ospredju mlečna govedoreja in svinjereja, v zadnjem času pa narašča pomen perutninarstva. V tržni kmetijski proizvodnji je l. 1975 imela po vrednosti največji delež živina (60 do 70 %). Vse bolj narašča pomen pridelave zelenjave, sadje, mleka, perutnine in jajc, zmanjšuje pa vrednost tradicionalnih žit in svinjskega mesa.

Glede na vpliv urbanizacije na kmetijsko proizvodnjo ločimo tri, med seboj jasno ločene cone:

1. cona neposrednega vpliva z radijem 10 do 20 km okrog Bydgoszcza in Torunje in z nekaj kilometrskim radijem okrog Grudziadza in Wocaweka. Prevladujejo majhne kmetije s pretežno mešanimi, delavskokmečkimi gospodinjstvi ter usmerjenostjo v pridelavo zelenjava in sadja.
2. Cona posrednjega vpliva; delež kmečkega prebivalstva se zmanjšuje, kmetijska proizvodnja pa se le deloma prilagaja potrebam mestnega trga.
3. Cona, v kateri ni opaziti vpliva urbanizacije na kmetijstvo. Kljub precejšnjim spremembam v kmetijstvu zaradi industrializacije in urbanizacije v razdobju 1960-75, pa na prostorsko diferenciacijo kmetijske proizvodnje v največji meri vplivajo razlike v naravnih pogojih. Kmetijski standard je najvišji na območju z najboljšimi naravnimi pogoji in gospodarskimi, čeprav leži to območje daleč od mest in pomembnih prometnih žil.

Vpliv industrializacije in urbanizacije na kmetijstvo ima dobre in slabe strani. Med pozitivne lahko štejemo sprejemanje odvečne kmečke delovne sile, večanje intenzifikacije kmetijstva, delno prilagoditev proizvodne usmerjenosti potreb po hrani v mestih itd. Med negativne učinke štejemo: naraščajoče ogrožanje naravnega okolja, zmanjševanje obsega doma proizvedene hrane, naraščajočo delitev kmetij, neugodne spremembe v sestavi kmečke delovne sile itd.