

**XALQARO QISHLOQ XO‘JALIGI UNIVERSITETI HUZURIDAGI ILMIY  
DARAJALAR BERUVCHI PHD.05/15.12.2022.I.155.01  
RAQAMLI ILMIY KENGASH**

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**“TOSHKENT IRRIGATSIYA VA QISHLOQ XO‘JALIGINI  
MEXANIZATSIYALASH MUHANDISLARI INSTITUTI” MILLIY  
TADQIQOT UNIVERSITETI**

**SAYDULLAYEVA FOTIMA JOZILOVNA**

**TOMORQA XO‘JALIKLARIDA MAHSULOTLAR ISHLAB CHIQRISHNI  
DIVERSIFIKATSIYALASHNING AHOLI OVQATLANISHIGA TA’SIRI**

**08.00.04 – “Qishloq xo‘jaligi iqtisodiyoti”**

**Iqtisodiyot fanlari bo‘yicha falsafa doktori (PhD) dissertatsiyasi  
AVTOREFERATI**

**Toshkent – 2024**

**Iqtisodiyot fanlari bo'yicha falsafa doktori (PhD)  
dissertatsiyasi avtoreferati mundarijasi**

**Content of dissertation abstract of doctor of philosophy (PhD)  
in economic sciences**

**Оглавление автореферата диссертации доктора философии (PhD)  
по экономическим наукам**

**Saydullayeva Fotima Jozilovna**

Tomorqa xo'jaliklarida mahsulotlar ishlab chiqarishni diversifikatsiyalashning aholi ovqatlanishiga ta'siri (Samarqand viloyati misolida).....5

**Saydullaeva Fotima Jozilovna**

Diversification of production in tomorka farms and its impact on the dietary of the population (The case of Samarkand region) .....25

**Saydullayeva Fotima Jozilovna**

Диверсификация производства в приусадебных хозяйствах и ее влияние на питание населения (на примере Самаркандской области).....47

**E'lon qilingan ishlar ro'yxati**

Список опубликованных работ

List of published works .....52

**XALQARO QISHLOQ XO‘JALIGI UNIVERSITETI HUZURIDAGI ILMIY  
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**SAYDULLAYEVA FOTIMA JOZILOVNA**

**TOMORQA XO‘JALIKLARIDA MAHSULOTLAR ISHLAB CHIQRISHNI  
DIVERSIFIKATSIYALASHNING AHOLI OVQATLANISHIGA TA’SIRI  
(SAMARQAND VILOYATI MISOLIDA)**

**08.00.04 - Qishloq xo‘jaligi iqtisodiyoti**

**Iqtisodiyot fanlari bo‘yicha falsafa doktori (PhD) dissertatsiyasi  
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**Toshkent – 2024**



## **KIRISH (falsafa doktori (PhD) dissertatsiyasi annotatsiyasi)**

**Dissertatsiya mavzusining dolzarbligi va zarurati.** Dunyo aholisi sonining o'sib borayotganli sharoitida iqlim o'zgarishi, siyosiy-ijtimoiy vaziyatlar keskinlashuvi, yuqumli kasalliklar bilan bog'liq yangi muammolar oziq-ovqat mahsulotlarini ishlab chiqarish hamda ta'minot zanjirining buzilishiga, natijada insonlarning oziq-ovqat iste'moli imkoniyatlarini qisqarishiga olib kelmoqda. Birlashgan Millatlar Tashkilotining Oziq-ovqat va qishloq xo'jaligi (FAO) tashkiloti ma'lumotlariga ko'ra "2030-yilga borib ochlikdan aziyat chekayotgan aholi soni bir milliarddan oshishi va barqaror maqsadlarga erishish imkoniyatining kamayishi taxmin qilinmoqda"<sup>1</sup>. Qishloq xo'jaligi sohasida oziq-ovqat xavfsizligini ta'minlash borasida importga qaramlikni kamaytirish, mahalliy oziq-ovqat ishlab chiqarishni kuchaytirish, sog'lom ovqatlanishni yo'lga qo'yishda xo'jaliklarda ishlab chiqarish samaradorligini oshirish va diversifikatsiya qilish choralari izlash muhim masalalardan sanaladi.

Dunyoda qishloq aholisining yashash sharoitlarini yaxshilash va oziq-ovqat xavfsizligini ta'minlash uchun kichik xo'jaliklarda oziq-ovqat mahsulotlarini samarali yetishtirish orqali yetarli hajmda, sifatli va arzon oziq-ovqat bilan ta'minlashga qaratilgan tadqiqotlar olib borilmoqda. Bu sohada barqaror qishloq xo'jaligi amaliyotlari, yangi innovatsion texnologiyalar va intensiv usullardan foydalanish hamda raqamli platformalar yaratishga oid iqtisodiy va tashkiliy mexanizmlarni ishlab chiqishga doir ilmiy-tadqiqot ishlari muhim o'rin tutadi.

O'zbekistonda qishloq xo'jaligini rivojlantirish va oziq-ovqat xavfsizligini ta'minlashga qaratilgan keng qamrovli chora-tadbirlar rejasida "aholining ijtimoiy himoyaga muhtoj qatlamini oziq-ovqat bilan ta'minlash mexanizmlarini takomillashtirish, shuningdek, qishloq xo'jaligi mahsulotlari ishlab chiqaruvchilarini ijtimoiy obyektlar bilan integratsiyalash, xalqaro darajada tan olingan uslubiyotlar va ilg'or tajribalar asosida oziq-ovqat xavfsizligini baholash tizimini joriy qilish hamda doimiy monitoring qilish, sog'lom iste'mol madaniyatini targ'ib qilish bo'yicha dastur ishlab chiqish, ijtimoiy ahamiyatga ega mahsulot turlari ishlab chiqarishni intensivlashtirishga doir tarmoq dasturlarini ishlab chiqish, chorvachilikda mahsuldorlikni oshirish, baliq va parranda go'shti, shuningdek, sut ishlab chiqarishni barqaror intensivlashtirishga qaratilgan tadqiqot ishlarini olib borish"<sup>2</sup> kabi vazifalar belgilangan. Ushbu vazifalarni ijrosini ta'minlashda qishloq hududlari aholisining oziq-ovqat manbai tomorqa xo'jaliklari mahsulotlari ishlab chiqarishini diversifikatsiyalashining rag'batlantiruvchi mexanizmlarini ishlab chiqish hamda xalqaro standartlar, ko'rsatkichlardan foydalanib tadqiqotlar olib borishda mazkur dissertatsiya mavzusi dolzarb hisoblanadi.

O'zbekiston Respublikasi Prezidentining 2017-yilning 10-sentabridagi PF-5199-son "Fermer, dehqon xo'jaliklari va tomorqa yer egalari huquqlari va qonuniy manfaatlarini himoya qilish, qishloq xo'jaligi ekin maydonlaridan samarali

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<sup>1</sup> World Health Organization. (2020). The state of food security and nutrition in the world 2020: transforming food systems for affordable healthy diets (Vol. 2020). Food & Agriculture Org.

<sup>2</sup> O'zbekiston Respublikasi Prezidentining farmoni. O'zbekiston Respublikasi qishloq xo'jaligini rivojlantirishning 2020 — 2030 yillarga mo'ljallangan strategiyasini tasdiqlash to'g'risida. 23.10.2019. PF-5853-son.

foydalanish tizimini tubdan takomillashtirish chora-tadbirlari to'g'risida", 2022-yil 6-iyuldagi PF-165-son "2022 - 2026 yillarda O'zbekiston Respublikasining innovatsion rivojlanish strategiyasini tasdiqlash to'g'risida"gi farmonlari, 2017-yil 10-oktabridagi PQ-3318-son "Fermer, dehqon xo'jaliklari va tomorqa yer egalari faoliyatini yanada rivojlantirish bo'yicha tashkiliy chora-tadbirlar to'g'risida", 2020-yilning 11-oktyabrdagi PQ-4887-son "Aholining sog'lom ovqatlanishini ta'minlash bo'yicha qo'shimcha chora-tadbirlar to'g'risida"gi, 2023-yil 5-apreldagi PQ-113-son "2023-yilda qishloq xo'jaligi mahsulotlari ishlab chiqarish, qayta ishlashni kengaytirish va qo'llab-quvvatlashning qo'shimcha chora-tadbirlari to'g'risida"gi qarorlar, Vazirlar Mahkamasining 2022-yil 28-oktyabrdagi 624-son "Tomorqada mahsulot yetishtirishni qo'llab-quvvatlash va uni yanada rivojlantirish uchun qulay sharoitlar yaratilganligi munosabati bilan O'zbekiston Respublikasi hukumati ayrim qarorlariga o'zgartirish va qo'shimchalar kiritish to'g'risida"gi qaror hamda ushbu faoliyatga tegishli boshqa me'yoriy-huquqiy hujjatlarda belgilangan vazifalarni amalga oshirishda ushbu dissertatsiya tadqiqoti muayyan darajada hissa qo'shadi.

**Tadqiqotning respublika fan va texnologiyalari rivojlanishining ustuvor yo'nalishlariga bog'liqligi.** Dissertatsiya respublika ilm-fan va texnologiyalari rivojlanishining I. "Demokratik va huquqiy jamiyatni ma'naviy-ahloqiy hamda madaniy rivojlantirish, innovatsion iqtisodiyotni shakllantirish" ustuvor yo'nalishiga muvofiq bajarilgan.

**Muammoning o'rganilganlik darajasi.** Qishloq xo'jaligida mavjud oilaviy xo'jaliklarda mahsulotlarni diversifikatsiyalashning ovqatlanishga ta'sirini birlamchi va ikkilamchi ma'lumotlardan foydalanib, Xouks K., Ruel M.T., Olderman X., Akramov, K.T., Pinstrup-Andersen P., Xidi, D.D., Olni K.V., Dina K., Takeshima H., Lombardozi L., Konrad M., Eker O., Mulva C., Muthini D., Zanello G., Islam A., Huang Y<sup>3</sup>. kabi xorij olimlari o'rgangan.

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<sup>3</sup> Hawkes, C., & Ruel, M. T. (2008). From agriculture to nutrition: Pathways, synergies and outcomes; Hawkes, C., & Ruel, M. T. (2006). Agriculture and nutrition linkages old lessons and new paradigms: understanding the links between agriculture and health (No. 13 (4)). International Food Policy Research Institute (IFPRI); Pinstrup-Andersen, P. (2013). Nutrition-sensitive food systems: from rhetoric to action. *The Lancet*, 382(9890), 375-376; Ruel, M. T., & Alderman, H. (2013). Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? *The lancet*, 382(9891), 536-551; Ruel, M. T., Quisumbing, A. R., & Balagamwala, M. (2018). Nutrition-sensitive agriculture: what have we learned so far?. *Global food security*, 17, 128-153; Olney, D. K., Talukder, A., Iannotti, L. L., Ruel, M. T., & Quinn, V. (2009). Assessing impact and impact pathways of a homestead food production program on household and child nutrition in Cambodia. *Food and Nutrition Bulletin*, 30(4), 355-369; Headey, D. D., & Hoddinott, J. (2016). Agriculture, nutrition and the green revolution in Bangladesh. *Agricultural Systems*, 149, 122-131; Ruel, M. T., & Brouwer, I. D. (2021). Nutrition: Transforming food systems to achieve healthy diets for all. IFPRI book chapters, 36-43.; Njuki, J., Benin, S., Marivoet, W., Ulimwengu, J. M., Mwongera, C., Breisinger, C., ... & Piñeiro, V. (2022). Regional developments [in 2022 Global Food Policy Report]. IFPRI book chapters, 114-145; Takeshima, H., Akramov, K., Park, A., Ilyasov, J., Liu, Y., & Ergasheva, T. (2020). Agriculture–nutrition linkages with heterogeneous, unobserved returns and costs: Insights from Tajikistan. *Agricultural Economics*, 51(4), 553-565.; Lombardozi L., *The Nexus Between The Role Of The State, Market Transition And Food Consumption : The Case Of Samarkand, Uzbekistan*. PhD thesis. SOAS, University of London 2018. DOI: <https://doi.org/10.25501/SOAS.00032802>; Murendo, C., Gwara, S., Mazvimavi, K., & Arensen, J. S. (2019). Linking crop and livestock diversification to household nutrition: Evidence from Guruve and Mt Darwin districts Zimbabwe. *World Development Perspectives*, 14, 100104.; Ecker, O. (2018). Agricultural transformation and food and nutrition security in Ghana: Does farm production diversity (still) matter for household dietary diversity?. *Food policy*, 79, 271-282.; Mulwa, C. K., & Visser, M. (2020). Farm diversification as an adaptation strategy to climatic shocks and implications for food security in northern Namibia. *World Development*, 129, 104906.; Muthini, D., Nzuma, J., & Nyikal, R. (2020). Farm production diversity and its association with dietary diversity in Kenya. *Food Security*, 12, 1107-1120.; Zanello, G., Shankar, B., & Poole, N. (2019). Buy or make? Agricultural production diversity,

Mamlakatimiz misolida dehqon-tomorqa xo‘jaliklari resurslaridan samarali foydalanish, ular yetishtirayotgan mahsulotlarning samaradorligiga ta‘sir etuvchi ijtimoiy-iqtisodiy omillar tahlili O‘Umurzakov N.Xushmatov, Q.Choriyev, A.Chertoviskiy, I.Rustamova, R.Husanov, O.Murtazayev va F.Ahrorov<sup>4</sup> kabi iqtisodchi olimlar tomonidan o‘rganilgan. Shuningdek, qishloq xo‘jaligi mahsulotlarini diversifikatsiya qilishda ekin maydonlaridan samarali foydalanish va oziq-ovqat xavfsizligini ta‘minlashdagi ahamiyati respublikamiz olimlaridan Sh.Hasanov, I.Bobojonov, N.Djanibekov, I.Rudenko, K.Akramov, D.Saidova, G.Samiyeva, A.Ergashev, A.Primovlar<sup>5</sup>ning ilmiy tadqiqot ishlarida keltirib o‘tilgan.

Qator tadqiqotlarda qishloq xo‘jaligi mahsulotlarini diversifikatsiyalashning qishloq xo‘jaligini barqaror rivojlantirish va samaradorlikni oshirishdagi ahamiyati yoritilgan, biroq uning oziq-ovqat xavfsizligini ta‘minlashdagi roli kamroq o‘rganilgan. Shu sababli, jahon miqyosida yuz berayotgan turli tabiiy, ijtimoiy va siyosiy vaziyatlarni hisobga olgan holda, mamlakatimizda tomorqa xo‘jaliklari mahsulotlarini diversifikatsiyalashning turli ijtimoiy-iqtisodiy omillarni inobatga olib, uy xo‘jaliklari ovqatlanishiga ta‘sirini ilmiy-amaliy o‘rganish ishning zaruriyatini belgilaydi.

**Tadqiqotning maqsadi** tomorqa xo‘jaligi mahsulotlarini diversifikatsiyalashning uy xo‘jaliklarida ovqatlanish diversifikatsiyasiga ta‘sirini baholash hamda uni oshirish bo‘yicha taklif va tavsiyalar ishlab chiqishdan iborat.

**Tadqiqotning vazifalari:**

tomorqa xo‘jaliklarida ishlab chiqarish diversifikatsiyasini nazariy asoslash;

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markets and dietary diversity in Afghanistan. *Food Policy*, 87, 101731.; Islam, A. H. M. S., von Braun, J., Thorne-Lyman, A. L., & Ahmed, A. U. (2018). Farm diversification and food and nutrition security in Bangladesh: empirical evidence from nationally representative household panel data. *Food security*, 10, 701-720.;Huang, Y., & Tian, X. (2019). Food accessibility, diversity of agricultural production and dietary pattern in rural China. *Food Policy*, 84, 92-102.

<sup>4</sup> Хушматов Н.С. Деҳқон (фермер) хўжаликларини ташкил этиш самарадорлиги ва уларнинг бошқа ташкилотлар билан ўзаро муносабатларини такомиллаштириш: авт. дис. ... и.ф.н. – Т., 1994.; Умурзаков У.П., Чориев К.А. Организационно-экономических и правовых основы реструктуризации сельскохозяйственных предприятий на переходном этапе. – Т., Мехнат, 1997. – с 79.; Хусанов Р.Х. Аграрная реформа: тенденция, практика, проблемы. – Т.: Узбекистан, 1994. – 74 с.; Рустамова И.Б. Қишлоқ хўжалиги ишлаб чиқаришини ташкил этиш. – Т.: Ўзбекистон миллий энциклопедияси, 2005. – 508 б.; Муртазаев О., Ф.Б.Ахроров. Қишлоқ хўжалиқ иқтисодиёти. – Т., Илм-Зиё, 2017 й.

<sup>5</sup> Hasanov, Sh. (2016): Agricultural policies to enhance the development of fruit and vegetable subsectors in Uzbekistan. *European Scientific Journal*, vol. 12 (13), May 2016. <http://dx.doi.org/10.19044/esj.2016.v12n13p479> Bobojonov, I., Lamers, J. P. A., Bekchanov, M., Djanibekov, N., Franz-Vasdeki, J., Ruzimov, J., & Martius, C. (2013). Options and constraints for crop diversification: A case study in sustainable agriculture in Uzbekistan. *Agroecology and Sustainable Food Systems*, 37(7), 788-811. <http://doi.org/10.1080/21683565.2013.775539>; Lombardozi, L., & Djanibekov, N. (2021). Can self-sufficiency policy improve food security? An inter-temporal assessment of the wheat value-chain in Uzbekistan. *Eurasian Geography and Economics*, 62(1), 1-20.; Kienzler, K. M., Rudenko, I., Ruzimov, J., Ibragimov, N., & Lamers, J. P. (2011). Winter wheat quantity or quality? Assessing food security in Uzbekistan. *Food Security*, 3, 53-64.; Akramov, K. T. (2011). International food prices, agricultural transformation, and food security in Central Asia. *Development in Practice*, 21(4-5), 741-754.; Nurmatovna, S. D. (2022). Main risks and factors of food security in uzbekistan. *Web of Scientist: International Scientific Research Journal*, 3(6), 1696-1703.; Самиева Г.Т. Деҳқон хўжаликларида ишлаб чиқаришни диверсификациялаш йўналишлари: дисс...авт. и.ф.н – Тошкент, 2019. Ergashev A. Analysis of fruit and vegetable supply, demand, diet quality and nutrition in Uzbekistan : дис. – Universitäts-und Landesbibliothek Bonn, 2017.; Примов А.Э. Қишлоқ хўжалиги экинларини диверсификациялашнинг фермер хўжаликлари иқтисодий самарадорлигига таъсирини баҳолаш: дисс...авт. и.ф.н. – Тошкент, 2022.

tomorqa mahsulotlarini diversifikatsiyalashning uy xo'jaliklari ovqatlanishiga ta'sirini baholashni ilmiy-uslubiy asoslarini ishlab chiqish;

qishloq xo'jaligi ishlab chiqarishining hozirgi holatini tahlil qilish va o'zgarishlar dinamikasini aniqlash;

tomorqa xo'jaliklarida mahsulot ishlab chiqarish diversifikatsiya darajasini aniqlash;

oziq-ovqat iste'moli diversifikatsiyasiga omillar ta'sirini ekonometrik model orqali baholash;

uy xo'jaliklari oziq-ovqat diversifikatsiyasini oshirishni rag'batlantiruvchi mexanizmni ishlab chiqish;

tomorqa xo'jaliklarida ishlab chiqariladigan oziq-ovqatning 12 guruhiga kiruvchi mahsulotlarni istiqboldagi ishlab chiqarish prognozlarini aniqlash.

**Tadqiqot obyekti** sifatida Samarqand viloyati tomorqa xo'jaliklari tanlab olindi.

**Tadqiqotning predmeti** tomorqa xo'jaliklarida mahsulot ishlab chiqarishni diversifikatsiyalashning uy xo'jaliklari ovqatlanish xilma-xilligiga ta'sir etishi jarayonida yuzaga keladigan tashkiliy va ijtimoiy-iqtisodiy munosabatlardir.

**Tadqiqotning usullari.** Tadqiqot jarayonida taqqoslama tahlil, abstrakt fikrlash, statistik va ekonometrik modellashtirish, so'rovnoma, grafik, indeks baholash va boshqa usullardan foydalanildi.

**Tadqiqotning ilmiy yangiligi** quyidagilardan iborat:

tomorqa xo'jaliklarida o'simlikchilik mahsulotlarini ishlab chiqarish diversifikatsiyasi "quyi" ( $1 < HHI \leq 0,7$ ), "o'rta" ( $0,7 \leq HHI < 0,4$ ) va "yuqori" ( $0,4 \leq HHI < 0$ ) mezonlar bo'yicha tomorqa xo'jaligi boshqaruvini maqbullashtirish taklif etilgan;

oziq-ovqat xavfsizligiga davlat yordamini kuchaytirishda (barqaror qishloq xo'jaligi mahsulotlari yetishtirish, suv va energiya ta'minotidan barqaror foydalanish, iqlimdan oqilona foydalanish, qayta ishlash va saqlash uchun maqbul ishlab chiqarish amaliyotlari hamda hosildan keyingi yo'qotishlarni kamaytirishga qaratilgan) subsidiyalar ajratish bo'yicha yagona siyosat olib borilishining maqsadga muvofiqligi asoslangan;

tomorqa xo'jaliklarida 12 guruh (dukkaklilar, meva-sabzavot, go'sht, sut, asal)dagi oziq-ovqat mahsulotlarini ishlab chiqarishning 2028-yilgacha prognoz parametrlari hisoblab chiqilgan;

qishloq joylarida uy xo'jaliklariga "o'z-o'zini ta'minlash-zahira-realizatsiya" bo'yicha tartibga solingan raqamli dasturlash ta'minotini joriy qilish markazini mahallalarda tashkil qilish orqali barqaror oziq-ovqat ta'minotiga erishishga qaratilgan rejali-iqtisodiy mexanizm ishlab chiqilgan.

**Tadqiqotning amaliy natijalari** quyidagilardan iborat:

tomorqa xo'jaliklarida mahsulotlar ishlab chiqarish diversifikatsiyasini oshirishning obektiv zarurligi, uy xo'jaliklari ovqatlanish xilma-xilligini ta'minlashdagi o'zi xos xususiyatlari nazariy jihatdan asoslangan;

rivojlangan xorijiy davlatlar qishloq xo'jaligidagi kichik xo'jaliklarning aholi oziq-ovqat xavfsizligini oshirishdagi muvaffaqiyatli tajribalari o'rganilgan va tomorqa xo'jaliklarida foydalanish yo'llari belgilab berilgan;

tomorqa xo'jaliklari mahsulotlar ishlab chiqarishini diversifikatsiyasini oshirishning davlat tomonidan iqtisodiy qo'llab-quvvatlashning subsidiyalash mexanizmini rag'batlantirish taklif etilgan.

**Tadqiqot natijalarining ishonchliligi** dissertatsiya ishida foydalanilgan ma'lumotlar uzoq muddatlilik va rasmiy manbalardan olinganligi, respublika va xorij iqtisodchi olimlarining oziq-ovqat mahsulotlari iste'moli diversifikatsiyasiga qishloq xo'jaligida mahsulot ishlab chiqarishning ta'sirini baholashga doir tadqiqot ishlari ilmiy-uslubiy natijalariga tayanilganligi, Samarqand viloyati tumanlari kesimida tomorqa xo'jaliklaridan to'plangan so'rovnoma ma'lumotlariga asoslanganligi, taklif va tavsiyalarining amaliyotga joriy etilganligi, olingan natijalarning vakolatli tuzilmalar tomonidan tasdiqlanganligi bilan izohlanadi.

#### **Tadqiqot natijalarining ilmiy va amaliy ahamiyati.**

Tadqiqot natijalariga asosan, tomorqa xo'jaliklarida mahsulot ishlab chiqarish diversifikatsiyasini oshirishning oziq-ovqat iste'moli diversifikatsiyasiga ta'siri baholangan va tahlil qilingan. Bu tahlillar natijasida respublikadagi tomorqa xo'jaliklarida mahsulot ishlab chiqarishni diversifikatsiya qilish, tomorqadan samarali foydalanish uchun dasturlar ishlab chiqilishi, aholini to'yimli va sog'lom ovqatlanishga o'rgatish, shuningdek, oiladagi ishlab chiqarish imkoniyatlaridan unumli foydalanish uchun takliflar berilgan. Tadqiqot natijalarining amaliy ahamiyati shundaki, oziq-ovqat iste'molini yaxshilash bo'yicha davlat dasturlarini ishlab chiqish, tegishli vazirlik va tashkilotlarda sohaga oid huquqiy-me'yoriy asoslarni takomillashtirishga ko'mak beradi. Shuningdek, "Tomorqa xo'jaliklarida mahsulot ishlab chiqarish diversifikatsiyasi darajalarini oshirish" bo'yicha uslubiy qo'llanma va oliy ta'lim muassasalarida "Qishloq xo'jalik iqtisodiyoti", "Oila xo'jaligi iqtisodiyoti" hamda "Xulq-atvor iqtisodiyoti" fanlarining dasturlarini takomillashtirilishida foydalanish tavsiya etiladi.

#### **Tadqiqot natijalarining joriy qilinishi.**

Tomorqa xo'jaliklarida mahsulotlar ishlab chiqarishni diversifikatsiyalashning aholi ovqatlanishiga ta'sirini baholash bo'yicha olingan ilmiy taklif va amaliy tavsiyalar asosida:

tomorqa xo'jaliklarida o'simlikchilik mahsulotlarini ishlab chiqarish diversifikatsiyasi "quyi" ( $1 < HHI \leq 0,7$ ), "o'rta" ( $0,7 \leq HHI < 0,4$ ) va "yuqori" ( $0,4 \leq HHI < 0$ ) mezonlar bo'yicha tomorqa xo'jaligi boshqaruvini maqbullashtirish taklifi Samarqand viloyati qishloq xo'jaligi boshqarmasi tomonidan 2023-yil 28-martda tasdiqlangan uslubiy qo'llanmasi va O'zbekiston Respublikasi Qishloq xo'jaligi vazirligi tomonidan amaliyotga joriy etilgan (O'zbekiston Respublikasi Qishloq xo'jaligi vazirligining 2024-yil 5-iyuldagi 06/27-06/1053-sonli ma'lumotnomasi). Kiritilgan takliflar asosida Samarqand viloyati qishloq xo'jaligi boshqarmasi tizim tashkilotlari tomonidan Bulung'ur, Ishtixon, Jomboy, Oqdaryo, Pstdarg'om, Payariq, Qo'shrabot, Tayloq va Urgut tumanlaridagi tomorqa xo'jaliklarida qishloq xo'jaligi mahsulotlarini ishlab chiqarishni diversifikatsiyalash darajasini oshirish chora-tadbirlari rejasi ishlab chiqilgan. Shu bilan birga, taklif qilinayotgan me'zonlar tumanlardagi tegishli tashkilotlar tomonidan barqaror ishlab chiqarish amaliyotlarini joriy qilishda baholash ko'rsatkichi sifatida foydalanib boshlagan;

oziq-ovqat xavfsizligiga davlat yordamini kuchaytirishda (barqaror qishloq xo‘jaligi mahsulotlari yetishtirish, suv va energiya ta‘minotidan barqaror foydalanish, iqlimdan oqilona foydalanish, qayta ishlash va saqlash uchun maqbul ishlab chiqarish amaliyotlari hamda hosildan keyingi yo‘qotishlarni kamaytirishga qaratilgan) subsidiyalar ajratish bo‘yicha yagona siyosat olib borilishining maqsadga muvofiqligi taklifi O‘zbekiston Respublikasining oziq-ovqat xavfsizligi va sog‘lom oziqlanishni ta‘minlashning 2030-yilgacha mo‘ljallangan strategiyasini ishlab chiqishda foydalanilgan (O‘zbekiston Respublikasi Qishloq xo‘jaligi vazirligining 2024-yil 5-iyuldagi 06/27-06/1053-sonli ma‘lumotnomasi). Mamlakatda oziq-ovqat xavfsizligini ta‘minlashda subsidiyalar orqali qo‘llab-quvvatlash siyosati tomorqa xo‘jaliklari tomonidan mahsulot ishlab chiqarish, ularga xom-ashyo ta‘minoti, daromad stabilligini ta‘minlashda narxlarni subsidiyalashda, zamonaviy suv tejamkor texnologiyalarni joriy qilish va qishloq xo‘jaligiga raqamli texnologiyalarni joriy qilishni subsidiyalash takliflari kiritilgan. Taklifning joriy etilishi tomorqa xo‘jaliklarda mahsulot ishlab chiqarish diversifikatsiyasining oshirilishi uy xo‘jaliklarida ovqatlanish xilma-xilligini o‘rtacha 7-8 tagacha oshirishga xizmat qiladi.

12 guruhdagi oziq-ovqat mahsulotlarini tomorqa xo‘jaliklarida ishlab chiqarishning 2028-yilgacha prognoz parametrlari bo‘yicha berilgan takliflar O‘zbekiston Respublikasi Qishloq xo‘jaligi vazirligining istiqboldagi rejalariga kiritilgan (O‘zbekiston Respublikasi Qishloq xo‘jaligi vazirligining 2024-yil 5-iyuldagi 06/27-06/1053-sonli ma‘lumotnomasi). Natijalarga ko‘ra, 2028-yilda 2022-yilga nisbatan ildizmevalarni ishlab chiqarish 1,2, sabzavot 1,1, meva va rezavorlar 1,1, go‘sh va go‘sh mahsulotlari 1,2, sut va sut mahsulotlari 1,2, tuxum 1,4, baliq 1,4, dukkakli mahsulotlar 1,1, asal 1,2 va ziravorlar 1,4 barobar ko‘p ishlab chiqarishi hisoblab topildi. Don kabi moyli ekinlarni ishlab chiqarish ko‘rsatkichi pasayish tendensiyasida bo‘lib, 2028-yilga borib don yetishtirish 53,6 ming tonnaga, moyli ekinlar mahsulotlarini ishlab chiqarish esa 470,8 tonnaga kamayishi prognoz qilingan. Mazkur prognoz natijalari Samarqand viloyatida tomorqalarda yetishtirilayotgan qishloq xo‘jalik mahsulotlarini ishlab chiqarishini rejalashtirishida qo‘llash hisobga olingan;

qishloq joylarida uy xo‘jaliklariga “o‘z-o‘zini ta‘minlash-zahira-realizatsiya” bo‘yicha tartibga solingan raqamli dasturlash ta‘minotini joriy qilish markazini mahallalarda tashkil qilish orqali barqaror oziq-ovqat ta‘minotiga erishishga qaratilgan rejali-iqtisodiy mexanizm ishlab chiqilgan va O‘zbekiston Respublikasi Qishloq xo‘jaligi vazirligi tomonidan amaliyotga joriy qilingan (O‘zbekiston Respublikasi Qishloq xo‘jaligi vazirligining 2024-yil 5-iyuldagi 06/27-06/1053-sonli ma‘lumotnomasi). Mazkur yondashuvlar ommaviy axborot vositalari, raqamli texnologiyalar, ijtimoiy infratuzilmalar va turli shakldagi pazandalik kurslari rolini kuchaytirish hamda oilada oziq-ovqat iste‘molining raqamli menyusini ommalashtirishni o‘z ichiga olgan. Mahallalarda tashkil qilinishi tavsiya qilingan mahsus markaz Samarqand viloyatining Bulung‘ur, Payariq va Tayloq tumanlarida bittadan tanlab olingan mahallalarda pilot tarzida joriy qilindi. Mexanizmning joriy qilinishi natijasida qishloq oilalarida iste‘mol diversifikatsiya darajasi 9,6% oshgan, oilaning oziq-ovqat (qishloq xo‘jalik) mahsulotlari xarajatlari 12% kamayishiga olib kelgan.

**Tadqiqot natijalarining aprobatsiyasi.** Dissertatsiya tadqiqotining natijalari 12 ta, jumladan 10 ta xalqaro va 2 ta respublika ilmiy-amaliy konferensiyalarida muhokamadan o'tkazilgan.

**Tadqiqot natijalarining e'lon qilinganligi.** Tadqiqot mavzusi bo'yicha jami 18 ta ilmiy ish, shulardan, O'zbekiston Respublikasi Oliy attestatsiyasi komissiyasi tomonidan doktorlik dissertatsiyalariga asosiy ilmiy natijalarni chop etish tavsiya etilgan mahalliy nashrlarda 3 ta va 1 ta xalqaro jurnalda maqolalar chop etilgan.

**Dissertatsiyaning tuzilishi va hajmi.** Dissertatsiya ishi kirish, uchta bob, xulosa, foydalanilgan adabiyotlar ro'yxatidan hamda ilovalar bilan birga 130 sahifada bayon etilgan bo'lib, shundan: 19 ta jadval, 19 ta rasmdan iborat.

## DISSERTATSIYANING ASOSIY MAZMUNI

Dissertatsiyaning **kirish** qismida mavzuning dolzarbligi, muammoning o'rganilganlik darajasi, uning maqsadi va vazifalari, ilmiy yangiligi, amaliy ahamiyati bayon etilgan, tadqiqot natijalarining ishonchliligi, tatbiq etilganligi, aprobatsiyasi, e'lon qilinganligi hamda uning tarkibiy tuzilishi va hajmi bo'yicha ma'lumotlar keltirilgan.

Dissertatsiyaning **“Tomorqa xo'jaliklarida mahsulotlar ishlab chiqarishni diversifikatsiyalashning aholi ovqatlanishiga ta'sirini nazariy asoslash”** deb nomlangan birinchi bobida tomorqa xo'jaliklari mahsulotlar ishlab chiqarishi diversifikatsiyasining mazmun-mohiyati, ilmiy-uslubiy asoslari, diversifikatsiya darajasini o'lchash va hisoblashning afzal usullari ochib berilgan. Shuningdek, tomorqa xo'jaliklarining xususiyatlari o'rganilgan hamda qishloq xo'jaligi mahsulotlari yetishtirishni diversifikatsiyalash bo'yicha xorij tajribalarining ahamiyatli jihatlari yoritib berilgan.

Monografik tadqiqotlarda qishloq xo'jaligi korxonasida diversifikatsiyaning uch bosqichli jarayon ekanligi keltirilgan. Birinchi bosqichda monokulturadan voz kechishni o'z ichiga olgan oziq-ovqat ekinlarini yetishtirish orqali samaradorlik darajasini oshirish belgilangan. Ikkinchi bosqichda xo'jaliklar bir nechta korxonalarga ega bo'lib, ular yilning barcha mavsumida sotishlari mumkin bo'lgan turli mahsulot yetishtirishni nazarda tutadi. Yakuniy bosqichda xo'jalikda bir ekindan (yoki chorvachilikdan) ko'proq ekinlar (yoki chorvachilik) yetishtirishga o'tishi yoki o'simlikchilik va chorvachilikni aralash tarzda olib borish aniq bo'ldi.

Mavzuni nazariy o'rganishlarimizdan kelib chiqib, tomorqa xo'jaliklarida ishlab chiqarishni ***diversifikatsiyalash*** – *“ixtiyorida mavjud resurslardan foydalanib, ehtiyojlarini hisobga olgan holda mahsulotlarni turli kombinatsiyalarda ishlab chiqarish”* deb ta'riflandi.

Qishloq xo'jaligida ishlab chiqarish diversifikatsiyasi darajasini aniqlashning bir qator usullari mavjud. Ushbu usullarning har biri tegishli baholash indekslarini qo'llaydi. Bugungi kunda diversifikatsiya darajasini aniqlash indeksleri soni ko'p bo'lsa-da, iqtisodiy tahlillarda Simpson indeksi, Entropiya indeksi, Shannon indeksi, Ogive indeksi va Herfindahl-Hirshman indeksleri(HHI) ko'proq qo'llanilib kelinmoqda. Mazkur indekslarning barchasi bir-biriga yaqin natijalar ko'rsatadi.

Ushbu indekslarning har biri murakkablik darajasi, hisoblash hamda talqin qilish qulayligi nuqtai nazaridan o'zining afzalliklari va cheklovlariga ega. Quyidagi 1-jadvalda yuqorida keltirib o'tilgan indekslarning hisoblash formulasi, uning qo'llanilishi va alohida ajratilgan o'ziga xos jihatlari taqqoslangan.

Ushbu indekslarning o'ziga xos bo'lgan jihatlari tomorqa xo'jaliklarining mahsulot ishlab chiqarish diversifikatsiyasi darajasini baholashda HHI indeksi boshqa indeksarga qaraganda bir qator afzalliklarga mavjudligini ko'rsatdi. HHI hisoblanishining soddaligi va aniqligi bilan kutilayotgan natijani ishonchligini oshiradi.

HHI indeksini birinchi marta AQShda adliya departamenti va federal savdo komissiyasi kabi monopoliyaga qarshi kurashish masalalari bilan shug'ullanuvchi hukumat muassasalari ma'lum bir sohada bozor konsentratsiyasi o'zgarishini baholashda ushbu indeksdan foydalangan<sup>6 7</sup>.

Hozirda ilmiy tadqiqotlar ushbu indeks qishloq xo'jaligida ekinlar va chorvachilik diversifikatsiyasini aniqlashda keng qo'llanilmoqda. Sababi ushbu indeksni hisoblashda dehqonlar barcha turdagi ekinlarni yetishtirishni talab qilmaydi.

Diversifikatsiya darajasi oshgani sayin u asta-sekin kamayadi. Umumiy konsentratsiya mavjud bo'lganda 1 qiymatini oladi va diversifikatsiya darajasi oshgani sayin nolga intiladi.

HHI formulasidagi kuzatilayotgan to'plamdagi ekin yoki chorva hayvoni turi –  $i$ ,  $P_i$  – kuzatilayotgan ma'lum vaqtda  $i$  ekin maydoni yoki chorva hayvonlarining jamiga nisbatan ulushini anglatadi.

HHI boshqa indekslarga qaraganda juda kam sonli kuzatilayotgan to'plam ma'lumotlarida ham aniq natijalarni ko'rsata oladi<sup>8</sup>. Tadqiqotimizning konseptual asosida tomorqa xo'jaliklari ishlab chiqarishini diversifikatsiyalashning uy xo'jaliklari ovqatlanishiga ta'sirini o'rganishda ekinlar va chorvachilik diversifikatsiyasi indekslari hamda oziq-ovqat xavfsizligi ko'rsatkichlari, boshqa iqtisodiy, ijtimoiy-demografik omillar hisobga olingan. Uy xo'jaliklari darajasidagi oziq-ovqat xavfsizligi "Uy xo'jaliklari oziq-ovqat iste'moli xilma-xilligi ko'rsatkichi (Household dietary diversity score)" orqali ifodalandi.

Tomorqa xo'jaliklari diversifikatsiyasini uy xo'jaliklari ovqatlanishga ta'sirini baholash Puasson regressiya modeli orqali empirik tahlil qilindi. So'nggi bosqichda, tomorqa xo'jaliklari tomonidan ishlab chiqarilayotgan mahsulotlar istiqbol prognozlarini ARIMA modeli yordamida so'ngi besh yildagi ko'rsatkichlar dinamikasini hisoblashning nazariyasi va metodologiyasi ko'rib chiqildi.

Xorij olimlarining olib borgan ilmiy tadqiqotlari natijalari o'rganilganda, kichik xo'jaliklarda mahsulotlar ishlab chiqarishni diversifikatsiyalash uy xo'jaliklarining ovqatlanish sifati, ya'ni oziq-ovqat iste'moli diversifikatsiyasining oshishiga fan-texnika yutuqlarini qo'llash bo'yicha tajribalar taqqoslama tahlil qilingan. Tomorqa xo'jaliklari ishlab chiqarishini diversifikatsiyalash uy xo'jaliklari ovqatlanish xilma-xilligini oshirishini ta'minlashi nazariy jihatdan asoslangan.

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<sup>6</sup> Hirschman, A. O. (1964). The paternity of an index. *The American economic review*, 54(5), 761-762.

<sup>7</sup> Hirschman, A. O. (1945). *National Power and the Structure of Foreign Trade*. Berkeley & Los Angeles, CA: University of California Press. Hirschman National Power and the Structure of Foreign Trade 1945.

<sup>8</sup> Hou, M., Qing, P., & Min, S. (2021). Multiple indicators of household dietary diversity in rural China: Effects of income and dietary knowledge. *Nutrition*, 91, 111406.

Tomorqa xo'jaliklarida ishlab chiqarish diversifikatsiyalarini aniqlash indekslarini taqqoslash<sup>9</sup>

Diversifikatsiya indeksi	Indeksning amaliyotdagi funksiyasi	Formulasi	Indeksning qo'llanilishi va uning o'ziga hos jihatlari
Simpson indeksi	Mavjud turlar sonini, har bir turning nisbiy ko'pligini hisobga olgan xolda xilma-xillikni o'lchaydi.	$SDI = 1 - \sum_{i=1}^N (P_i)^2$	Simpson indeksi odatda ekologik xilma-xilliklarni hisoblashda qo'llaniladi. Ekologiyada u mavjud o'simlik va hayvon turlarining sonini, shuningdek, har bir turning ko'pligini hisobga oladi.
Entropiya indeksi	Turli guruhlar o'rtasida taqsimotning tenglik darajasini o'lchaydi.	$H = \frac{1}{1-q} \ln\left(\sum_{i=1}^R p_i^q\right)$	Entropiya indeksi diversifikatsiya miqdorini aniqlashda qo'llanilib, indeks diversifikatsiya darajasini baholashda standart o'lchamlarni bermaydi.
Shannon indeksi	Ma'lumotlar to'plamidan tasodifiy olingan tur identifikatorini bashorat qilishdagi noaniqlikni aniqlaydi.	$H = - \sum P_i * \ln P$	Shannon indeksi to'plamidan tasodifiy olingan turlar ko'rsatkichlarini bashorat qilishdagi noaniqlikni aniqlaydi. Diversifikatsiyani aniqlashda indeksning to'plam ma'lumotlarining hajmi bilan bog'liq kamchiliklari kuzatiladi.
Ogiv indeksi	Tashkilotning diversifikatsiyalashish miqdorini o'lchaydi.	$OI = \frac{\sum_{i=1}^n [P_i - (\frac{1}{N})]^2}{(\frac{1}{N})}$	Ogiv indeksi ham Herfindahl Hirshman Indeksi kabi konsentrasiya darajasini baholashga qo'l keladi. Ammo indeksning kamchiliklaridan biri kuchli konsentrasiya va diversifikatsiyada yuqori chegara nolga yaqinlashadi.
Margalef indeksi	Turlarning o'rtasida xilma-xillik darajasini aniqlaydi.	$MI = (S - 1) \ln P$	Margalef indeksi ekinlar sonining qay darajada ko'pligini baholaydi. Mazkur indeksning turlarning xilma-xilligiga qaratilgan bo'lib, natija xilma-xillik darajasiga ko'proq bog'liqlikda bo'ladi.
Herfindahl Hirshman indeksi (HHI)	Turlar hajmini o'lchash va ular o'rtasidagi farqlarni ko'rsatadi.	$HHI = \sum_{i=1}^N (P_i)^2$	Herfindahl Hirshman indeksi iqtisodiy tahlillarda keng qo'llaniladigan indeks hisoblanib, u hisoblanish funksiyasiga ko'ra juda oddiy. Indeksni boshqa indeksarga nisbatan solishtirganda u diversifikatsiya darajasini hisoblashda turli chalkashliklardan qochadi.

<sup>9</sup> Muallifning monografik kuzatuvlari asosida tuzilgan.

Xulosa qilib aytganda, nazariy tushunchalar, xorij tajribalari, tomorqa xo‘jaliklarida diversifikatsiyani oshirish oziq-ovqat xavfsizligi ta‘minlanishiga olib kelishini tasdiqladi. Shu boisdan ushbu amaliyotlarni Samarqand viloyati tomorqa xo‘jaliklari misolida tadbiq etish, ilmiy va amaliy jihatdan asoslash muhim hisoblanadi.

Dissertatsiyaning **“Tomorqa xo‘jaliklarida ishlab chiqarish diversifikatsiyasi hamda qishloq hududlarida ovqatlanish xilma-xilligining hozirgi holati va rivojlanish dinamikasi”** deb nomlangan ikkinchi bobida tadqiqotning ilmiy-uslubiy, amaliy ishlanma hamda natijalari asosida Samarqand viloyatida qishloq xo‘jaligi oziq-ovqat mahsulotlari ishlab chiqarishining bugungi holati va ko‘rsatkichlari dinamikasi tahlil qilingan, Samarqand viloyati tomorqa xo‘jaliklari diversifikatsiya darajasi toifalarga ajratib o‘rganilgan, ular asosida xulosa va takliflar ishlab chiqilgan.

Samarqand viloyatida bugungi kungacha qishloq xo‘jaligida oziq-ovqat mahsulotlari yetishtirish hajmi va tarkibi ijobiy tomonga o‘zgargan bo‘lib, 2021-yilda qishloq xo‘jaligi oziq-ovqat mahsulotlarining asosiy qismi, ya‘ni 59 foizini dehqon hamda tomorqa xo‘jaliklari yetishtirganligi aniqlandi.

Tadqiqotimizda asosiy agrooziq-ovqat mahsulotlari ishlab chiqaruvchi tomorqa xo‘jaliklarining uy xo‘jaliklari ovqatlanishiga ta‘sirini o‘rganish masalalariga e‘tibor bergan holda, 2021-yil yanvar-mart oylari davomida Samarqand viloyatining 320 ta tomorqa xo‘jaliklaridan olingan so‘rovnoma ma‘lumotlari asosida ularning ekinlar va chorvachilik diversifikatsiyasi darajalari Herfindahl Hirshman indeksidan foydalanib hisoblab chiqildi.

Tomorqada mahsulot ishlab chiqarish oziq-ovqat iste‘moli tovarlarining katta qismini tashkil qilishini inobatga olib, tadqiqotimizda o‘simlikchilik va chorvachilik diversifikatsiyalarining yuqori, o‘rta va past darajalari mezonlari ishlab chiqilgan.

Natijalariga ko‘ra, ekinlar diversifikatsiyasi HHI indeksi qiymati 0,4 dan boshlab kamayganda yuqori, 0,7 gacha o‘rta va 0,7 dan kam bo‘lganda past deb, chorvachilikda diversifikatsiya indeksi 0,45 dan boshlab kamayganda yuqori, 0,75 gacha o‘rta va 0,75 dan kam bo‘lganda past deb topildi (2-3-jadvallar).

Diversifikatsiya darajasi indeksi aholining oziq-ovqat iste‘moliga bevosita ta‘sir ko‘rsatadi. O‘rganilgan ma‘lumotlarga asosida aholining oziq-ovqat iste‘moli mahsulotlarining 51 foizi sotib olingan mahsulotlar hisobiga to‘g‘ri kelsa, qolgan 49 foizi tomorqada yetishtirilgan mahsulotlar hissasiga to‘g‘ri keladi.

Tomorqa xo‘jaliklari mahsulotlar ishlab chiqarish diversifikatsiyasi uy xo‘jaliklari ovqatlanish xilma-xilligiga ta‘siri *Puasson(Poisson) regressiya modeli* orqali baholandi. Empirik tahlillar STATA 15 dasturiy ta‘minotidan foydalanib amalga oshirildi.

Regressiyani amalga oshirishdan oldin o‘zgaruvchilarni multikollinearlik darajasi (VIF) testi amalga oshirilgan va o‘zgaruvchilar o‘rtasida multikollinearlik yo‘qligi aniqlangan. Shuningdek, regression tahlilni amalga oshirishdan oldin, modelning qo‘yilayotgan gipotezaga statistik jihatdan mosligi testlar (Deviance muvofiqlik va Pearson muvofiqlik) orqali tekshirib ko‘rilgan. Modelning parametrlari qo‘yilgan gipotezaga mos kelishi yuqori statistik aniqlikda isbotlangan.

Regressiya tahlili natijasida Samarqandda uy xo‘jaliklarida oziq-ovqat mahsulotlari iste‘moli diversifikatsiya ko‘rsatkichining o‘zgarishiga tomorqada ekinlar va chorvachilik ishlab chiqarish diversifikatsiyasi indeksi yuqori statistik aniqlikda ijobiy ta‘sir ko‘rsatishi aniqlangan.

## 2-jadval.

Tomorqa xo'jaliklari ekinlar diversifikatsiya darajalarining mezonlari<sup>10</sup>

Toifalar	Ekinlar diversifikatsiyasi					
	(HHI <sub>e</sub> ) <sup>*</sup>	Kkal <sup>***</sup>				
		1 - guruh	2 – guruh	3 - guruh	4 - guruh	5 - guruh
<b>Yuqori</b>	$HHI_e \leq 0.4$	> 960,4	> 1097,6	> 1293,6	> 1509,2	> 1646,4
<b>O'rta</b>	$0.4 < HHI_e \leq 0.7$	960,4 - 705,6	1097,6 – 823,2	1293,6 – 980	1509,2 – 1117,2	1646,4 - 1470
<b>Past</b>	$HHI_e > 0.7$	705,6 >	823,2 >	980 >	1117,2 >	1470 >

\*HHI<sub>e</sub> – Ekinlar diversifikatsiya indeksi (Herfindahl Hirshman Index); \*\*HHI<sub>ch</sub> – Chorva mahsulotlari diversifikatsiyasi (Herfindahl Hirshman Index); \*\*\*Kkal – Iste'mol kaloriyasi (Kilocalories)

## 3-jadval.

## Tomorqa xo'jaliklari chorvachilik diversifikatsiya darajalarining mezonlari

Toifalar	Chorvachilik diversifikatsiyasi					
	(HHI <sub>ch</sub> ) <sup>**</sup>	Kkal				
		1 – guruh	2 – guruh	3 - guruh	4 - guruh	5 - guruh
<b>Yuqori</b>	$HHI_{ch} \leq 0.45$	> 240,1	> 274,4	> 323,4	> 377,3	> 411,6
<b>O'rta</b>	$0.45 < HHI_{ch} \leq 0.75$	240,1 – 176,4	274,4 – 205,8	323,4 - 245	377,3 – 279,3	411,6 – 367,5
<b>Past</b>	$HHI_{ch} > 0.75$	176,4 >	205,8 >	245 >	279,3 >	367,5 >

<sup>10</sup> Muallif tadqiqotlari asosida tuzilgan.

Indeks natijasini nol qiymatga yaqinlashishi ishlab chiqarishning diversifikatsiyalashib borishini, aksincha esa konsentratsiyalashuvini anglatadi. Shunday ekan, tahlil natijasiga ko'ra, tomorqada o'simlikchilik mahsulotlarini ishlab chiqarish diversifikatsiya indeksining bir birlikka pasayishi oziq-ovqat mahsulotlari iste'moli diversifikatsiyasi ko'rsatkichini 0,84 koeffitsiyentga oshirishi hamda chorvachilik mahsulotlarini ishlab chiqarish indeksining bir birlikka pasayishi esa 0.15 koeffitsiyentga oshirishini ko'rsatgan.

Shu bilan birgalikda, iste'mol diversifikatsiyasiga tomorqa yer maydonining bir sotixga oshishi, tomorqa xo'jaligi boshlig'i ma'lumotining oshib borishi, pazandalik o'quv kurslarida ishtiroki, pazandalikka oid internet manbalaridan foydalanish va har bir pazandalik teledasturlari sonining oshib borishi mos ravishda 0,004, 0,062, 0,098 va 0,486 koeffitsiyentga ortishini ko'rsatgan.

Ammo, oila vakillarining xorijda ishlashi (xorijdan pul o'tkazmalari kelishi), bozorgacha bo'lgan yo'lning har bir km ga oshib borishi, agro-vet dorixonalariga bo'lgan masofaning ortib borish iste'mol diversifikatsiyasining mos ravishda 0,16, 0,013 va 0,147 koeffitsiyentga kamayishiga olib kelishi isbotlangan.

Binobarin, oila a'zolari jon boshiga tushadigan daromadning oshib borishi va xonadondagi avtomobilning mavjudligi ijobiy marjinal ta'sirda bo'lsa-da, yuqori statistik aniqligini ko'rsatgan. Statistik ishonchlilik darajasi yuqori bo'lmasa-da, uy bekasi yoshining har bir yilga ortib borishi, tomorqada ishlab chiqarish diversifikatsiyasiga salbiy, ammo oiladagi ro'zg'or tajribasi esa ijobiy ta'sirda bo'lishi isbotlangan. Quyida keltirilgan 4-jadvalda so'rovnoma ma'lumotlariga asoslanibuy xo'jalik-lari avqatlanish xilma-xilligi omillarning marjinal ta'siri keltirilib o'tildi (4-jadval).

#### 4-jadval.

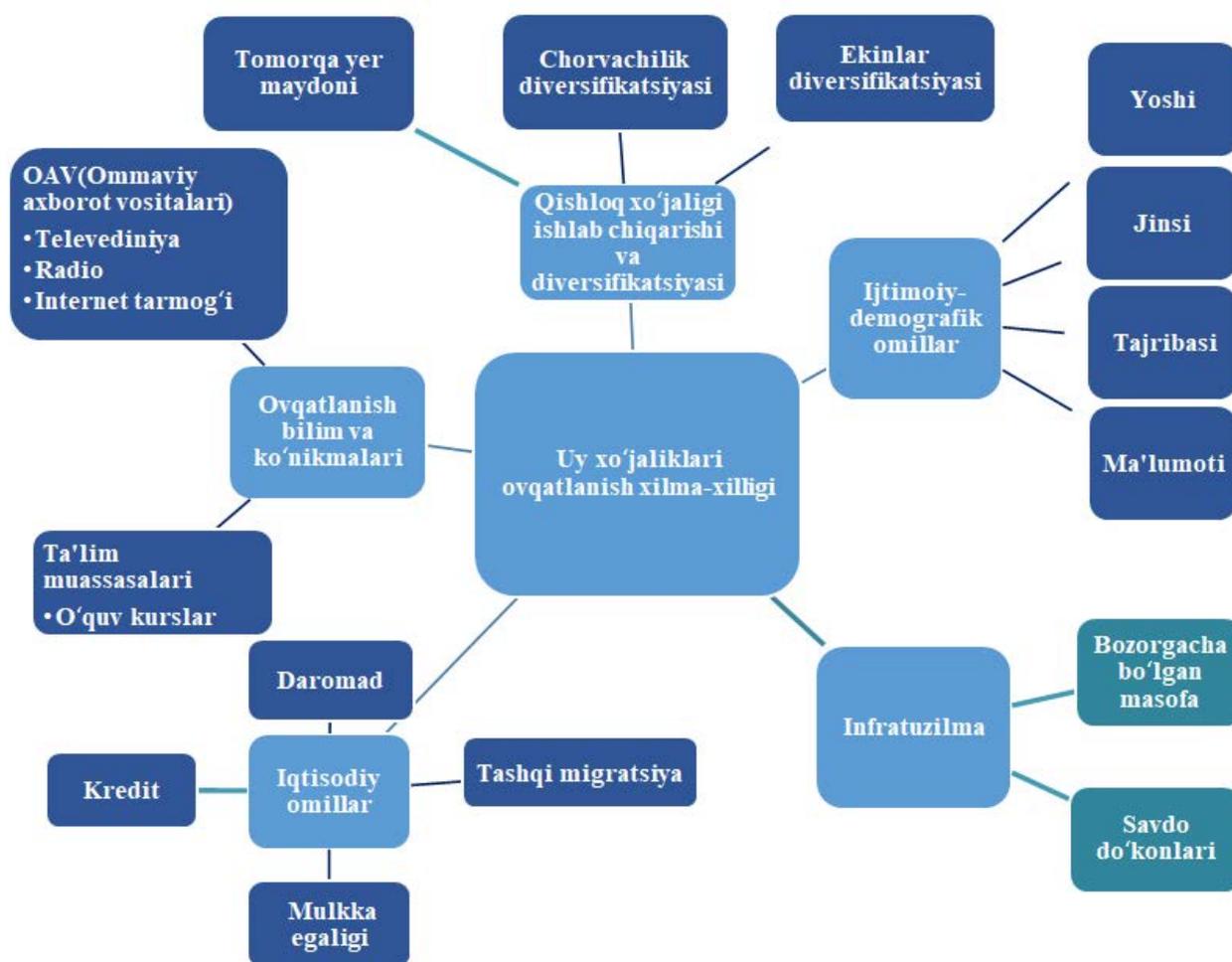
#### Puasson (Poisson) regressiya tahlili natijalari<sup>11</sup>

Oziq-ovqat mahsulotlari iste'moli diversifikatsiyasi	Marjinal ta'sir (Standart og'ish)		
TDI (ekinlar)	.844 (.111) ***		
TDI (chorvachilik)	.159 (.07) **		
Bir kishiga to'g'ri keladigan yillik daromad, ln.	.006 (.009)		
Kredit	-.04 (.04)		
Xorijda oila a'zosining ishlashi	-.16 (.071) **		
Avtomobil mavjudligi	.026 (.031)		
Bozorgacha bo'lgan yo'l, km	-.013 (.006) **		
Agro-vet dorixona mavjudligi	-.147 (.054) ***		
Tomorqa yer maydoni, sotix	.004 (.001) ***		
Uy bekasining yoshi, ln.	-.11 (.073)		
Uy bekasining ish tajribasi, ln.	.048 (.03)		
Uy bekasining ma'lumoti	.062 (.037) *		
Pazandalik o'quv kurs	.094 (.054) *		
Pazandalik internet manbalari	.098 (.038) ***		
Pazandalik teledasturlari	.486 (.038) ***		
O'zgarma qiymat	1.593 (.329) ***		
Mean dependent var	3.449	SD dependent v	1.502
Pseudo r-squared	0.112	Number of obs	320
Chi-square	981.105	Prob > chi2	0.000
Akaike crit. (AIC)	1066.837	Bayesian crit. (BIC)	1126.827

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

<sup>11</sup> Muallif tadqiqotlari asosida tuzilgan.

Tahlillardan olingan natijalar tomorqada mahsulot ishlab chiqarish diversifikatsiyasi oziq-ovqat iste'mol diversifikatsiyasini ortishga olib kelishini ko'rsatdi. Shu bilan birga, oziq-ovqat iste'moli diversifikatsiyasining oshishiga, pazandalik bo'yicha uy bekalarining bilim olishi, o'quv kurslarida ishtirok etishi, ular uchun internetdan foydalanish imkoniyatlarining oshishi va pazandachilik to'g'risidagi teledasturlari dastlab tomorqa keyin iste'mol diversifikatsiyasining ortishi ilmiy isbotlangan. Shu bilan birga qishloq xo'jaligi ishlab chiqarishi va diversifikatsiyasi, iqtisodiy, ijtimoiy-demografik omillar, infratuzilma, ovqatlanish bilim va ko'nikmalari kabi eng asosiy omillarni inobatga olib, uy xo'jaliklari ovqatlanish xilma-xilligining konseptual modeli ishlab chiqildi (1-rasm).



**1-rasm. Uy xo'jaliklari ovqatlanish xilma-xilligiga omillarning marjinal ta'sirini baholashning konseptual modeli<sup>12</sup>**

Yuqoridagi natijalar uy xo'jaliklarida ovqatlanish xilma-xilligining oshishida tomorqa xo'jaliklarida oziq-ovqat xavfsizligiga davlat yordamini kuchaytirishda (barqaror qishloq xo'jaligi mahsulotlari yetishtirish, suv va energiya ta'minotidan barqaror foydalanish, iqlimdan oqilona foydalanish, qayta ishlash va saqlash uchun maqbul ishlab chiqarish amaliyotlari hamda hosildan keyingi yo'qotishlarni kamaytirishga qaratilgan) subsidiyalar ajratish bo'yicha yagona siyosat olib borilishining maqsadga muvofiqligi asoslandi.

<sup>12</sup> Muallif tadqiqotlari asosida tayyorlangan.

Dissertatsiya ishining **“Tomorqa xo‘jaliklarida oziq-ovqat mahsulotlari yetishtirish, qishloq aholisining ovqatlanish diversifikatsiyasini oshirish yo‘llari”** nomli uchinchi bobida Samarqand viloyatidagi tomorqa xo‘jaliklari mahsulotlari ishlab chiqarish hajmi 2028-yilgacha prognoz ko‘rsatkichlari ishlab chiqilgan hamda qishloq oilalari ovqatlanish xilma-xilligini oshirishning innovatsion yechimlari tadqiqot natijalariga ilmiy asoslanib topilgan.

Oziq-ovqat mahsulotlarini ishlab chiqarish, aholi iste‘molini to‘yimli va yetarli miqdorda ta‘minlash qishloq xo‘jaligi ishlab chiqarishining oldida turgan muhim masalalardan biri hisoblanadi. Qishloq xo‘jaligida mahsulot ishlab chiqarishiga to‘sqinlik qiladigan turli noaniqliklar, aholi sonining o‘sishi, iste‘molchilarning talabi, resurslarning holati va iqlim o‘zgarishi kabi bir qator omillarning ta‘sirida oziq-ovqat mahsulotlariga nisbatan umumiy talab darajasi o‘zgarib turadi. Vaholangki, oziq-ovqat mahsulotlari iste‘moli turlarining ortib borishi, aholini ovqatlanish sifatini oshishiga, vitaminlarga boy mahsulot iste‘molini ortishiga olib keladi.

Samarqand viloyatidagi tomorqa xo‘jaliklarida 12 ta oziq-ovqat mahsulotlari guruhlarining ishlab chiqarish hajmi 2028-yilgacha prognozi ARIMA modeli orqali hisoblab topilgan.

Prognozlashtirishni amalga oshirishda tahlil uchun qo‘llanilayotgan ma‘lumotlarga muvofiq bo‘lgan statistik modelni tanlashda vaqt seriyalarini statsionarligi Kengaytirilgan Dikki-Fuller testi orqali tekshirildi. Tomorqa xo‘jaliklarida 12 ta oziq-ovqat mahsulotlari prognozlari uchun mos bo‘lgan alohida modellar tanlab olindi. Natijalar shuni ko‘rsatdiki, 2028-yilga borib Samarqand viloyatidagi tomorqa xo‘jaliklarida dukkakli don ishlab chiqarish 5945,1 tonna, o‘sib borish trendi o‘rtacha 98,8 ga; tuxum ishlab chiqarish 1079,2 mln. dona, o‘sib borish trendi 47,6 ga; sut va sut mahsulotlari 1497,9 ming tonna, o‘sib borish trendi 34,4 ga; asal ishlab chiqarish 873,5 tonna, o‘sib borish trendi 21,9 ga; baliq 465,7 ming tonna, o‘sib borish trendi 21,3 ga; sabzavotlar 858,3 ming tonna, o‘sib borish trendi 16,8 ga; ildizmevalar (Kartoshka) 569,4 ming tonna, o‘sib borish trendi 13,9 ga; go‘sht va go‘sht mahsulotlari 301,1 ming tonna, o‘sib borish trendi 6,3 ga; meva va rezavorlar 209,6 ming tonna, o‘sib borish trendi 3,8 ga; ziravorlar 1,1 tonna, o‘sib borish trendi 0,04 ga tengligi aniqlangan. Mahsulotlar ichida don va yog‘ olinadigan mahsulotlarni ishlab chiqarish pasayishi kuzatilgan. Ular 2028-yilga borib mos ravishda 34,2 ming tonna va 470,8 tonnaga teng bo‘lgan. Ularning pasayib borish trendi don ishlab chiqarishda o‘rtacha 8,9 ga va yog‘ olinadigan ekinlarda esa 50,7 ga teng bo‘lishi kuzatilgan (5-jadval).

Xulosa qilib aytganda, prognoz hisobi natijalari 12 ta oziq-ovqat guruhiga kiruvchi mahsulotlardan 10 tasini ishlab chiqarish tendensiyasini ortishini ko‘rsatdi. Ammo bu ko‘rsatkichlar yetarli emas. Tomorqada mahsulot ishlab chiqarishni ko‘paytirishni rag‘batlantiruvchi usullarni qo‘llash maqsadga muvofiq bo‘ladi.

Tomorqa yerlaridan samarali foydalanish uchun tomorqa yer egalarini savodxonligini muntazam oshirib borish, oilani oziq-ovqat mahsulotlariga ega bo‘lishi va mikro elementlarga boy mahsulotlarni ko‘proq iste‘mol qilishlari uchun tomorqa xo‘jaliklari oilani sifatli, arzon, kafolatli, doimiy va diversifikatsiyalangan oziq-ovqat bilan ta‘minlaydi.

5-jadval.

Samarqand viloyati tomorqa xo‘jaliklarining oziq-ovqat mahsulotlarini ishlab chiqarish prognozi<sup>13</sup>.

Yillar	A	B	D	E	F	G	H	I	J	K	L	M
2012	158,0	314,8	536,9	130,6	192,3	891,5	324,0	138,0	1165,3	4328,3	513,3	0,4
2013	148,6	333,4	571,2	143,8	200,6	948,8	343,3	149,3	1345,9	4460,0	549,7	0,4
2014	149,8	369,8	525,1	154,3	212,0	1014,8	390,9	169,2	1244,1	4593,7	568,6	0,5
2015	166,9	393,1	691,4	165,9	225,1	1079,5	448,7	170,4	1188,3	4654,9	530,1	0,4
2016	172,7	433,4	742,1	184,6	237,3	1171,8	525,6	191,1	1050,9	4781,2	635,4	0,7
2017	174,3	455,8	757,1	189,4	234,5	1181,8	599,1	195,4	966,4	4889,3	674,1	0,6
2018	144,6	477,7	822,7	178,0	242,7	1155,4	617,3	215,7	910,3	4969,5	692,4	0,5
2019	87,7	479,6	733,1	167,5	237,6	1166,7	644,8	231,0	891,0	4989,0	683,7	0,7
2020	70,4	414,4	631,8	168,9	246,7	1199	707,5	293,8	876,3	5190,2	650,2	0,6
2021	70,5	416,1	637,2	169,8	252,9	1216,3	709,2	365,8	899,4	5234,9	714,9	0,9
2022	87,8	485,6	757,4	186,5	263,0	1291,6	793,2	329,0	775,0	5352,4	741,9	0,8
2023	78,9	499,6	774,2	190,3	269,4	1326,0	840,9	350,3	724,3	5451,2	763,8	0,8
2024	70,0	513,5	791,0	194,2	275,7	1360,4	888,5	371,6	673,6	5550,0	785,7	0,9
2025	61,0	527,5	807,9	198,0	282,1	1394,7	936,2	392,8	622,9	5648,8	807,7	0,9
2026	52,1	541,5	824,7	201,9	288,4	1429,1	983,9	414,1	572,2	5747,5	829,6	1,0
2027	43,2	555,4	841,5	205,7	294,7	1463,5	1031,5	435,4	521,5	5846,3	851,5	1,0
2028	34,2	569,4	858,3	209,6	301,1	1497,9	1079,2	456,7	470,8	5945,1	873,5	1,1
	$y = -8,9996x + 185,15$ $R^2 = 0,8272$	$y = 13,963x + 332,01$ $R^2 = 0,8608$	$y = 16,823x + 572,33$ $R^2 = 0,6296$	$y = 3,8522x + 144,09$ $R^2 = 0,7792$	$y = 6,34x + 193,3$ $R^2 = 0,9774$	$y = 34,375x + 913,5$ $R^2 = 0,9618$	$y = 47,667x + 268,87$ $R^2 = 0,9946$	$y = 21,278x + 94,94$ $R^2 = 0,9632$	$y = -50,693x + 1332,6$ $R^2 = 0,9544$	$y = 98,783x + 4265,8$ $R^2 = 0,9975$	$y = 21,933x + 500,61$ $R^2 = 0,9528$	$y = 0,0429x + 0,3316$ $R^2 = 0,8886$

A – don (ming tonna); B – ildizmevalar (ming tonna); D – sabzavotlar (ming tonna); E – meva va rezovorlar (ming tonna); F – go‘sh va go‘sh mahsulotlari (ming tonna); G – sut va sut mahsulotlari (ming tonna); H – tuxum (mln. dona); I – baliq (ming tonna); J – moyli ekinlar (tonna); K – dukkaklilar (tonna); L – asal (tonna); M – ziravorlar (tonna).

<sup>13</sup> Statistika ma’lumotlar asosida muallif hisob kitobi.

Qolaversa, oziq-ovqat mahsulotlari uchun xarajatlarni tejaydi, zahirani shakllantiradi va oziq-ovqat xavfsizligini ta'minlaydi. Shu bois, tomorqada diversifikatsiyani oshirishga olib keluvchi obyektiv yechimlarni topish dolzarblikni kasb etadi.

Tadqiqotimizda mazkur muammoga innovatsion yondashuvlar orqali yechim topilgan. Ushbu innovatsion yondashuv qishloq joylarida uy xo'jaliklariga "o'z-o'zini ta'minlash-zahira-realizatsiya" bo'yicha tartibga solingan raqamli dasturlash ta'minotini joriy qilish markazini mahallalarda tashkil qilish orqali barqaror oziq-ovqat ta'minotiga erishishga xizmat qiladi. Diversifikatsiyani oshirishga qaratilgan bunday yondashuvlar: ommaviy axborot vositalari, raqamli texnologiyalar, ijtimoiy infratuzilmalar va turli shakldagi kurslarning rolini kuchaytirish hamda oilada oziq-ovqat iste'molining raqamli menyusini ommalashtirish ni o'z ichiga olgan.

Har bir yondashuvlar bo'yicha quyidagicha natijalar aniqlangan:

1. *Ommaviy axborot vositalari.* Pazandalikni tadqiq qiluvchi maxsus teledasturlar, radio eshittirishlar, internet sahifalari va resurslari hamda gazeta va jurnallar sahifalarini o'z ichiga olgan vositalardan foydalanish va kuzatib borish hisobiga ularning oziq-ovqat mahsuloti iste'moli diversifikatsiya ko'rsatkichi ko'rsatuvni kuzatib bormaganlarga nisbatan 2,7 punktga, ishlab chiqarish diversifikatsiyasi indeksi esa dehqonchilik mahsulotlarini ishlab chiqarishda 0,18 va chorvachilikda 0,20 punktga ko'pligi aniqlangan;

2. *Raqamli texnologiyalar.* Uy bekalari internet tarmog'iga kirishi uchun smartfon, planshet, kompyuter va smart televizorlar kabi raqamli texnologiyalardan foydalanganlar bilan foydalanmaganlar o'rtasida mahsulot ishlab chiqarish va iste'mol diversifikatsiyalari solishtirilganda, dehqonchilik mahsulotlarini ishlab chiqarish diversifikatsiya indeksi 0,12 va chorvachilik mahsulotlarini ishlab chiqarish esa 0,24 punktga yuqori bo'lgan. Oziq-ovqat mahsulotlari iste'moli diversifikatsiyasi indeksi esa 2,2 barobarga yuqori bo'lganligi isbotlangan.

3. *Ijtimoiy infratuzilmalar.* Pazandalik sirlarini o'rganishda internet manbalaridan doimiy foydalanganlarda tomorqada dehqonchilik mahsulotlarini ishlab chiqarish diversifikatsiyasi indeksi 0,03, chorvachilikda 0.16 punktga yuqori bo'lgan oziq-ovqat iste'moli diversifikatsiyasi indeksi internet manbalaridan foydalanmaganlarga nisbatan ikki barobarga ko'proq bo'lgan.

Bu kabi kurslarda faqatgina ovqat tayyorlash usullari emas, balki oziq-ovqat mahsulotlarini tanlash, ularning makro-mikro nutriyentlarga boyligini hisobga olib, xilma-xil mahsulotlardan samarali foydalanish o'rgatiladi. Tadqiqotimizda tomorqa ishlab chiqarishi diversifikatsiyasi darajasi pazandalik kurslarida qatnashgan respondentlar bilan qatnashmaganlarga qaraganda yuqoriroq ekanligi kuzatilgan. Oilada oziq-ovqat iste'molining raqamli menyusini ommalashtirish. Oilaning kunlik, haftalik, oylik iste'moli to'g'risida "nima yeyish" yoki "nima ichish" haqida qaror qabul qilayotganda, ozuqa moddalariga boy variantlarni to'g'ri tanlash kerak.

Shu boisdan oilada kunlik, haftalik taomnomalarni tuzish muhim hamda murakkab vazifa bo'lib hisoblanadi. Oilalar uchun menyuslarni raqamlashtirish bu vazifani osonlashtirishga olib keladi. Tadqiqotimizdagi natijalarga ko'ra, qisman bo'lsa-da, raqamli menyu dasturlaridan foydalangan respondentlarda UOID (Uy xo'jaliklari oziq-ovqat iste'moli diversifikatsiyasi) ko'rsatkichi foydalanmaganlarga qaraganda ikki barobar yuqori bo'lganligi, dehqonchilik va chorvachilik diversifikatsiyasi indeksi mos ravishda 0,15 va 0,19 punktga ko'p bo'lganligi ilmiy asoslangan (6-jadval).

6-jadval.

**Tomorqa xo‘jaliklarida mahsulot ishlab chiqarish diversifikatsiyasini oshirishga innovatsion yondashuvlar ta’siri natijalari<sup>14</sup>.**

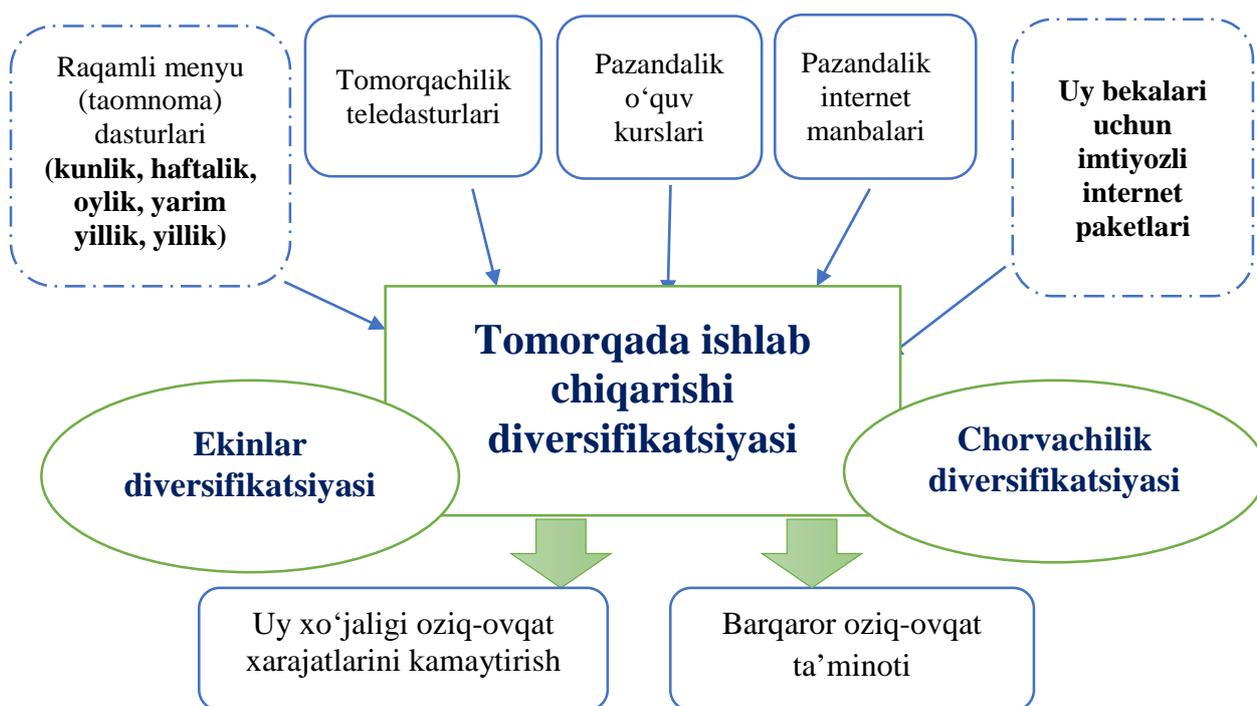
Ko‘rsatkichlar		Ommaviy axborot vositalari		Raqamli texnologiyalar		Ijtimoiy infratuzilmalar		Pazandalik kurslari		Ovqatlanish rejasi	
		1	0	1	0	1	0	1	0	1	0
So‘rovnomada berilgan javoblar		66	254	7	313	64	256	11	309	6	314
HHI	Dehqonchilik	0,21*	0,39	0,30*	0,48	0,28*	0,31	0,24*	0,31	0,28*	0,43
	Chorvachilik	0,66***	0,86	0,55*	0,81	0,65***	0,81	0,72*	0,79	0,62**	0,81
Uy xo‘jaliklari ovqatlanish xilma-xilligi ko‘rsatkichi		5,6***	2,9	6,6**	3,0	5,7***	2,8	5,0**	3,4	7,0**	3,4

Manba: So‘rovnoma ma’lumotlari asosida.

Guruhlar o‘rtasidagi farqlarni ajratish maqsadida t test qo‘llanilgan.

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

<sup>14</sup> Muallif tadqiqotlari asosida tuzilgan.



**2-rasm. O‘z-o‘zini ta‘minlash-zahira-realizatsiya” bo‘yicha tartibga solingan raqamli dasturlash ta‘minotini joriy qilish markazini mahallalarda tashkil qilish tartibi<sup>15</sup>.**

2-rasmda tomorqada ishlab chiqarish va oziq-ovqat iste‘moli diversifikatsiyasini oshirishda eksternal drayverlar sifatida uy bekalari raqamli menyu dasturlaridan foydalanishga o‘rgatish va adaptatsiya qilishi uchun pazandachilikning turli shakldagi (offlayn va onlayn) kurslari sillabuslarning rejalariga kiritish, ommaviy axborot vositalarida bu kabi platformalardan foydalanish bo‘yicha konsultatsiyalar berib borilishi unga qo‘shimcha tarzda infratuzilma imkoniyatlari (ayollar uchun maxsus internet paketlari)ni taklif qilish maqsadga muvofiqligi keltirilgan.

Qishloq aholisi ovqatlanish xilma-xilligini oshirishning innovatsion yechimlari sifatida taklif qilingan obyektiv yangilanishlar sohada ijobiy natijalarni olish kelishini ko‘rsatdi. Tomorqada mahsulot ishlab chiqarish diversifikatsiyasi va uy bekalari uchun namoyish qilinadigan qo‘shimcha teledastur hamda radio eshittirishlar, ayollar foydalanishlari uchun imtiyozli internet tariflari, pazandachilik kurslari (offlayn va onlayn) sillabuslariga onlayn menyu (taomnoma) dasturlarini o‘rgatishni joriy qilish, o‘zbeklar uchun onlayn menyu (taomnoma) dasturlarini tashkil qilish va ommalashtirish oziq-ovqat iste‘moli diversifikatsiyasini oshirishga xizmat qiladi.

## XULOSA

1. Dissertatsiyada tomorqa xo‘jaliklarining mahsulot ishlab chiqarish diversifikatsiyasini aholi ovqatlanishiga ta‘sirini baholashning nazariy asoslari va uslubi o‘rganildi hamda bu bo‘yicha amaliyotda qo‘llanilgan xorijiy strategiyalar

<sup>15</sup> Muallif tadqiqotlari asosida tuzilgan.

taqqoslandi. Natijada, tomorqa ishlab chiqarish diversifikatsiyasi to'g'risida tegishli nazariy ta'riflar berildi va o'ziga xos bo'lgan xususiyatlari ajratib ko'rsatildi. Tomorqada ishlab chiqarish diversifikatsiyasini aniqlashda 1945-yilda amerikalik iqtisodchi Orris S. Herfindahl va nemis iqtisodchisi Albert O. Hirshmanlar tomonidan ishlab chiqilgan Herfindahl-Hirshman Indeksidan foydalanish afzalligi aniqlandi. Shu bilan birgalikda, oziq-ovqat mahsulotlari iste'moli xilma-xilligiga tomorqa xo'jaliklarida mahsulot ishlab chiqarish diversifikatsiyasi hamda omillarning marjinal ta'sirini baholash maqsadida Puasson (Poisson) regressiya modeli tahlil uchun tanlandi, ushbu metodlar tadqiqotlarga mos ekanligi tavsifiya qilindi.

2. Samarqand viloyatida bugungi kungacha qishloq xo'jaligida oziq-ovqat mahsulotlari yetishtirish hajmi va tarkibi ijobiy tomonga o'zgargan bo'lsada, mahsulot ishlab chiqarishining joriy holati qoniqarli darajada emas. Mahsulot ishlab chiqarish sur'atining o'sib borishi ayrim mahsulotlarda aholi sonining o'sishiga nisbatan pastroq ekanligi aniqlandi.

3. Tadqiqotda ekinlar va chorvachilik diversifikatsiyasi Samarqand viloyatida 320 ta tomorqa xo'jaliklari misolida Herfindahl-Hirshman Indeksi usulidan foydalanib hisoblanganda ekinlar bo'yicha o'rtacha 0.298, chorvachilik bo'yicha o'rtacha 0,779 qiymatga teng bo'lganligi aniqlab topildi. Tomorqada ishlab chiqarish diversifikatsiyasi darajalari tibbiy me'yorlarda berilgan ratsional ovqatlanish normativlari inson mehnatining og'irligi va kasb guruhlari asosida, mamlakatimizning iqlimi va ovqatlanishdagi milliy xususiyatlarini inobatga olgan holda, quvvatga va asosiy oziq-ovqat moddalariga bo'lgan fiziologik ehtiyojini qondirishga qaratilgan guruhlar bo'yicha alohida yuqori, o'rta va past darajalardagi mezonlarga ajratildi va talab qilinadigan energiya (kkal)ni beradigan mahsulot turlariga nisbatan hisoblab chiqildi. Natijada, ekinlar diversifikatsiyasi indeksi 0,4 dan boshlab kamayganda yuqori, 0,7 gacha o'rta va 0,7 dan kam bo'lganda past deb, chorvachilikda diversifikatsiyasi indeksi 0,45 dan boshlab kamayganda yuqori, 0,75 gacha o'rta va 0,75 dan kam bo'lganda past deb topildi.

4. Dissertatsiyada uy xo'jaliklarining iste'moliga tomorqa xo'jaliklarida ishlab chiqarish diversifikatsiyasi va boshqa ijtimoiy, iqtisodiy hamda demografik omillar ta'siri marjinal baholanganda, tomorqada o'simlikchik mahsulotlarini ishlab chiqarish diversifikatsiya indeksining bir birlikka pasayishi oziq-ovqat mahsulotlari iste'moli diversifikatsiyasi indeksini 0,84 koeffitsiyentga oshirishi hamda chorvachilik mahsulotlarini ishlab chiqarish indeksining bir birlikka pasayishi esa 0,15 koeffitsiyentga oshirishini ko'rsatdi. Shu bilan birgalikda, iste'mol diversifikatsiyasiga tomorqa yer maydonining bir sotixga oshishi, tomorqa xo'jaligi boshlig'ining ma'lumotini oshib borishi, pazandalik o'quv kurslarida ishtiroki, pazandalik internet manbalaridan foydalanish va har bir pazandalik teledasturlari sonini oshib borishi mos ravishda 0,004, 0,062, 0,098 va 0,486 koeffitsiyentga oshib borishini, oila vakillarining xorijda ishlashi, bozorgacha bo'lgan yo'lning oshib borishi, agro-vet dorixonalarigacha bo'lgan masofaning ortib borish iste'mol diversifikatsiyasining mos ravishda 0,16, 0,013 va 0,147 koeffitsiyentga kamayishiga olib kelishi isbotlandi.

5. Olingan natijalarga ko‘ra tomorqa xo‘jaliklarida mahsulotlar yetishtirishni diversifikatsiyasi ahamiyati yuqori ekanligidan mamlakatimizda oziq-ovqat xavfsizligiga davlat yordamini kuchaytirishda barqaror qishloq xo‘jaligi amaliyotlarini joriy qilish uchun subsidiyalar ajratish bo‘yicha yagona siyosat olib borilishining maqsadga muvofiqligi asoslandi.

6. Tomorqa xo‘jaliklarida oziq-ovqat mahsulotlarini yetishtirish hajmining 2028-yilgacha bo‘lgan prognoz ko‘rsatkichlari baholandi. Natijalarga ko‘ra, 2028-yilda 2022-yilga nisbatan ildizmevalarni ishlab chiqarish 1,2, sabzavot 1,1, meva va rezavorlar 1,1, go‘sht va go‘sht mahsulotlari 1,2, sut va sut mahsulotlari 1,2, tuxum 1,4, baliq 1,4, dukkakli mahsulotlar 1,1, asal 1,2 va ziravorlar 1,4 barobar ko‘p ishlab chiqarishi hisoblab topildi. Don kabi moyli ekinlarni ishlab chiqarish ko‘rsatkichi pasayish tendensiyasida bo‘lib, 2028-yilga borib don yetishtirish 53,6 ming tonnaga, moyli ekinlar mahsulotlarini ishlab chiqarish esa 470,8 tonnaga kamayishi prognoz qilindi. Oziq-ovqat guruhiga kiruvchi boshqa 10 ta mahsulotlarda ishlab chiqarish tendensiyasi ortishini ko‘rsatdi.

7. Tomorqa yerlaridan samarali foydalanish uchun, tomorqa yer egalarining savodxonligini muntazam oshirib borish, oilani oziq-ovqat mahsulotlariga ega bo‘lishi va mikro elementlarga boy mahsulotlarni ko‘proq iste‘mol qilishlari uchun tomorqada mahsulot yetishtirish diversifikatsiyasini oshirishga doir qishloq joylarida uy xo‘jaliklariga “o‘z-o‘zini ta‘minlash-zahira-realizatsiya” bo‘yicha tartibga solingan raqamli dasturlash ta‘minotini joriy qilish markazini mahallalarda tashkil qilish taklifi berildi. Taklif etilgan raqamlashtirilgan dasturdan foydalanish ijobiy natijalar berishi aniqlandi hamda uy bekalari uchun davriy taomnomalarni tuzishda, sifatli ovqatlar tayyorlashda va oziq-ovqat mahsulotlari to‘g‘risida ma‘lumot berishda elektron dasturiy ta‘minot vazifasini bajarishi asoslandi. Mazkur dastur qishloq aholisi nutritsiyasi xilma-xilligini oshirishning innovatsion yechimlari sifatida amaliyotda qo‘llanilishiga tavsiya qilindi.

**SCIENTIFIC COUNCIL No. PHD.05/15.12.2022.I.155.01 FOR AWARDING  
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UNIVERSITY**

**“TASHKENT INSTITUTE OF IRRIGATION AND AGRICULTURAL  
MECHANIZATION ENGINEERS” NATIONAL RESEARCH UNIVERSITY**

**SAYDULLAEVA FOTIMA JOZILOVNA**

**DIVERSIFICATION OF PRODUCTION IN TOMORKA FARMS AND ITS  
IMPACT ON THE DIETARY OF THE POPULATION (THE CASE OF  
SAMARKAND REGION)**

**08.00.04 - Agricultural economics**

**Doctoral (PhD) dissertation abstract on economical sciences**

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The doctoral dissertation is available at the Information Resource Center of International Agricultural University (registered under No. \_\_\_\_), (Address: 111200, Tashkent region, Kybrai district, University street, 2. Phone: +998 88 801 36 00) e-mail: [scientific\\_council@iau.uz](mailto:scientific_council@iau.uz)

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## **INTRODUCTION (doctor of Philosophy (PhD) dissertation annotation**

**The actuality and relevance of the dissertation theme.** In the conditions of the growing number of the world population, climate change, political and social situations, new problems related to infectious diseases, as a result of disruption of the production of food products and the supply chain, leads to a decrease in the possibilities of people's food consumption. According to the Food and Agriculture Organization of the United Nations (FAO), "the number of people suffering from hunger is expected to exceed one billion by 2030 and the possibility of achieving the sustainable development goals will decrease"<sup>1</sup>. In order to provide food security, reducing dependence on imports, encouraging local food production and promoting healthy eating, increasing production efficiency in small agricultural farms and looking for diversification measures are among the important issues of the sector.

A number of researches are being carried out that to improve the living conditions of the rural population in the world and to develop the most promising approaches to ensure food security and to implement them by effectively organizing the production of food products in small farms, providing them with sufficient, high-quality and affordable food products. Among these are scientific research works on the development of economic and organizational mechanisms to encourage the use of sustainable agricultural practices in the sphere, the use of new innovative technologies and intensive methods, the development of digital platforms that serve to increase the volume and quality of production.

In the comprehensive plan of measures aimed at the development of agriculture and food security in Uzbekistan, tasks such as "improving the mechanisms of providing food to the population in need of social protection, as well as integrating producers of agricultural products with social objects, implementing of food security assessment system based on internationally recognized methodologies and best practices and continuous monitoring, developing the program to promote a healthy consumer culture, developing the network programs to intensify the production of socially important products, increasing productivity in animal husbandry, sustainable intensification of fish and poultry meat, as well as milk production to carry out focused research"<sup>2</sup>. In fulfilling these tasks, the theme of this dissertation is relevant for the development of incentive mechanisms for the diversification of the production of household products as a source of food for the population of tomorka farms , as well as for conducting systematic research.

This research work contributes to the implementation of the tasks stipulated in the decree of the President of the Republic of Uzbekistan "On measures to protect the rights and legal interests of farmers, dehkan farms and tomorka landowners, and fundamentally improve the system of effective use of agricultural arable land", on September 10, 2017, No. DP-5199, "On approval of the innovative development

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<sup>1</sup> World Health Organization. (2020). The state of food security and nutrition in the world 2020: transforming food systems for affordable healthy diets (Vol. 2020). Food & Agriculture Org.

<sup>2</sup> O'zbekiston Respublikasi Prezidentining farmoni. O'zbekiston Respublikasi qishloq xo'jaligini rivojlantirishning 2020 — 2030 yillarga mo'ljallangan strategiyasini tasdiqlash to'g'risida. 23.10.2019. PF-5853-son.

strategy of the Republic of Uzbekistan in 2022 – 2026”, on July 6, 2022, DP–165, in the Resolution of the President of the Republic of Uzbekistan “On organizational measures to further develop the activities of farmers, peasant farms and landowners”, on October 10, 2017, RP–3318, “On additional measures to ensure healthy nutrition of the population”, on October 11, 2020, RP–4887, “On additional measures to expand and support the production, processing of agricultural products in 2023”, on April 5, 2023, RP–113, of the Cabinet of Ministers “On amendments and additions to some decisions of the Government of the Republic of Uzbekistan in connection with the creation of favorable conditions for the support and further development of agricultural production”, on October 28, 2022, No. 624 and other normative legal acts related to the research topic

**The dependence of the research on the priority areas of development of science and technologies in the country.** This research was carried out in the priority direction of the development of science and technology of the republic I. “Spiritual, moral and cultural development of a democratic and legal society, formation of an innovative economy”.

**The extent of the study of the research problem.** It should be noted that the scholars foreign countries such as, Hawkes, C., Ruel, M.T., Alderman, H., Akramov, K.T., Pinstруп-Andersen P., Headey, D.D., Olney, K.W., Dina K., Takeshima H., Lombardozzi L., Conrad M., Ecker O., Mulva C., Muthini D., Zanello G., Islam A., Huang Y<sup>3</sup>, have been researched diversification of production small farms and its

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<sup>3</sup> Hawkes, C., & Ruel, M. T. (2008). From agriculture to nutrition: Pathways, synergies and outcomes; Hawkes, C., & Ruel, M. T. (2006). Agriculture and nutrition linkages old lessons and new paradigms: understanding the links between agriculture and health (No. 13 (4)). International Food Policy Research Institute (IFPRI); Pinstруп-Andersen, P. (2013). Nutrition-sensitive food systems: from rhetoric to action. *The Lancet*, 382(9890), 375-376; Ruel, M. T., & Alderman, H. (2013). Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? *The lancet*, 382(9891), 536-551; Ruel, M. T., Quisumbing, A. R., & Balagamwala, M. (2018). Nutrition-sensitive agriculture: what have we learned so far?. *Global food security*, 17, 128-153; Olney, D. K., Talukder, A., Iannotti, L. L., Ruel, M. T., & Quinn, V. (2009). Assessing impact and impact pathways of a homestead food production program on household and child nutrition in Cambodia. *Food and Nutrition Bulletin*, 30(4), 355-369; Headey, D. D., & Hoddinott, J. (2016). Agriculture, nutrition and the green revolution in Bangladesh. *Agricultural Systems*, 149, 122-131; Ruel, M. T., & Brouwer, I. D. (2021). Nutrition: Transforming food systems to achieve healthy diets for all. IFPRI book chapters, 36-43.; Njuki, J., Benin, S., Marivoet, W., Ulimwengu, J. M., Mwangera, C., Breisinger, C., ... & Piñeiro, V. (2022). Regional developments [in 2022 Global Food Policy Report]. IFPRI book chapters, 114-145; Takeshima, H., Akramov, K., Park, A., Ilyasov, J., Liu, Y., & Ergasheva, T. (2020). Agriculture–nutrition linkages with heterogeneous, unobserved returns and costs: Insights from Tajikistan. *Agricultural Economics*, 51(4), 553-565.; Lombardozzi L., *The Nexus Between The Role Of The State, Market Transition And Food Consumption : The Case Of Samarkand, Uzbekistan*. PhD thesis. SOAS, University of London 2018. DOI: <https://doi.org/10.25501/SOAS.00032802>; Murendo, C., Gwara, S., Mazvimavi, K., & Arensen, J. S. (2019). Linking crop and livestock diversification to household nutrition: Evidence from Guruve and Mt Darwin districts Zimbabwe. *World Development Perspectives*, 14, 100104.;Ecker, O. (2018). Agricultural transformation and food and nutrition security in Ghana: Does farm production diversity (still) matter for household dietary diversity?. *Food policy*, 79, 271-282.;Mulwa, C. K., & Visser, M. (2020). Farm diversification as an adaptation strategy to climatic shocks and implications for food security in northern Namibia. *World Development*, 129, 104906.;Muthini, D., Nzuma, J., & Nyikal, R. (2020). Farm production diversity and its association with dietary diversity in Kenya. *Food Security*, 12, 1107-1120.;Zanello, G., Shankar, B., & Poole, N. (2019). Buy or make? Agricultural production diversity, markets and dietary diversity in Afghanistan. *Food Policy*, 87, 101731.; Islam, A. H. M. S., von Braun, J., Thorne-Lyman, A. L., & Ahmed, A. U. (2018). Farm diversification and food and nutrition security in Bangladesh: empirical evidence from nationally representative household panel data. *Food security*, 10, 701-720.;Huang, Y., & Tian, X. (2019). Food accessibility, diversity of agricultural production and dietary pattern in rural China. *Food Policy*, 84, 92-102.

impact on dietary using face-to-face questionnaire, time series, and panel data in the case of different countries.

The scientists of our country such as U.Umurzakov K.Choriyev, N.Khushmatov, A.Chertoviskiy, R.Khusanov, va I.Rustamova, O.Murtazaev, F.Akhrorov have conducted research on analysis of socio-economic factors affecting the effective use of resources and its impact to the efficiency of their production on the example small farms<sup>4</sup>. In addition, the importance of diversification of agricultural products in the efficient use of cultivated lands and ensuring food security was emphasized in the research works of scientists of the country Sh.Hasanov, I.Bobojonov, N.Djanibekov, I.Rudenko, K.Akramov, D.Saidova, G.Samiyeva, A.Ergashev, A.Primov<sup>5</sup>.

However, a number of researches have highlighted the importance of diversification of agricultural production for the sustainable development of agriculture, increasing efficiency, but less attention is paid from the point of view of ensuring food security in the world. Therefore, considering the various natural, social, and political situations occurring in the world, it is important to scientifically and practically study the impact of diversification of tomorka farm production on rural households nutrition, taking into account various socio-economic factors determines the necessity of the research.

**The aim of the research** is to assess the impact of diversification of tomorka farm production on households dietary diversity and to develop scientifically based proposals and practical recommendations for its improvement.

**The tasks of the research** are to:

justify theoretically diversification of tomorka farms production;

develop scientific and methodological bases for assessing the impact of diversification of tomorka farm production on households dietary;

analyze the current state of agricultural production and determining the dynamics of changes;

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<sup>4</sup> Хушматов Н.С. Дехқон (фермер) хўжаликларини ташкил этиш самарадорлиги ва уларнинг бошқа ташкилотлар билан ўзаро муносабатларини такомиллаштириш: Авт. дис. ... и.ф.н. – Т., 1994.; Умурзаков У.П., Чориев К.А. Организационно-экономических и правовых основы реструктуризации сельскохозяйственных предприятий на переходном этапе. – Т., Меҳнат, 1997. – с 79.; Хусанов Р.Х. Аграрная реформа: тенденция, практика, проблемы. – Т.: Узбекистан, 1994. –74 с.;; Рустамова И.Б. Қишлоқ хўжалиги ишлаб чиқаришини ташкил этиш. – Т.: Ўзбекистон миллий энциклопедияси, 2005. – 508 б.; Муртазаев О., Ф.Б.Ахроров. Қишлоқ хўжалик иқтисодиёти. – Т., Илм-Зиё, 2017 й.;

<sup>5</sup> Hasanov, Sh. (2016): Agricultural policies to enhance the development of fruit and vegetable subsectors in Uzbekistan. *European Scientific Journal*, vol. 12 (13), May 2016. <http://dx.doi.org/10.19044/esj.2016.v12n13p479>  
Bobojonov, I., Lamers, J. P. A., Bekchanov, M., Djanibekov, N., Franz-Vasdeki, J., Ruzimov, J., & Martius, C. (2013). Options and constraints for crop diversification: A case study in sustainable agriculture in Uzbekistan. *Agroecology and Sustainable Food Systems*, 37(7), 788-811. <http://doi.org/10.1080/21683565.2013.775539>; Lombardozi, L., & Djanibekov, N. (2021). Can self-sufficiency policy improve food security? An inter-temporal assessment of the wheat value-chain in Uzbekistan. *Eurasian Geography and Economics*, 62(1), 1-20.; Kienzler, K. M., Rudenko, I., Ruzimov, J., Ibragimov, N., & Lamers, J. P. (2011). Winter wheat quantity or quality? Assessing food security in Uzbekistan. *Food Security*, 3, 53-64.; Akramov, K. T. (2011). International food prices, agricultural transformation, and food security in Central Asia. *Development in Practice*, 21(4-5), 741-754.; Nurmatovna, S. D. (2022). Main risks and factors of food security in Uzbekistan. *Web of Scientist: International Scientific Research Journal*, 3(6), 1696-1703.; Самиева Г.Т. Дехқон хўжаликларида ишлаб чиқаришни диверсификациялаш йўналишлари: дисс...авт. и.ф.н – Тошкент, 2019. Ergashev A. Analysis of fruit and vegetable supply, demand, diet quality and nutrition in Uzbekistan : дис. – Universitäts-und Landesbibliothek Bonn, 2017.; Примов А.Э., Қишлоқ хўжалиги экинларини диверсификациялашнинг фермер хўжаликлари иқтисодий самарадорлигига таъсирини баҳолаш: дисс...авт. и.ф.н – Тошкент, 2022

determine the level of diversification of tomorka farms production;  
evaluate the influence of factors on the diversification of dietary through an econometric model;

develop a mechanism that encourages to improve households dietary diversity and tomorka farm production diversification;

determine future forecasts of production of 12 food groups.

**The object of the research** is tomorka farms of Samarkand region were selected as the object of research.

**The subject of the research** is the organizational, socio-economic relations that arise in the process of the improve of the diversification of production of products on tomorka farms.

**Research methods.** Methods such as comparative analysis, abstract thinking, statistical and econometric modeling, questionnaire, graph, index assessment and other methods were applied in the research process.

**Scientific novelty of the research** is as follows:

it was suggested that level of crop diversification of tomorka farms according to criterias “low” ( $1 < HHI \leq 0.7$ ), “medium” ( $0.7 \leq HHI < 0.4$ ) and “high” ( $0.4 \leq HHI < 0$ ) as an optimization of farm management;

it is justified that strengthening state support for food security (aimed at sustainable agricultural production, sustainable use of water and energy supply, climate-smart use, optimal production practices for processing and storage, and reduction of post-harvest losses) based on the expediency of conducting a single policy subsidy;

it is calculated that forecast parameters of food production in 12 groups (legumes, fruits and vegetables, meat, milk, honey) until 2028;

it is developed that planned-economic mechanism aimed at achieving sustainable food supply by organizing a center for the introduction of regulated digital programming supply to households in tomorka farms on the basis of “self-sufficiency-reserve-realization”.

**The practical results of the research** are as follows:

it is justified that the objective necessity of increasing the diversification of production of products in farms, its specific features in ensuring the diversity of household nutrition are theoretically based;

it is determined that the successful experiences of small farms in the agriculture of developed foreign countries in increasing the food security of the population were studied and the ways of use in the farms;

it is proposed that to stimulate the subsidizing mechanism of economic support by the state to increase the diversification of farm production.

**Reliability of research results.** It is defined that the data used in the thesis work are long-term and obtained from official sources, relying on the scientific and methodological results of the research works of well-known republican and foreign economists on the assessment of the impact of agricultural production on the diversification of food consumption, on the survey data collected from households in the districts of Samarkand region, the proposals and recommendations have been put

into practice, as well as approval by the authorities determine the reliability of the research.

**The scientific and practical significance of the results of the research.** It is proposed that Proposals collected, analyzed and developed on the basis of their results to assess the impact of product production diversification on homesteads on the diversification of food consumption, development of programs encouraging efficient use of the farm, teaching the population to eat nutritious and healthy food, and effective use of production opportunities in the family. The practical significance of the research results is that the development of state programs to improve food consumption by increasing the diversification of product production in homesteads will help to improve the legal and regulatory frameworks related to the sector in relevant ministries and organizations. In addition, a methodological manual on “Increasing the levels of product production diversification in farms” commissioned, and “Agricultural economics”, “Family economics”, “Behavioral economics” in higher educational institutions is recommended to use them in improving the programs of such subjects.

**Implementation of the research results.** Based on the scientific proposal and practical recommendations received on the assessment of the impact of the diversification of production of products in farms on the food security of the population:

the proposal that level of crop diversification production of tomorka farms is “low” ( $1 < \text{HHI} \leq 0.7$ ), “medium” ( $0.7 \leq \text{HHI} < 0.4$ ) and “high” ( $0.4 \leq \text{HHI} < 0$ ) to optimize farm management according to criteria has been used the methodical manual approved by the Samarkand Region Agricultural Department on March 28, 2023 and put into practice by the Ministry of Agriculture of the Republic of Uzbekistan (Reference of the Ministry of Agriculture of the Republic of Uzbekistan, on July 5, 2024, No. 06/27-06/1053). Based on the submitted proposals, the level of diversification of agricultural production in farms in Bulungur, Ishtikhon, Jomboy, Okhdaryo, Pasdargom, Payariq, Koshrabot, Tayloq and Urgut districts was determined by the system organizations of the Samarkand Region Agriculture Department has been developed. Meantime, the proposed criteria are already being used by relevant organizations in the districts as an evaluation indicator for the implementation of sustainable production practices;

the proposal that in strengthening state support for food security (aimed at sustainable agricultural production, sustainable use of water and energy supply, climate-smart use, optimal production practices for processing and storage, and reduction of post-harvest losses) proposal of the expediency of conducting a single policy has been used in the development of the strategy of ensuring food security and healthy nutrition of the Republic of Uzbekistan until 2030 (Reference of the Ministry of Agriculture of the Republic of Uzbekistan, on July 5, 2024, No. 06/27-06/1053). The policy of supporting the provision of food security in the country through subsidies is the production of products by household farms, the supply of raw materials to them, subsidizing prices to ensure income stability, the introduction of modern water-saving technologies and agricultural proposals to subsidize the

introduction of digital technologies are included in the network. The introduction of the offer and the increase in the diversification of production in tomorka farms will serve to increase the variety of meals in households to an average of 7-8.

the proposal that the forecast parameters of tomorka farms production of 12 groups of food products until 2028 has been included in the future plans of the Ministry of Agriculture of the Republic of Uzbekistan (Reference of the Ministry of Agriculture of the Republic of Uzbekistan, on July 5, 2024, No. 06/27-06/1053). According to the results, in 2028 compared to 2022, the production of root crops will be 1.2, vegetables 1.1, fruits and berries 1.1, meat and meat products 1.2, milk and milk products 1.2, eggs 1.4 times, fish 1.4 times, leguminous products 1.1 times, honey 1.2 times and spices 1.4 times more. The indicator of production of oilseeds, such as grain, is in a downward trend, and by 2028, grain production is predicted to decrease by 53.6 thousand tons, and production of oilseed products by 470.8 tons. The results of this forecast are taken into account when planning the production of agricultural products grown in farms in Samarkand region;

the proposal that the planned-economic mechanism aimed at achieving sustainable food supply by organizing a center for the introduction of regulated digital programming supply to households in tomorka farms on the basis of “self-sufficiency-reserve-realization” has been developed and put into practice by the Ministry of Agriculture of the Republic of Uzbekistan (Reference of the Ministry of Agriculture of the Republic of Uzbekistan, on July 5, 2024, No. 06/27-06/1053). These approaches include increasing the role of mass media, digital technologies, social infrastructures and various forms of cooking courses, and popularizing the digital menu of family food consumption. The special center, which was recommended to be established in the neighborhoods, was introduced as a pilot in one selected neighborhood in Bulung'ur, Payariq and Tayloq districts of Samarkand region. As a result of the introduction of the mechanism, the level of consumption diversification in rural families increased by 9.6%, and the family's food (agricultural) expenses decreased by 12%.

**Approbation of the results of the research.** The results of this research have been shared at 12, including 10 international and 2 national scientific-practical conferences.

**Publication of the research results.** According to the results of this research a total of 18 scientific works published on the topic of the research, including 3 articles in local publications and 1 international journal, were recommended by the Higher Attestation Commission of the Republic of Uzbekistan to publish the main scientific results for doctoral dissertations.

**The structure and volume of the dissertation.** The content of the dissertation consists of an introduction, three chapters, conclusion, a list of references and appendices. The volume of the dissertation is 130 pages (including 19 tables, 19 pictures).

## MAIN CONTENT OF THE DISSERTATION

The **introduction** of the dissertation includes the relevance and necessity of the research theme, the relevance of the research to the main priorities of the national

science and technology development, the review of foreign scientific research on the subject, the level of studying the problem, the relation of the dissertation theme to the scientific research work of higher education institution where the dissertation is written, the aim and tasks, object and subject, methods, scientific novelty and results of the research, reliability of the research results, scientific and practical significance of the research results, their implementation, the approbation, announcement of the results, structure and the volume of the dissertation.

The first chapter of the dissertation is entitled **“Theoretical justification of the influence of tomorka farm production diversification diversification on population dietary”**, the chapter examines the scientific and methodological foundations of diversification of production of products in tomorka farms, the preferred methods of measuring and calculating the level of diversification. In addition, the characteristics of tomorka farms were researched and the important aspects of foreign experiences on diversification of agricultural production were highlighted.

In monographic researches, it is stated that diversification in an agricultural enterprise is a three-stage process. In the first stage, it is determined to increase the level of efficiency through the cultivation of food crops, which includes the abandonment of monoculture. In the second stage, the farms have several enterprises, which are supposed to grow different products that they can sell in all seasons of the year. At the final stage, resources are shifted from one crop (or livestock) to more crops (or livestock) or mixed crop and livestock production.

According to the our theoretical studies of the theme of dissertation, ***diversification*** of production in tomorka was defined as – *“production of products in various combinations, taking into account the needs, using available resources”*.

The diversification in agriculture means providing a variety of farming and animal husbandry activities that are interconnected in different ways. In the diversification of crops, the replacement of production of several agricultural products with another ensures the transition from monoculture to intensification.

There are a number of ways to determine the level of production diversification in agriculture. Each of these methods uses appropriate evaluation indices. Meantime, although there are many indices for determining the level of diversification, such as, the Simpson index, Entropy index, Shannon index, Ogive index, and Herfindahl-Hirshman index are used more often in economic analysis. All these indices show results close to each other in a certain sense. Each of these indices has its advantages and limitations in terms of complexity, ease of calculation and interpretation. The function, calculation formula, using and specific aspects of the above-mentioned indices are researched in Table No.1 below.

Based on the conceptual basis of our research, in order to research the impact of diversification of tomorka farm production diversification on household dietary diversity we used multifactorial analysis method, crop and livestock diversification indices and food security indicators, taking into account other economic, socio-demographic. The function, calculation formula, application and specific aspects of the above-mentioned indices are studied in Table 1 below. The specific aspects of

**Table №1.**

**Comparison of indices for determining diversification of production in tomorka farms<sup>6</sup>**

Diversification index	The function of the index in practice	Formulas	The use of the index and its features
Simpson index	It measures diversity by taking into account the number of species present and the relative abundance of each species.	$SDI = 1 - \sum_{i=1}^N (P_i)^2$	Simpson's index is usually used to calculate ecological diversity. In ecology, it considers the number of plant and animal species present, as well as the abundance of each species.
Entropy index	It measures the degree of equality of distribution between different groups.	$H = \frac{1}{1-q} \ln\left(\sum_{i=1}^R p_i^q\right)$	The entropy index is used to determine the amount of diversification, and the index does not provide standard dimensions for assessing the level of diversification.
Shannon index	Quantifies the uncertainty in predicting a species identity drawn randomly from a data set.	$H = - \sum P_i * \ln P$	Shannon's index quantifies the uncertainty in predicting species numbers randomly drawn from a set. Deficiencies of the index related to the size of the collection data are observed when determining diversification.
Ogive index	It measures the amount of diversification of the organization.	$OI = \frac{\sum_{i=1}^n [P_i - (\frac{1}{N})]^2}{(\frac{1}{N})}$	The Ogive index, like the Herfindahl Hirschman Index, is used to assess the level of concentration. But one of the disadvantages of the index is that the upper limit approaches zero in cases of strong concentration and diversification.
Margalef index	Determines the degree of diversity between species.	$MI = (S - 1) \ln P$	The Margalef index evaluates the extent to which the number of crops is high. This index focuses on the diversity of species, and the result is more dependent on the level of diversity.
Herfindahl Hirschman Index (HHI)	Measures the size of species and shows the differences between them.	$HHI = \sum_{i=1}^N (P_i)^2$	The Herfindahl Hirschman index is a widely used index in economic analysis, and it is very simple in terms of its calculation function. It avoids various confusions in calculating the degree of diversification when comparing the index against other indices.

<sup>6</sup> Based on the author's monographic observations.

the indices cited from the analysis in the dissertation show the existence of a number of advantages of HHI compared to other indices in assessing the level of diversification of household production.

The simplicity and accuracy of HHI calculation increases the reliability of the expected result. The HHI was the first time in the USA that government agencies dealing with antitrust issues, such as the Department of Justice and the Federal Trade Commission, used this index to assess changes in market concentration in a given industry<sup>7 8</sup>.

Currently, this index is widely used in scientific research to determine the diversification of crops and livestock in agriculture. The reason is that when calculating this index, farmers do not need to grow all types of crops.

As the level of diversification increases, it gradually decreases. It takes the value of 1 when there is total concentration and tends to zero as the level of diversification increases.

The type of crop or livestock in the observed collection in the HHI index formula –  $i, P_i$  – means the share of crop area or livestock in the total observed period  $ii$ .

The HHI index is able to show accurate results in a much smaller set of observed data than other indices<sup>9</sup>.

Food security at the household level was expressed by “Household dietary diversity score”. Assessment of the effect of diversification of farm holdings on household nutrition was empirically analyzed using the Poisson regression model. At the last stage, the theory and methodology of calculating the dynamics of indicators for the last five years were considered using the ARIMA model of future forecasts of products produced by homestead farms.

The studying the results of scientific research conducted by foreign scientists, the diversification of production of products in small farms, the quality of food of households, that is, the diversification of food consumption, and the application of scientific and technical achievements, a comparative analysis of experiments done It is theorized that diversification of farm production will ensure that households increase dietary diversity.

It is concluded that theoretical concepts, foreign experiences have confirmed that increasing diversification in households leads to food security. Therefore, it is important to apply these practices on the example of tomorka farms of Samarkand region, to justify them scientifically and practically.

In the second chapter of the dissertation is entitled **“Current state and dynamics of development of diversification of production in tomorka farms and dietary diversity in tomorka farms”**, in this chapter, on the scientific-methodological, practical development and results of the research, the current state of

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<sup>7</sup> Hirschman, A. O. (1964). The paternity of an index. *The American economic review*, 54(5), 761-762.

<sup>8</sup> Hirschman, A. O. (1945). *National Power and the Structure of Foreign Trade*. Berkeley & Los Angeles, CA: University of California Press. Hirschman National Power and the Structure of Foreign Trade 1945.

<sup>9</sup> Hou, M., Qing, P., & Min, S. (2021). Multiple indicators of household dietary diversity in rural China: Effects of income and dietary knowledge. *Nutrition*, 91, 111406.

agricultural food production in Samarkand region and the dynamics of development were analyzed and the level of diversification of tomorka farms of Samarkand region was described and divided into categories. The effect of tomorka farm crop and livestock diversification on the diversity of household dietary was assessed, and conclusions and proposals were developed accordingly to them.

The volume and structure of food production in Samarkand region has changed in a positive direction until today, which is the result of many scientific researches on increasing the efficiency of production. It was determined that in the region in 2021, the majority of agricultural food products, 59 percent, were grown by smallfarmers. However, today the issues related to the study and assessment of the impact of these changes on dietary diversity are not sufficiently researched.

The paying attention to these issues in our research, based on the survey data of 320 tomorka farms of the Samarkand region during the months of January-March 2021, their levels of crop and livestock diversification were determined using the Herfindahl Hirshman index. The degree of crop diversification, when calculated using the HHI index, increases when the value approaches zero, and vice versa when it is equal to 1, it means that a monoculture is planted with one crop. The level of livestock diversification, calculated by the same HHI index, increases when the value approaches zero, and when it is equal to 1, it means that only one type of livestock is kept.

The index of the level of diversification has a direct impact on the population's food consumption. According to the researched object, 51% of the household's food consumption is accounted for by purchased products, and the remaining 49% is accounted for by home own grown products. Taking into account that the production of food products in tomorka farm constitutes a large portion of food consumption in our research, the criteria of high, medium and low levels of crop and livestock diversification were found on the basis of mathematical calculations accordingly to the consumption.

According to the results of the research, crop diversification is high when the value of the HHI index decreases from 0.4, medium to 0.7 and low when it is less than 0.7, reUp to .75 was considered medium and less than 0.75 was considered low.(Table No.2 and 3).

In our study, the impact of tomorka farm production diversification on household dietary diversity was assessed using the Poisson regression model. Regression was performed using Stata-15 software.

Before performing the regression, the multicollinearity level (VIF) test of the variables was performed and it was determined that there was no multicollinearity between the variables. In addition, before the Regression analysis, the statistical compatibility of the model with the proposed hypothesis was checked by tests (Deviance goodness-of-fit and Pearson goodness-of-fit). It is proved with high statistical accuracy that the results correspond to the hypothesis of the parameters of the model.

The result of the regression analysis revealed that the index of crop and livestock production diversification has a positive effect on the change of the

Table № 2.

### Criteria of crop diversification levels of tomorka farms production<sup>10</sup>

\*HHI<sub>c</sub> – Crop diversification (Herfindahl Hirshman Index); \*\*HHI<sub>l</sub> – Livestock (Herfindahl Hirshman Index); \*\*\*Kkal – Iste'mol kaloriyasi (Kilocalories)

Category	Crop diversification					
	(HHI <sub>c</sub> ) <sup>*</sup>	Kkal <sup>***</sup>				
		1 – group	2 – group	3 – group	4 – group	5 – group
<b>High</b>	$\text{HHI}_c \leq 0.4$	> 960,4	> 1097,6	> 1293,6	> 1509,2	> 1646,4
<b>Medium</b>	$0.4 < \text{HHI}_c \leq 0.7$	960,4 - 705,6	1097,6 – 823,2	1293,6 – 980	1509,2 – 1117,2	1646,4 - 1470
<b>Low</b>	$\text{HHI}_c > 0.7$	705,6 >	823,2 >	980 >	1117,2 >	1470 >

Table №3.

### Criteria of livestock diversification levels of tomorka farms production

Category	Livestock diversification					
	(HHI <sub>l</sub> ) <sup>**</sup>	Kkal				
		1 – group	2 – group	3 – group	4 – group	5 – group
<b>High</b>	$\text{HHI}_l \leq 0.45$	> 240,1	> 274,4	> 323,4	> 377,3	> 411,6
<b>Medium</b>	$0.45 < \text{HHI}_l \leq 0.75$	240,1 – 176,4	274,4 – 205,8	323,4 - 245	377,3 – 279,3	411,6 – 367,5
<b>Low</b>	$\text{HHI}_l > 0.75$	176,4 >	205,8 >	245 >	279,3 >	367,5 >

<sup>10</sup> Based on the author's monographic observations.

diversification index of food consumption in households in Samarkand region with high statistical accuracy. According to the theory, the Herfindahl Hirshman index (HHI) is estimated between 0 and 1 value. Approaching the index result to zero means that production is becoming more diversified, and on the contrary, it is being concentrated. Therefore, according to the results of the analysis, it can be seen that a one-unit decrease in the diversification index of crop production of tomorka farm increases household dietary diversity score by a factor of 0.84, and one-unit decrease in the index of livestock diversification increases it by a factor of 0.15 (Table №4).

**Table №4.**

**Results Poisson regression analysis<sup>11</sup>**

<b>Household dietary diversity score</b>	<b>Marginal effect (Standard deviation)</b>		
Crop diversification(HHI)	.844 (.111) ***		
Livestock diversification(HHI)	.159 (.07) **		
Annual income per person, ln.	.006 (.009)		
Credit access	-.04 (.04)		
Work of a family member abroad	-.16 (.071) **		
Car	.026 (.031)		
The road to the market, km	-.013 (.006) **		
Agro-vet pharmacy	-.147 (.054) ***		
Farm land area, sotikh	.004 (.001) ***		
Age of the housewife, ln.	-.11 (.073)		
Work experience of the housewife, ln.	.048 (.03)		
Education level of the housewife	.062 (.037) *		
Culinary courses	.094 (.054) *		
Culinary Internet Resources	.098 (.038) ***		
Culinary related TV shows	.486 (.038) ***		
Constant	1.593 (.329) ***		
Mean dependent var	3.449	SD dependent v	1.502
Pseudo r-squared	0.112	Number of obs	320
Chi-square	981.105	Prob > chi2	0.000
Akaike crit. (AIC)	1066.837	Bayesian crit. (BIC)	1126.827

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

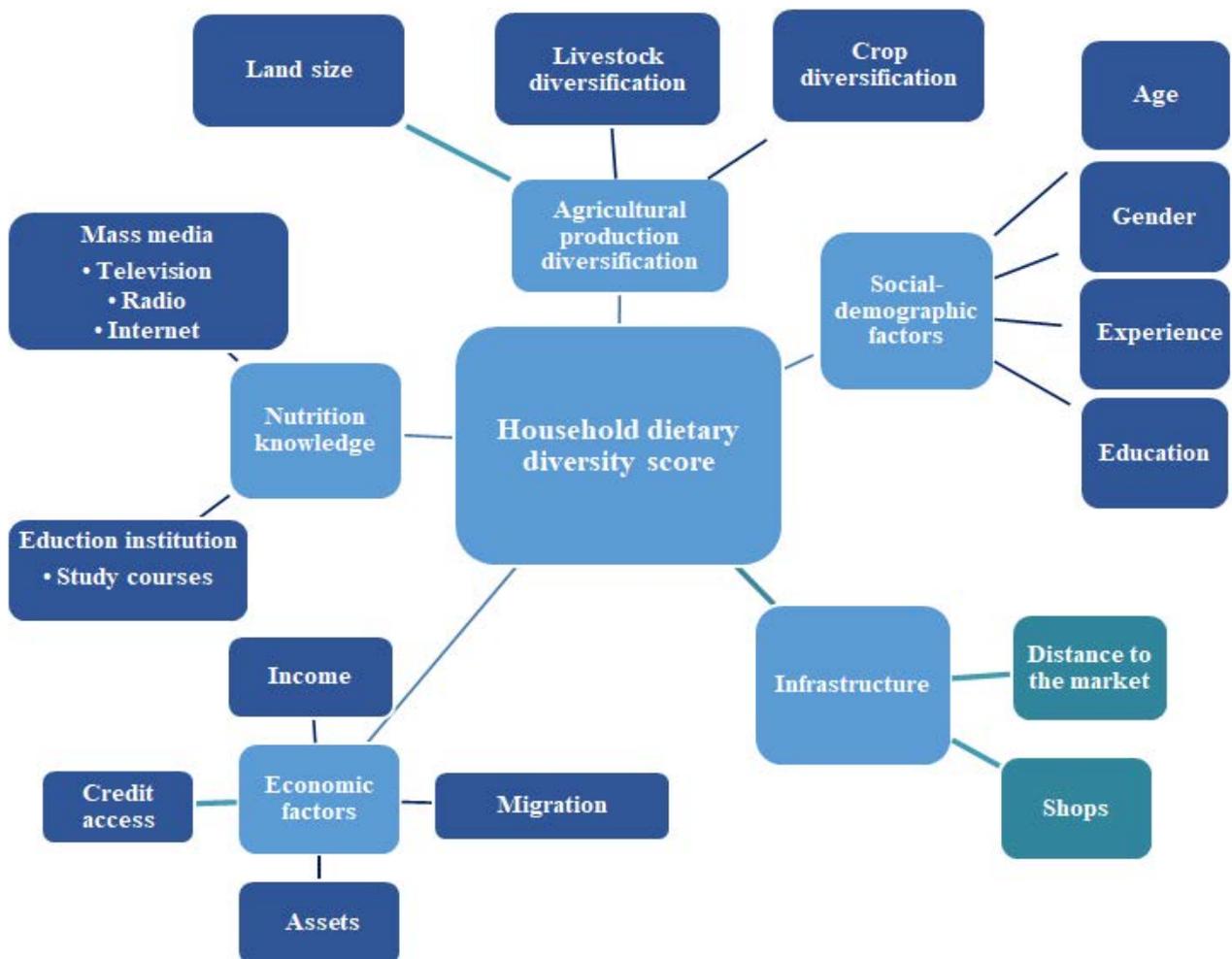
Meantime, consumption diversification includes an increase in farm land area by one hectare, an increase in the education of the head of the household, participation in cooking courses, use of cooking internet resources, and an increase in the number of each cooking TV program, respectively 0.004, which showed that it increases by 0.062, 0.098 and 0.486 coefficients. However, the work of family members abroad (remittances from abroad), the increase of the road to the market by every km, and the increase of the distance to the agro-vet pharmacies are 0.16, 0.013,

<sup>11</sup> Based on the author's monographic observations.

respectively it has been proven that it leads to a decrease, household dietary diversity score by a factor of 0.147. Therefore, although the increase in the per capita income of family members and the presence of a car in the household have a positive marginal effect, it has shown that it is not statistically significant.

Although the level of statistical reliability is not high, it has been proven that the age of the housewife increases every year, has a negative effect on the diversification of production on the farm, but the experience of the family has a positive effect (Table No.4). The results obtained from the analysis show that product production diversification in the farm leads to an increase in consumption diversification. Meantime, to the increase in household dietary diversity score has been proved scientifically, the education of housewives in cooking, participation in training courses, the increase in the possibilities of using the Internet for them.

Meantime, its conceptual model was developed taking into account the main factors such as agricultural production and diversification, economic, socio-demographic, infrastructure, and nutrition knowledge and skills, which affect the Household dietary diversity score. (Figure No.1).



**Figure No.1. A conceptual model for estimating the marginal impact of factors on household dietary diversity<sup>12</sup>**

<sup>12</sup> Based on the author's research.

The above results can be used to increase the diversity of food in households, to strengthen government support for food security in households (sustainable agricultural production, sustainable use of water and energy supplies, rational use of climate, optimal for processing and storage production practices and reduction of post-harvest losses) justified the expediency of conducting a single policy on allocating subsidies.

The third chapter of the dissertation is entitled “**The ways to increase tomorka farm production diversification and rural household dietary diversity**”, innovative solutions to increase the diversity of food of rural families were found based on the research results, as well as the production of farm products in Samarkand region. Forecast indicators by 2028 have been developed.

One of the most important issues facing agricultural production is the production of food products and the provision of adequate and nutritious food for the population. The overall demand for food is changing due to a number of factors such as various uncertainties that hinder agricultural production, population growth, consumer demand, resource status, and climate change. However, the increase in the types of consumption of food products leads to an increase in the quality of nutrition of the population and an increase in the consumption of products rich in vitamins.

The production volume of 12 groups of food products in homestead farms in Samarkand region until 2028 was calculated using the ARIMA model. Stationarity of time series when choosing a statistical model in accordance with the data used for analysis in forecasting using the Extended Dickey-Fuller test checked. Individual models suitable for 12 food product proposals have been selected.

The results showed that by 2018, the production of leguminous grain in the farms of Samarkand region was 5945.1 tons, the growth trend was 98.8% on average; egg production 1079.2 mln. units, the growth trend is 47.6 ha; milk and milk products 1497.9 thousand tons, growth trend is 34.4 ha; honey production is 873.5 tons, growth trend is 21.9 ha; fish 465.7 thousand tons, growth trend is 21.3 ha; vegetables 858.3 thousand tons, growth trend 16.8 ha; root vegetables (potatoes) 569.4 thousand tons, the growth trend is 13.9 ha; meat and meat products 301.1 thousand tons, the growth trend is 6.3 ha; fruits and vegetables 209.6 thousand tons, the growth trend is 3.8 ha; spices 1.1 tons, the growth trend was determined to be equal to 0.04. Among the products, there was a decrease in the production of grain and oil products. By 2028, they were equal to 34.2 thousand tons and 470.8 tons. It was observed that their downward trend is equal to 8.9 ha in grain production and 50.7 ha in oil crops (Table № 6).

In conclusion, the results of the forecast calculation showed an increase in the production of 10 products from 12 food groups. But these indicators are not enough. It is advisable to use methods that stimulate the production of products on the farm

In order to make effective use of farm land, to regularly raise the literacy of the farm land owners, to make the family have food products and to consume more products rich in microelements, the family farms should provide the family with quality, affordable, guaranteed, constant and diversified food. - provides food. In addition, it saves costs for food products, builds reserves and ensures food security

Table №5.

Agrifood production forecast of tomorka farms of Samarkand region<sup>13</sup>.

Years	A	B	D	E	F	G	H	I	J	K	L	M
2012	158,0	314,8	536,9	130,6	192,3	891,5	324,0	138,0	1165,3	4328,3	513,3	0,4
2013	148,6	333,4	571,2	143,8	200,6	948,8	343,3	149,3	1345,9	4460,0	549,7	0,4
2014	149,8	369,8	525,1	154,3	212,0	1014,8	390,9	169,2	1244,1	4593,7	568,6	0,5
2015	166,9	393,1	691,4	165,9	225,1	1079,5	448,7	170,4	1188,3	4654,9	530,1	0,4
2016	172,7	433,4	742,1	184,6	237,3	1171,8	525,6	191,1	1050,9	4781,2	635,4	0,7
2017	174,3	455,8	757,1	189,4	234,5	1181,8	599,1	195,4	966,4	4889,3	674,1	0,6
2018	144,6	477,7	822,7	178,0	242,7	1155,4	617,3	215,7	910,3	4969,5	692,4	0,5
2019	87,7	479,6	733,1	167,5	237,6	1166,7	644,8	231,0	891,0	4989,0	683,7	0,7
2020	70,4	414,4	631,8	168,9	246,7	1199	707,5	293,8	876,3	5190,2	650,2	0,6
2021	70,5	416,1	637,2	169,8	252,9	1216,3	709,2	365,8	899,4	5234,9	714,9	0,9
2022	87,8	485,6	757,4	186,5	263,0	1291,6	793,2	329,0	775,0	5352,4	741,9	0,8
2023	78,9	499,6	774,2	190,3	269,4	1326,0	840,9	350,3	724,3	5451,2	763,8	0,8
2024	70,0	513,5	791,0	194,2	275,7	1360,4	888,5	371,6	673,6	5550,0	785,7	0,9
2025	61,0	527,5	807,9	198,0	282,1	1394,7	936,2	392,8	622,9	5648,8	807,7	0,9
2026	52,1	541,5	824,7	201,9	288,4	1429,1	983,9	414,1	572,2	5747,5	829,6	1,0
2027	43,2	555,4	841,5	205,7	294,7	1463,5	1031,5	435,4	521,5	5846,3	851,5	1,0
2028	34,2	569,4	858,3	209,6	301,1	1497,9	1079,2	456,7	470,8	5945,1	873,5	1,1
	$y = -8,9996x + 185,15$ $R^2 = 0,8272$	$y = 13,963x + 332,01$ $R^2 = 0,8608$	$y = 16,823x + 572,33$ $R^2 = 0,6296$	$y = 3,8522x + 144,09$ $R^2 = 0,7792$	$y = 6,34x + 193,3$ $R^2 = 0,9774$	$y = 34,375x + 913,5$ $R^2 = 0,9618$	$y = 47,667x + 268,87$ $R^2 = 0,9946$	$y = 21,278x + 94,94$ $R^2 = 0,9632$	$y = -50,693x + 1332,6$ $R^2 = 0,9544$	$y = 98,783x + 4265,8$ $R^2 = 0,9975$	$y = 21,933x + 500,61$ $R^2 = 0,9528$	$y = 0,0429x + 0,3316$ $R^2 = 0,8886$

A-grain (thousand tons); B-root fruits (thousand tons); D-vegetables (thousand tons); E-fruits and berries (thousand tons); F-meat and meat products (thousand tons); G-milk and dairy products (thousand tons); H-egg (million pieces); I-fish (thousand tons); J-oil crops (tons); K-legumes (tons); L-honey (tons); M-spices (tons).

<sup>13</sup> Author's account book based on statistical data.

This innovative approach serves to achieve sustainable food security in rural areas by establishing a community-based digital programming implementation center for self-sufficiency-storage-realization for households. Such approaches aimed at increasing diversification include: strengthening the role of mass media, digital technologies, social infrastructures and courses of various forms, and popularizing the digital menu of family food consumption.

The results for each approach are as follows:

1. Mass media. By using and following tools including special cooking television programs, radio broadcasts, Internet pages and resources, and pages of newspapers and magazines, the household dietary diversity score by 2.7 points compared to those who did not follow the show. Also tomorka farm production diversification index was found to be 0.18 points higher in crop and 0.20 points higher in livestock;

2. Digital technologies. When housewives use digital technologies such as smartphones, tablets, computers, and smart TVs to access the Internet and those who do not use them, the diversification index of crop was 0.12, and the production of livestock was 0.12. 0.24 points higher. It was proved that the score of household dietary diversity was 2.2 times higher.

3. Social infrastructures. Those who constantly used internet sources to learn cooking and cultivating technologies had a diversification index of agricultural production in the tomorka farms of 0.03 points, and a diversification index of food consumption which was 0.16 points higher in livestock farming, twice as much as those who did not use internet sources.

4. In such courses, not only methods of food preparation are taught, but also the selection of food products, the effective use of various products, taking into account their richness in macro-micro nutrients. In our study, it was observed that the level of farm production diversification was higher with respondents who attended cooking courses than those who did not.

5. Popularization of the digital menu of food consumption in the family. When making decisions about what to eat or what to drink for your family's daily, weekly, and monthly intake, it's important to choose nutrient-dense options. Therefore, making daily and weekly food lists in the family is an important and complex task. Digitizing menus like these for families makes this task easier. According to the results of our research, the Household dietary diversity score was twice as high as those who did not use digital menu programs, and crop and livestock diversification index was respectively 0.15 and 0.19 points higher rates scientifically proved (Table No. 6).

**Table №6.**

**The results of the impact of innovative approaches to increase production diversification in tomorka farms<sup>14</sup>.**

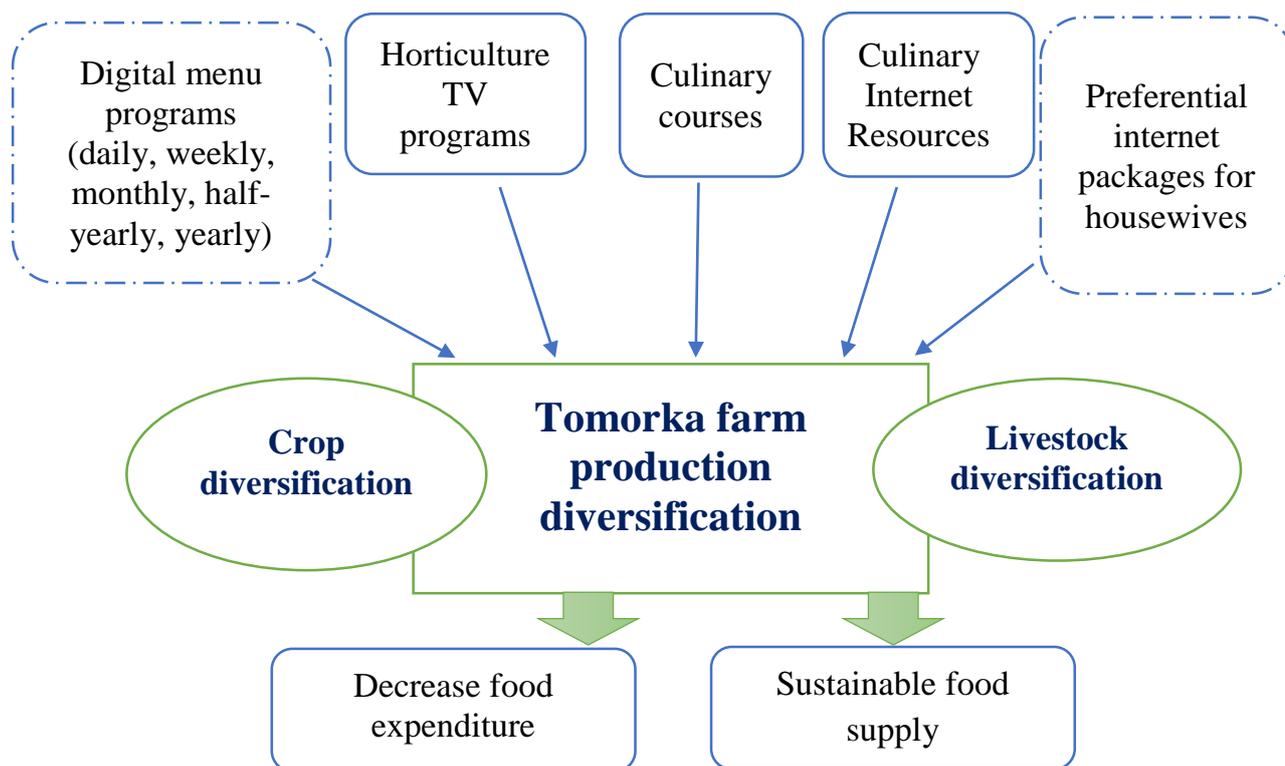
Indicators		Mass media		Digital technologies		Social infrastructure		Culinary courses		Dietary menu	
		1	0	1	0	1	0	1	0	1	0
Answers from the survey		66	254	7	313	64	256	11	309	6	314
HHI	Crop	0,21*	0,39	0,30*	0,48	0,28*	0,31	0,24*	0,31	0,28*	0,43
	Livestock	0,66***	0,86	0,55*	0,81	0,65***	0,81	0,72*	0,79	0,62**	0,81
Household dietary diversity score		5,6***	2,9	6,6**	3,0	5,7***	2,8	5,0**	3,4	7,0**	3,4

Source: Based on survey data.

The t-test was used to distinguish differences between groups.

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

<sup>14</sup> Author's account book based on statistical data.



**Figure No. 2. The procedure for organizing the center for the introduction of regulated digital programming support in the neighborhoods<sup>15</sup>.**

In Figure No. 2, as external drivers for increasing the diversification of homestead production and food consumption, the inclusion of cooking courses in different forms (offline and online) in the syllabus plans for training and adaptation of housewives in the use of digital menu programs and in the mass media from such platforms providing consultations on the use, in addition to it, the expediency of offering infrastructure options (special internet packages for women) is mentioned.

Objective innovations proposed as innovative solutions to increase the diversity of the rural population's diet have shown positive results in the sphere. Diversification of farm production and additional television and radio broadcasts for housewives, preferential internet recipes for women, cooking courses (offline and online) the introduction of teaching online menu (recipe) programs to the syllabuses and the organization and popularization of online menu (recipe) programs for Uzbeks will serve to increase the diversification of food consumption.

## CONCLUSION

1. In the dissertation, the theoretical basis and method of assessing the impact of tomorka farm production diversification on households dietary were researched and foreign strategies used in practice were compared. As a result, relevant theoretical definitions of diversification of tomorka farm production were given and its specific features were highlighted. The Herfindahl-Hirschman Index, developed by the

<sup>15</sup> Author's account book based on statistical data.

American economist Orris C. Herfindahl and the German economist Albert O. Hirschman in 1945, was found to be preferable in determining the diversification of farm production. Meantime, Poisson regression model was chosen for analysis to evaluate the marginal impact of factors of product production diversification and factors on the diversity of food products consumption, and it was recommended that these methods are suitable for research.

2. Although the volume and composition of food production in agriculture in Samarkand region has changed in a positive direction, the current state of production is not satisfactory. It became known that the growth rate of product production in some products is lower than the growth of the population.

3. In this dissertation, the diversification of crops and livestock was found to be equal to 0.298 for crops and 0.779 for livestock when calculated using the Herfindahl-Hirschman Index method in the case of 320 tomorka farms of Samarkand region. The levels of production diversification in the farm are based on the rational nutrition standards given in medical standards, based on the severity of human labor and occupational groups, taking into account the climate and national characteristics of our country in nutrition, groups aimed at satisfying the physiological necessity for energy and basic nutrients. were divided into separate high, medium and low level criteria and calculated in relation to the types of products that provide the required energy (kcal). As a result, the crop diversification index is high when it decreases from 0.4, medium to 0.7, and low when it is less than 0.7, and high when the livestock diversification index decreases from 0.45 to 0.75 and less than 0.75 was considered low.

4. In this dissertation, when the influence of farm production diversification and other social, economic and demographic factors on household consumption is marginally evaluated, a decrease in the diversification index of production of plant products on the farm by one unit decreases the consumption of food products. It showed that diversification index increases by 0.84 coefficient and decrease of livestock production index by one unit increases it by 0.15 coefficient. Meantime, consumption diversification includes an increase in farm land area by one hectare, an increase in the education of the head of the farm, participation in culinary training courses, use of culinary Internet resources, and an increase in the number of each culinary TV program, respectively 0.004 , increases by 0.062, 0.098 and 0.486 coefficients, the work of family members abroad, the increase of the road to the market, and the increase in the distance to agro-vet pharmacies lead to a decrease in consumption diversification by 0.16, 0.013 and 0.147 coefficients, respectively.

5. According to the obtained results, the importance of diversifying the production of tomorka farms is high, and the expediency of a single policy on allocating subsidies for the introduction of sustainable agricultural practices in strengthening state support for food security in our country was justified.

6. Forecast indicators of the volume of agrifood production in tomorka farms by 2028 were evaluated. According to the results, in 2028 compared to 2022, the production of root crops will be 1.2, vegetables 1.1, fruits and berries 1.1, meat and meat products 1.2, milk and milk products 1.2, eggs 1.4, fish 1.4, leguminous products 1.1, honey 1.2 and spices 1.4 times more. The indicator of production of oil

crops such as grain is in a downward trend, and by 2028, grain production is predicted to decrease by 53.6 thousand tons, and the production of oil crops products by 470.8 tons. The production trend of 10 other products belonging to the food group showed an increase.

7. For the efficient use of farm land, to regularly improve the literacy of farm land owners, to increase the diversification of farm production so that the family has food products and consumes more products rich in microelements. A proposal was made to organize a center for the introduction of digital programming on the basis of "self-sufficiency-reserve-realization" for rural households. It was found that the use of the digital program gives positive results in increasing the diversification of consumption, and electronic software helps housewives to create periodic menus, prepare high-quality meals, and provide information about food products. It was justified that it fulfills the task of supply. This program was recommended to be used in practice as an innovative solution to increase dietary diversity of the rural population.

**НАУЧНЫЙ СОВЕТ PhD.05/15.12.2022.I.155.01  
ПО ПРИСУЖДЕНИЮ УЧЕНОЙ СТЕПЕНИ PhD ПРИ  
МЕЖДУНАРОДНОМ СЕЛЬСКОХОЗЯЙСТВЕННОМ УНИВЕРСИТЕТЕ**

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**НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ  
“ТАШКЕНТСКИЙ ИНСТИТУТ ИНЖЕНЕРОВ ИРРИГАЦИИ И  
МЕХАНИЗАЦИИ СЕЛЬСКОГО ХОЗЯЙСТВА”**

**САЙДУЛЛАЕВА ФОТИМА ЖОЗИЛОВНА**

**ДИВЕРСИФИКАЦИЯ ПРОИЗВОДСТВА В ПРИУСАДЕБНЫХ  
ХОЗЯЙСТВАХ И ЕЕ ВЛИЯНИЕ НА ПИТАНИЕ НАСЕЛЕНИЯ (НА  
ПРИМЕРЕ САМАРКАНДСКОЙ ОБЛАСТИ)**

**08.00.04- Экономика сельского хозяйства**

**АВТОРЕФЕРАТ  
PhD диссертации по экономическим наукам**

**Ташкент – 2024**

**Тема диссертации (PhD) зарегистрирована Высшей аттестационной комиссией при Кабинете Министров Республики Узбекистан за PhD.05/15.12.2022.I.155.01.**

Диссертация выполнена в Национальном исследовательском университете «Ташкентский институт инженеров ирригации и механизации сельского хозяйства»

Автореферат диссертации размещен на трех языках ( на узбекском, английском, русском (резюме)) на сайте ([www.iau.uz](http://www.iau.uz)) Ученого совета и на информационно-образовательном портале «ZiyoNet» ([www.ziyo.net](http://www.ziyo.net)).

<b>Научный консультант:</b>	<b>Хасанов Шавкат Турсункулович,</b> доктор экономических наук, профессор
<b>Официальные оппоненты</b>	<b>Акрамов Камилжон Тагаевич,</b> доктор экономических наук, <b>Мустафакулов Шерзод Игамбердиевич,</b> доктор экономических наук, профессор.
<b>Ведущая организация:</b>	<b>Каршинский инженерно-экономический институт</b>

Защита диссертации состоится «\_\_» \_\_\_\_\_ 2023 года в \_\_ часов на заседании научного совета PhD.05/15.12.2022.I.155.01 по присуждению учёной степени при Международном аграрном университете. Адрес: Ташкентская область, Кибрайский район, улица Университетская, дом 2. Телефон: +998 88 801-36-00, электронная почта: [scientific\\_council@iau.uz](mailto:scientific_council@iau.uz).

С диссертацией можно ознакомиться в Информационно-ресурсном центре Международного аграрного университета (зарегистрирован под номером \_\_\_\_). Адрес: Ташкентская область, Кибрайский район, улица Университетская, дом 2. Тел.: +998 88 801 36 00, e-mail: [scientific\\_council@iau.uz](mailto:scientific_council@iau.uz).

Автореферат диссертации разослан «\_\_» \_\_\_\_\_ 2024 года.  
(протокол реестр №\_\_ от «\_\_» \_\_\_\_\_ 2024 года).

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## ВВЕДЕНИЕ (аннотация диссертации)

**Целью исследования** является оценка влияния диверсификации продукции приусадебного хозяйства на диверсификацию питания в домашних хозяйствах, а также разработка предложений и рекомендаций по ее повышению.

### **Задачи исследования:**

теоретическое обоснование диверсификации производства в приусадебных хозяйствах;

разработка научно-методических основ оценки влияния диверсификации приусадебной продукции на питание домашних хозяйств;

анализ текущего состояния сельскохозяйственного производства и определение динамики изменений;

определение уровня диверсификации производства продукции в приусадебных хозяйствах;

оценка влияния факторов на диверсификацию потребления продуктов питания с помощью эконометрической модели;

разработка механизма, способствующего увеличению диверсификации продуктов питания в домашних хозяйствах;

определение прогнозов перспективного производства продукции, относящейся к 12 группам продуктов питания, производимых на приусадебных участках.

В качестве **объекта исследования** были выбраны приусадебные хозяйства Самаркандской области.

**Предметом исследования** являются организационные, социально-экономические отношения, возникающие в процессе воздействия диверсификации производства продукции в приусадебных хозяйствах.

### **Научная новизна исследования заключается в следующем:**

диверсификация производства растениеводческой продукции в приусадебных хозяйствах предложено оптимизировать управление приусадебным хозяйством по критериям “низкого” ( $1 < \text{ННІ} \leq 0,7$ ), “среднего” ( $0,7 < \text{ННІ} < 0,4$ ) и “высокого” ( $0,4 < \text{ННІ} < 0$ );

целесообразность проведения единой политики по предоставлению субсидий основана на усилении государственной поддержки продовольственной безопасности (устойчивое сельскохозяйственное производство, устойчивое использование воды и энергии, рациональное использование климата, оптимальные методы производства для переработки и хранения, а также снижение послеуборочных потерь);

рассчитаны прогнозные параметры производства продуктов питания по 12 группам (бобовые, фрукты и овощи, мясо, молоко, мед) до 2028 года;

разработан плановый экономический механизм, направленный на достижение устойчивого снабжения продовольствием путем организации центра по внедрению регламентированного цифрового программирования снабжения домохозяйств в махаллях на основе «самообеспечения-резервов-реализации».

**Введение результатов исследования.** На основании полученных научных предложений и практических рекомендаций по оценке влияния диверсификации производства продукции в приусадебных хозяйствах на питание населения:

диверсификация производства растениеводческой продукции в приусадебных хозяйствах предложение по оптимизации управления приусадебным хозяйством по критериям “низкого” ( $1 < \text{ННІ} < 0,7$ ), “среднего” ( $0,7 - \text{ННІ} < 0,4$ ) и “высокого” ( $0,4 - \text{ННІ} < 0$ ) утверждено управлением сельского хозяйства Самаркандской области 28 марта 2023 года. Министерства сельского хозяйства Республики Узбекистан (справочник Министерства сельского хозяйства Республики Узбекистан № 06/27-06/1053 от 5 июля 2024 года). На основании внесенных предложений системными организациями Управления сельского хозяйства Самаркандской области разработан план мероприятий по повышению уровня диверсификации производства сельскохозяйственной продукции в приусадебных хозяйствах Булунгурского, Иштиханского, Джамбойского, Акдарьинского, Пастдаргомского, Паярикского, Кошрабатского, Тайлякского и Ургутского районов. В то же время предлагаемые критерии начали использоваться соответствующими организациями в округах в качестве оценочных показателей при внедрении устойчивых производственных практик;

в усилении государственной поддержки продовольственной безопасности (устойчивое сельскохозяйственное производство, устойчивое использование воды и энергии, разумное использование климата, предложение о целесообразности проведения единой политики по предоставлению субсидий на переработку и хранение (направленной на снижение послеуборочных потерь) было использовано при разработке стратегии обеспечения продовольственной безопасности и здорового питания Республики Узбекистан до 2030 года (постановление Министерства сельского хозяйства Республики Узбекистан от 5 июля 2024 года № 06/27-06/1053).числовой справочник). Политика поддержки через субсидии в обеспечении продовольственной безопасности в стране включает предложения по субсидированию производства продукции приусадебными хозяйствами, поставки им сырья, субсидирование цен при обеспечении стабильности доходов, внедрение современных водо-экономичных технологий и внедрение цифровых технологий в сельское хозяйство. Внедрение предложения по увеличению диверсификации производства продукции в приусадебных хозяйствах послужит увеличению разнообразия питания в домашних хозяйствах в среднем до 7-8.

Предложения по прогнозным параметрам производства продовольственных товаров 12 групп в приусадебных хозяйствах до 2028 года включены в перспективные планы министерства сельского хозяйства Республики Узбекистан (справочник Министерства сельского хозяйства Республики Узбекистан № 06/27-06/1053 от 5 июля 2024 года). По итогам в 2028 году по сравнению с 2022 годом производство корнеплодов составит 1,2, овощей 1,1, фруктов и ягод 1,1, мяса и мясопродуктов 1,2, молока и молочных продуктов 1,2, яиц 1,4 раза, рыбы 1,4 раза, зернобобовых продуктов. в 1,1 раза,

меда в 1,2 раза и специй в 1,4 раза больше. Показатель производства масличных культур, в том числе зерна, имеет тенденцию к снижению, и к 2028 году прогнозируется снижение производства зерна на 53,6 тыс. тонн, производства масличной продукции – на 470,8 тонн. Результаты данного прогноза учитываются при планировании производства сельскохозяйственной продукции, выращиваемой в хозяйствах Самаркандской области;

разработан и внедрен в практику Министерством сельского хозяйства Республики Узбекистан планово-экономический механизм, направленный на достижение устойчивого продовольственного обеспечения домохозяйств в сельской местности путем организации в махаллях Центра внедрения регулируемого цифрового программного обеспечения “самообеспечение-резервирование-реализация” (постановление Министерства сельского хозяйства Республики Узбекистан от 5 января 2024 года № 520).- справочник № 06/27-06/1053 от 27 июля). Эти подходы включают усиление роли средств массовой информации, цифровых технологий, социальной инфраструктуры и кулинарных курсов в различных формах, а также популяризацию цифрового меню питания в семье. Спеццентр, который было рекомендовано создать в махаллях, был введен в качестве пилотного проекта в выбранном Булунгурском, Паярикском и Тайлокском районах Самаркандской области. В результате внедрения механизма уровня диверсификации потребления в сельских семьях увеличился на 9,6%, а расходы семьи на питание (сельскохозяйственные) снизились на 12%.

**E'LON QILINGAN NASHRLAR RO'YHATI**  
**SPISOK OPUBLIKOVANNYY RABOT**  
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**I bo'lim (I chast, I part)**

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