Узбек И.Х. Воздействие некоторых экологических факторов на образование почв техногенных экосистем / **И.Х. Узбек, А.А. Мыцык, В.И. Козечко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 5–13.
Приведены результаты многолетних исследований по выявлению воздействия биотических и абиотических факторов на образование почв в условиях техногенной среды степной зоны Украины. Установлено, что первыми на вскрышные горные породы поселяются семена и бактерии аборигенных видов растений и микроорганизмов. Многолетние бобовые травы (люцерна и эспарцет) проявляют большую экологическую пластичность корневых систем и совместно с микроорганизмами и ферментами превращают горную породу в биологически деятельную среду.
Ключевые слова: техногенный ландшафт, рекультивация, почвообразовательный процесс, корни, микроорганизмы, ферменты.

Жуков А.В. Эколого-морфологические особенности дождевых червей степного Приднепровья / **А.В. Жуков, Д.Б. Шаталин** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 14–22.
Показано, что представители региональной фауны дождевых червей могут быть распределены на 3 экологические группы: эпигейные (8 видов); эндогейные (6 видов) и норники (3 вида). Наиболее распространенные виды принадлежат к числу эндогейных видов (*Aporrectodea rosea, Aporrectodea trapezoides*). Наиболее типичным среди епигейных видов является *Dendrobaena octaedra*, а среди норников – *Octodrilus transpadanus*. В пространстве, заданном измерениями длины тела дождевых червей и его удлиненностью, могут быть четко выделены представители основных функциональных групп по Буше. Эпигейные формы и норники отличаются более высокими значениями отношения logW / logL. Это свидетельствует о том, что форма их тела менее удлинена, чем форма тела эндогейных форм. Норники вообще являются наибольшими по размерам и наименее удлиненными представителями Lumbricidae. Пространство, заданное показателями степеней удлиненности сегментов и тела дождевых червяков позволяет установить наличие групп видов, которые полностью отвечают жизненным формам дождевых червяков, по Т.С. Перель. В этом пространстве группа норников занимает четко отделенную позицию. Для них характерна низкая удлиненность тела и высокая удлиненность сегментов. Относительной длиной сегментов от норников отличаются почвенно-подстилочные черви. Группа эпигейных форм в избранном морфологическом пространстве четко дифференцируется на почвенно-подстилочных и подстилочных дождевых червей. Они четко различаются по удлиненности тела и сегментов. Почвенно-подстилочные черви имеют несколько менее удлиненные тело и сегменты, чем представители группы подстилочных.
Ключевые слова: дождевые черви, морфология, экологические группы, эпигейные, эндогейные, норники.

Грицан Ю.И. Природно-заповедный фонд в структуре лесного хозяйства днепропетровской области / **Ю.И. Грицан, С.А. Сытник, В.М. Ловинская** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 23–27.
Детально проанализированы количественный и качественный состав современных категориальных сетей природно-заповедного фонда, особенности их структуры для Днепропетровской области и земель государственного лесного фонда. Рассмотрены таксационные структуры древостоев *Robinia pseudoacacia* L. – одного из самых распространенных древесных видов лесных насаждений в пределах объектов природно-заповедного фонда, подчиненных государственному предприятию “Верхнеднепровское лесное хозяйство”.
Ключевые слова: природно-заповедный фонд, Днепропетровская область, Робиниевый древостой, лесоводственно-таксационный анализ.

Шерстобоєва Е.В. Микроорганизмы почвы в условиях изменения климата / **Е.В. Шерстобоєва, Е.С. Демьянюк** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 28–33.
Анализ результатов многочисленных экспериментальных исследований и гипотетических рассуждений показывает, что глобальное потепление климата приводит к изменениям в структуре и метаболической активности почвенных микроорганизмов, их биоэкологии. Климатические изменения влияют на почвенные организмы как непосредственно через изменения температурного режима окружающей среды, так и косвенно (температурный режим и повышение CO_2) из-за изменений в физиологических и биохимических процесах, протекающих в организме растений. Не существует однозначных выводов о влиянии повышения температуры на ферментативную активность почвы. Изменчивость гидротермических условий усиливает антагонистические взаимоотношения

между патогенными микроорганизмами и растениями. Все это может иметь негативное влияние на органическое вещество почвы, активизировать процессы деструкции и увеличить объемы выбросов парниковых газов. При этом снизится производительность агроэкосистем и качество полученной продукции, что скажется на продовольственной безопасности.
Ключевые слова: изменение климата, микроорганизмы, гидротермические условия, органическое вещество почвы, биохимическая активность.

Мамедов Г.М. Использование органических отходов в качестве питательной среды для растений календулы, фиалки и драцены / **Г.М. Мамедов, А.Ф. Хомами** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 34–37.
Изучена эффективность применения компоста, изготовленного из отходов арахиса, в условиях закрытого грунта под декоративными культурами. В исследованиях использовали торф+перлит в соотношении 2:1, а в контрольном варианте – компост из отходов арахиса. В других вариантах торф заменен 25-, 50-, 75- и 100%-ным компостом из отходов арахиса. В исследованиях самым лучшим был вариант при замене торфа 75%-ным компост из отходов арахиса. Результаты исследований показали, что увеличение соотношения компоста, а также сокращение торфа на 75 %, было эффективным способом для роста и развития декоративных растений. Использование компоста из арахиса является самым эффективным способом для выращивания декоративных растений.
Ключевые слова: торф, перлит, компост из оболочек арахиса, рост растений.

Кивер В.Ф. Эффективность использования азотной кислоты разбавленной с поливной водой в агротехнологии производства кукурузы / **В.Ф. Кивер, Д.М. Оноприенко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 38–43.
Обоснованы перспективы использования растворов азотной кислоты для фертигации кукурузы в северной Степи Украины. Установлено, что использование HNO_3 в концентрации 0,0001–0,01 % не вызывает ожогов растений кукурузы, а при концентрации азота 0,01 % сформировался такой же урожай, как и при рекомендованной для орошаемой кукурузы норме минеральных удобрений $N_{180}P_{90}$. Фертигация кукурузы азотной кислотой на разных агрофонах повышала микробиологическую активность почвы в слое 0–40 см.
Ключевые слова: кукуруза, почва, азотная кислота, фертигация, концентрация, урожай, микробиологическая активность почвы, минеральные удобрения.

Ткачук А.В. Оценка репрезентативности временных рядов для определения характерных лет по естественному увлажнению под посевами люцерны в Северной Степи Украины / **А.В. Ткачук, В.Ю. Запорожченко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 44–48.
По данным метеорологических элементов проведен расчет влагозапасов под посевами люцерны агрогидрометеорологическим методом за 68-летний период. По разностным интегральным кривым установлено, что увеличение периода наблюдений не является предпосылкой его репрезентативности. Выявлено, что 22-летний период (1966–1987 гг.) является репрезентативным по сравнению с другим периодом наблюдений, и поможет товаропроизводителям при составлении структуры севооборота и целесообразности посевов люцерны.
Ключевые слова: репрезентативный период, почвенные влагозапасы, люцерна, агрогидрометеорологичний метод, цикл влажности, модульный коэффициент, интегральная кривая.

Коваленко В.В. Методологические подходы к создания ГИС режима почвенной влаги на основе агрогидрометеорологического метода / **В.В. Коваленко, Д.А. Довганенко, А.С. Белоброва** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 49–54.
Представлена методология создания геоинформационной системы режима почвенной влаги, в основу которой положен агрогидрометеорологический метод расчета влагозапасов (АГММРВ), на примере озимой пшеницы в условиях Днепропетровской области. ГИС режима почвенной влаги базируется на установлении логико-статистической зависимости между эмпирическими параметрами АГММРВ, цифровой моделью рельефа, почвенным покровом и погодными условиями.
Ключевые слова: почвенная влага, агрогидрометеорологический метод, ГИС режима влаги.

Мирошниченко Н.Н. Влияние почвенно-климатических условий, удобрения и сортовых особенностей на химический состав зерна пшеницы озимой / **Н.Н. Мирошниченко, Е.В. Панасенко, А.М. Звонарь** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 55–61.

Оценены отличия поступления макро- и микроэлементов в основную продукцию пшеницы озимой при ее выращивании в различных почвенно-климатических условиях, а также специфичность требований новых сортов с высоким адаптивным потенциалом к минеральному питанию. Подчеркнуто, что вариабельность химического состава зерна пшеницы озимой зависит от условий ее выращивания, уровня удобрения и сортовой специфики минерального питания. Вариабельность содержания азота выше, чем фосфора и калия, а микроэлементов – выше, чем основных элементов питания.
Ключевые слова: пшеница озимая, вариабельность, макро-, микроэлементы, почвенно-климатические условия, удобрения, сортовые особенности.

Шевченко М.С. Факторы севооборотного комплекса и фитоценотической мутации засоренности посевов / **М.С. Шевченко, С.М. Шевченко, Н.В. Швец** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 62–67.
Представлены результаты изучения динамики видового состава и степени засоренности посевов сельскохозяйственных культур при длительном выращивании в севообороте. Установлено, что системное применение эффективных приемов борьбы с сорняками сопровождается снижением засоренности. Одновременно происходит выравнивание степени засоренности на фоне способов обработки почвы и трансформация видового состава сорняков.
Ключевые слова: сорняки, севооборот, обработка почвы, адаптация, степень засоренности, динамика сорняков, минимализация обработки почвы, сельскохозяйственные культуры, урожайность.

Лядская И.В. Методические подходы к оценке влажности устойчивого завядания растений дерново-литогенных почв на красно-бурых глинах / **И.В. Лядская, Е.П. Масликова, А.В. Жуков** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 68–72.
Определены показатели влажности устойчивого завядания растений дерново-литогенных почв на красно-бурых глинах расчетным методом и методом вегетационных миниатюр. Установлены причины расхождений этих подходов. Выяснено, что для дерново-литогенных почв на красно-бурых глинах влажность устойчивого завядания растений составляет 6,4–10,1 %. Для исследованного типа техноземов характерно существенно неравномерное распределение этого показателя по профилю. Такие особенности сложения технозема можно рассматривать как негативную особенность для роста растений и формирования продуктивности экосистем. По результатам регрессионного анализа доказано, что наибольшее влияние на влажность устойчивого увядания растений имеет засоленность почвы. Построенные педотрансферные функции дают возможность уменьшить трудозатраты для определения данной гидрологической константы и получить показатель, который имеет очевидную экологическую значимость.
Ключевые слова: влажность устойчивого увядания растений, дерново-литогенные грунты, рекультивация.

Гаврилюк Ю.В. Влияние систем обработки почвы на ее агрофизическое состояние / **Ю.В. Гаврилюк** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 73–77.
Изложены результаты многолетних исследований по влиянию различных систем основной обработки почвы (дифференцированная и безотвальная) в севообороте на агрофизические свойства почвы – плотность, запасы влаги. Установлено, что в условиях безотвальной обработки почвы максимальная плотность почвы (1,22–1,25 г/см^3) превышала показатели оптимальной плотности почвы на глубине 20–30 см в посевах кукурузы на зерно и ячменя ярового в конце вегетации. Наиболее оптимальные условия плотности и запасов влаги в посевах сельскохозяйственных культур сложились при использовании дифференцированной системы обработки почвы в полевом севообороте.
Ключевые слова: запасы влаги, плотность почвы, севооборот, система обработки почвы.

Специфика изотопного состава чернозема оподзоленного и полученной на нем сельскохозяйственной продукции / **А.В. Ревтье, Е.Ю. Гладких, Н.Н. Мирошниченко, В.В. Шварtау, Л.Н. Михальская** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 78–84.
Исследован изотопный состав системы “почва–растение” с помощью масс-спектрометрии с индуктивно связанной плазмой. Проведено сравнение содержания кислоторастворимых форм элементов и их изотопов в черноземе оподзоленном с кларками для почв. Выявлены тенденции пространственных изменений элементного состава почвы под воздействием аммиака как наиболее сильнодействующего агрогенного фактора. Установлена избирательность поглощения отдельных изотопов химических элементов из почвы растениями, определе-

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ны корреляционные зависимости между их содержанием в растениях пшеницы, подсолнечника и почве.
Ключевые слова: ионом, изотопный состав, масс-спектрометрия, чернозем оподзоленный, безводный аммиак, транслокация.

Свиридов А.Н. Состояние агрофизических показателей черноземов обыкновенных при разных технологиях обработки почвы / **А.Н. Свиридов, М.О. Колос** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 85–90.
Установлено изменение основных агрофизических показателей черноземов обыкновенных (плотности, пористости, твердости, структурности) при безотвальных комбинированных обработках и прямом посеве. Выявлена динамика взаимосвязи плотности сложения почвы и твердости в посевах гороха и пшеницы озимой. Показана продуктивность различных звеньев севооборота, насыщенного зерновыми культурами; раскрыты тенденции изменения урожайности в зависимости от технологий обработки почвы и систем удобрения.
Ключевые слова: отвальная обработка, комбинированная обработка, прямой посев, почва, плотность почвы, твердость, пористость, структура, продуктивность зерновых культур, урожайность, горох, пшеница озимая, сорго.

Виниченко И.И. Стратегия как инструмент обеспечения экономического развития государства / **И.И. Виниченко, А.Д. Мостовая** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 91–96.
Рассмотрены теоретические подходы к стратегическому планированию и понятие стратегии. Исследованы особенности отечественного и зарубежного опыта формирования экономической стратегии на общегосударственном уровне. Проанализированы теоретические и методологические подходы к разработке стратегий экономического, социального и экологического развития национальных экономик. Выявлены основные недостатки существующей системы планирования и прогнозирования экономического развития, характерные для украинских стратегий. Сформулированы сущность стратегии на общегосударственном уровне, ее объект и субъект, стратегические цели, направления, задачи и результаты. Представлены позиции ведущих ученых по определению государственного стратегического планирования и стратегии экономического развития страны. Раскрыта необходимость разработки стратегии продовольственной безопасности в составе экономической стратегии государства. Даны рекомендации по совершенствованию теоретических и методологических подходов к разработке стратегии экономического развития в целом и, в частности, продовольственной безопасности на государственном уровне.
Ключевые слова: экономическая стратегия государства, стратегическая цель, стратегические направления, цели и задачи, стратегические результаты, стратегия продовольственной безопасности.

Тропин В.В. Законодательство Украины о сельскохозяйственной кооперации: проблемные вопросы и пути их решения / **В.В. Тропин** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 97–101.
Рассмотрены некоторые актуальные вопросы, требующие немедленного решения и нормативного закрепления, в частности относительно единого подхода к определению членов сельскохозяйственного обслуживающего и сельскохозяйственного производственного кооперативов; устранения уклона правового регулирования в сторону сельскохозяйственной обслуживающей кооперации и пренебрежения вопросами развития кооперации производственной; урегулирования вопроса определения и формирования уставного капитала сельскохозяйственного кооператива; устранения недостатков подзаконного нормативно-правового регулирования сельскохозяйственной кооперации; совершенствования механизма регистрации сельскохозяйственного обслуживающего кооператива как некоммерческой организации и тому подобное.
Ключевые слова: законодательство, сельскохозяйственная кооперация, сельскохозяйственный кооператив, членство, неприбыльность, устав.

Наконечный Р.А. Термодинамическая и инфодинамическая модель физической экономии / **Р.А. Наконечный, А.Д. Копытко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 102–107.
Анализируются некоторые аспекты термодинамической и инфодинамической моделей физической экономии. Первая из них акцентирует внимание на энергетических процессах, а вторая – на когнитивных и информационных процессах в жизнедеятельности человека. Принципиального различия между ними нет, ибо они отображают родственные между собой компоненты природы и социально-экономической жизни человека и общества и дополняют органически друг друга. Оптимальное использование преимуществ информа-

ционных процессов позволяет человеку или обществу существенно усиливать свое влияние в возрастании бюджета энергии Солнца, накапливаемой на планете Земля.
Ключевые слова: физическая экономия, энергия Солнца, термодинамическая модель физической экономии, инфодинамическая модель физической экономии, ноосфера, природа, технологии, знания, информация, общество.

Мироненко О.А. Современные информационные технологии и показатели количественного оценивания степени риска агропредпринимательства / **О.А. Мироненко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 108–113.
Рассмотрена эффективность использования информационных технологий с целью обеспечения удачно выбранного управленческого решения в агропредпринимательстве и использования объективного метода для количественного определения величины экономического риска на базе статистических данных прошлых периодов и оценивания степени риска при известном значении коэффициента чувствительности. Современные информационные технологии должны быть направлены на ускорение перехода к более совершенным методам планирования производства, чтобы вовремя оценить степени риска показателей деятельности предприятия, сократить управленческие расходы, расширить доступ агротоваропроизводителей и населения к анализу степени риска.
Ключевые слова: предприятие, экономический риск, информационные технологии, управленческое решение, вероятность, коэффициент чувствительности, агропредпринимательство.

Ярмоленко Ю.О. Методологические подходы к созданию механизма устойчивого развития АПК Украины в условиях евроинтеграции / **Ю.О. Ярмоленко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 114–118.
Определены основные вызовы, которые необходимо учитывать при разработке экономического механизма устойчивого развития аграрного сектора економики, в частности конфронтационные тенденции, главной из которых является неравномерность взаимоотношений между субъектами мирового хозяйства; проблемы создания “наиболее благоприятного” политического режима и эффективного глобального управления; неспособность всей системы организации власти адаптироваться к новым условиям хозяйствования. Предложены методологические подходы к созданию такого механизма.
Ключевые слова: методологические подходы, экономический механизм, устойчивое развитие, евроинтеграция, конфронтационные тенденции, глобальное управление, инстуциональное обеспечение, системный подход.

Хаянок Т.Н. Концептуализация кадрового потенциала работников аграрных предприятий / **Т.Н. Хаянок, И.Г. Батраченко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 119–123.
Исследованы научно-теоретические основы сущности понятия кадровый потенциал работников аграрного предприятия. Выявлены составляющие кадрового потенциала, которые четко отражают авторское представление о сущности, формировании и управлении кадровым потенциалом работников. На основе обобщения методов оценки и диагностики кадрового потенциала определен практический и научно-методологический механизмы формирования и развития кадрового потенциала работников аграрного предприятия.
Ключевые слова: кадровый потенциал, его сущность, концептуализация, діагностика, управление персоналом, аграрное предприятие.

Харченко Е.Н. Повышение экономической эффективности производства молока коров голштинской породы / **Е.Н. Харченко, А.Н. Черненко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 124–127.
Доказана целесообразность проведения эконометрического анализа в MS Excel для повышения экономической эффективности производства молока коров с учетом оптимизации формирования стада по величине массы тела. Проанализированы выборочная совокупность из 50 коров стада ПрАО “Агро-Союз” Днепропетровской области. Предложена методика формирования и критерий расчета экономической эффективности молочного стада за счет экономии кормов благодаря определению наиболее эффективной группы животных, ориентируясь на коэффициент молочности при формировании стада из коров оптимальной массы тела.
Ключевые слова: масса тела, надой, коэффициент молочности, формирование стада, корреляция, критерий эффективности, экономический эффект, электронные таблицы MS Excel.

Нужна С.А. Математические аспекты моделирования и планирования деятельности агропромышленных предприятий в услови-

ях неопределенности / **С.А. Нужна** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 128–133.
Предложена стохастическая экономико-математическая модель аграрного предприятия, а также концепция оптимизации процессов агропроизводства в условиях неопределенности. Полученные результаты могут быть использованы для разработки планов деятельности предприятий для любой природно-экономической зоны. Реальные расчеты подтверждают экономическую эффективность разработанной концепции планирования.
Ключевые слова: экономический риск, стохастическая экономико-математическая модель, аграрные предприятия, стратегическое планирование, тактическое планирование, критерий оптимальности, технико-экономические показатели, товарная продукция, прибыль, рентабельность.

Слюсар С.Т. Проблемы становления и развития сельскохозяйственных обслуживающих кооперативов в Украине / **С.Т. Слюсар** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 3(41). – С. 134–139.
Исследована специфика правового регулирования отношений, возникающих в связи с деятельностью сельскохозяйственных обслуживающих кооперативов. Предложено развитие обслуживающей кооперации как одно из стратегических направлений развития сельских территорий. Усовершенствована на основе многофункциональности организационно-экономическая структура кооперативного формирования. Утверждается, что при надлежащей поддержке со стороны государства сельскохозяйственные обслуживающие кооперативы могут стать мощными игроками на рынке, как это произошло в Канаде и странах ЕС.
Ключевые слова: сельскохозяйственная кооперация, сельскохозяйственный обслуживающий кооператив, кооперативные формирования, налоговое законодательство, сельская территория, сельское население.

Effects of some environmental factors on the soil of technological education of ecosystem (p. 5–13)

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Some results of years of research to identify the impact of environmental factors (biotic and abiotic) in the formation of soil in a man-made environment of the steppe zone of Ukraine. The influence of some abiotic (climate, rock, relief, mineral fertilizers, irrigation) and biotic (perennial grasses, organic fertilizers and composts, microorganisms and protozoa, invertebrates and vertebrates, enzymes) factors on the formation of soils. It was found that the first stripping rocks and bacteria colonize the seed of native species of plants and microorganisms. Perennial legumes (Medicago L. and Onobrychis Adans) 3rd year of life are dominant and are the centers of concentration of soil fertility elements. The meter layer of rock they accumulate up to 11 t/ha of roots in the air-dry measurements. They, for example, only one layer of 0–20 cm, contained an average of 350 kg/ha of N, 45 kg P_2O_5, 110 kg K_2O and 290 kg/ha CaO. It is experimentally proved that the dynamics of the total number of microorganisms due to the complex nature of the relationships that are emerging between microorganisms, plant roots and physical-chemical properties of parent rocks, exposed to constant weather conditions. Formed under the influence of harsh environmental conditions of the microbial community structure relatively conservative, and therefore the number of individual groups of organisms reflects the level of biological activity of the parent rock. In any case, the maximum number of microorganisms is timed for the spring season. The last thing they number in the summer. From this it depends on the intensity of decomposition of plant residues in the formation. As an example, data on mass oligonitrophilic that reaches high values, especially in the rhizosphere of grasses, where they are only one layer of 0–20 cm accumulate 42,1 kg/ha nitrogen gsha. The evolution of the system plant – soil-forming rock – microorganisms occurs in the direction of increasing the density of living matter and enhancing its impact on organic and mineral part of the breed. It was shown that the enzyme activity is a measure of the intensity and direction of soil formation processes, taking place under the influence of biotic and abiotic factors. Here the roots of plants and micro-organisms carried out a major contribution to the formation of the enzyme potential soil forming.

Keywords: technogenic Landscape, recultivation, process of soil forming, roots, microorganisms, enzymes.

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Ecomorphological properties of the steppe Pridniprovie earthworms (p. 14–22)

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The article shows that representatives of regional earthworm fauna may be divided into 3 ecological groups: epigeic (8 species); endogeic (6 species) and anecic (3 species). The most common species belong to endogeic species (*Aporrectodea rosea, Aporrectodea trapezoides*). The most typical among epigeic species is *Dendrobaena octaedra*, and among anecic is *Octodrilus transpadanus*. In space, specified the length of the body dimensions of earthworms and his elongations can be clearly allocating major functional groups according Bouche. Epigeic and anecic are more high values of relationship logW/logL, which suggests that the shape of their body is less extended than the body form endogeic forms. Anicic are the greatest and least elongated representatives Lumbricidae. Space specified indicators of the degree of elongation segments and degree of elongation of

the body earthworms allows you to determine the existence of groups of species that fully meet the life forms of the lumbricidae according T.S. Perel. In this space anecic takes a clearly differentiated position. For them, low elongation of the body and high elongation. Relative length of segments from anecic different litter worms. In turn, the group epigeic forms in morphological space clearly differentiated on the soil-litter and litter dwelling earthworms. They clearly differ on elongation of body and segments. Soil-litter worms have somewhat less elongated body and elongated segments, in comparison with litter-dwelling worms.

Keywords: earthworms, morphology, ecological groups, epigeic, endogeic, anecic.

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Natural reserve fund in the structure of the forestry Dnepropetrovsk region (p. 23–27)

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Dnipropetrovsk region is one of the last places among regions of Ukraine in area of the natural reserve fund (NRF) and it's only 1,7 % that is extremely poor. This average index for Ukraine is 5,7 %. Point of view, this situation cause by a variety of the reasons, the main of which are the considerable level of anthropogenic transformation of natural steppe ecosystems, the disturbance of soils, a developed industrial enterprises and inefficient government environmental policy. To determine the perspective of development of the natural reserve fund in Dnipropetrovsk region, which is located within the natural zones of Steppe of Ukraine, it is necessary to evaluate the contemporary structure and state of the NRF. Especially it is relevant for the analysis of NRF within of lands covered with forest vegetation. The forest within steppe zone is mainly of the artificial origin, and cannot represent the nature this zone. This is impossible without assessment the structure of NRF and the state of the autotrophic biotic component of protected ecosystems.
The aim of this work is the analysis of the structure of natural reserve fund within of the forest the Dnipropetrovsk region and assessment forestry-biometric indexis of *Robinia pseudoacacia* stands within NRF of the Northern Steppe of Ukraine.
Natural-reserved fund of the Dnipropetrovsk region presents 139 objects, total area of 57046,2 ha: of them of national and local significant – 30 objects (30,3 thousand ha) and local significant of 109 objects (26,7 thousand ha).
Robinia pseudoacacia stands within the analyzed NRF occupy a lot part of the plantation area: "Velyka Zapadnya" – 66,6 %; "Balka Gostra" – 63,3 %; "Balka Gluboka" – 59,9%; "Urochyshe Paskove" – 45,9 %. The largest share of the area of protected objects *Robinia pseudoacacia* stands related to overmature age group with the total wood stock is 204,07 thousand m^3.
Quantitative and qualitative state of the natural reserve fund of the Dnipropetrovsk region is suboptimal and doesn't corresponmodern standards. The expansion of NRF is an urgent action, because the current levels of wilderness protection in this region is very distant from the European and cannot provide for the peculiar conservation of the natural flora and fauna and sustainable functional of the region's environment. But the increase the area of the protected objects and territories must will be on the land occupied by natural steppe ecosystems, but not on the artificial forests. Autotrophic component of ecosystems within a significant number of objects of natural reserve Fund, the subordinate DOLMG formed traducianism wood species with a high ecological valence – robno nesprawivaite prestigioso age. Conservation status of the objects of the NRF makes it impossible for the forestry measures, which leads to the formation of stands of poor sanitary condition and questioned the conservation value of these objects.

Keywords: Natural reserve fund, Dnepropetrovsk region, Robinia pseudoacacia, forestry-biometric indexis.

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Soil microorganisms under climate change (p. 28–33)

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Analyses of experimental results and hypothetical reasoning suggests that global warming causes change in the structure and metabolic activity of soil microorganisms, their bioecology.
Climatic conditions carry both direct and indirect impact on the livelihoods of organisms and soil formation. The temperature and humidity are important components of environmental conditions that regulate the flow of soil-biological processes.
Climate changes affect the distribution of species of organisms and the interaction between them. In terrestrial ecosystems that range changes depends on the interaction of aboveground and underground groups of organisms that affect species composition, quantitative characteristics, ecosystem processes, as well as connections within communities and ecosystems. In turn, changes in the interaction of species in response to climate change will have a significant impact is on biodiversity and function of terrestrial ecosystems.
Soil microorganisms also indirectly affect the C cycle by improving soil aggregation, which physically protects the soil organic matter. That is, microbial contribution to the absorption of C determined by the interaction between the amount of microbial biomass structure of microbial communities, microbial metabolic products. Due to sensitivity to temperature process cycle carbon slight change in temperature can lead to large emissions of carbon back into the soil atmosphere. Indirect effects of climate change on microorganisms indirectly through plants may be stronger than the direct effects of temperature factor on the composition of microbial communities.
These observations suggest that global warming of climate leads to an expansion of thermophilic fungi species, and pathogens begin to spread from the south to the north. They form the overwintering structures that protect them from external influences. Increasing the temperature can lead to a decrease of the latent period and to increase of pathogens aggressiveness. Temperature can influence the function of the parasites virulence genes and resistance genes in plants.
Strengthened antagonistic relationship between plants and pathogens, between host and parasite. Changing and mutually trophic links in consort, broken their resistance and orientation. Climate changes will influence soil organisms both directly (warming) and indirectly

(warming and elevated CO_2) due to changes in physiological and biochemical processes in the body plant.

There is little evidence that atmospheric CO_2 enrichment will increase total soil organic matter content because greater C flow into soil stimulates the soil food web, often leading to equivalent increases in soil CO_2 efflux. No definitive conclusions about the impact of raising the temperature on enzymatic activity in the soil.

This may adversely affect the organic component of soil, enhance the processes of degradation and increase greenhouse gas emissions. This will decrease productivity of agroecosystems and the quality of the resulting product, which in turn affect food security.

Keywords: climate change, soil microorganisms, hydrothermal conditions, soil organic matter, biochemical activity.

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The reuse of peanut organic wastes as a growth medium for marigold, viola tricolor and dracaena marginata plants (p. 34–37)

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This research conducted to evaluate the possibility using peanut shells compost as a suitable medium in cultivating ornamental plants. Peat + perlite with a ratio of 2:1 without peanut shells compost used as control treatment. Peat replaced by 25, 50, 75 and 100 % V/V of peanut shells compost in control. Plant growth characters include height, Stem and leaf fresh weights and stem and leaf dry weights measured in marigold, Viola tricolor and Dracaena marginata plants. Results showed that peanut shells compost had more effects on growth properties like height, stem and leaf dry weigh in comparison to control. The lowest growth related to 100 % treatment of peanut shells and control. The most growth of Viola tricolor, Dracaena marginata and Marigold plants resulted in 25, 50 and 75 % peanut shells compost, respectively. Results show that increasing compost peanut shells as well as reducing the use of peat, can be effective on the ornamental plants growth. The results revealed that using composted peanut significantly increased plant height and stem diameter.

Keywords: peat, perlite, compost, peanut shells, plant growth.

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Efficiency of using nitric acid diluted with irrigation water in agricultural technologies of corn production (p. 38–43)

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Prospects of nitric acid using for fertigation of corn in the northern Steppes of Ukraine were grounded. It was defined that the use of HNO_3 with concentration 0,0001–0,01 % does not cause the burns of corn, and the concentration of nitrogen at the level 0,01 % forms the same grain yield as the recommended norms for irrigated corn fertilizer $N_{180}P_{90}$. Fertigation of corn with nitric acid in various agricultural phones raised the microbiological activity in 0–40 cm of soil layer.
For northern steppe of Ukraine, low concentrated nitric acid can be promising nitrogen fertilizer for maize on irrigated lands (for fertigation).
Artificial acid rain with the concentration of NO_3 0,6–9,06 g/lcan increase the yield by 1,23–1,52 t/ha compared to options where fertilizer used by superficial way before presowing cultivation of soil, but was also environmentally safe. Under the influence of nitric acid, nutrients free up from minerals in amounts, which is necessary for corn.
Reducing the norm of N, introduced as a solution HNO_3 from N_{180} to N_{18} and $N_{1,8}$ accompanied by a decreasing of the average yield of grain from 10,83 to 8,85 and 7,54 t/ha. Adding dissolved HNO_3 with irrigation water on the ensuring optimum fertilizers did not provide further growth of the crop. With the highest standards of HNO_3 concentration in irrigation water of 0,01 % and rate of chemical fertilizers N180P90 the productivity of grain was decreased, that was due to excess N in the soil solution and inhibition of some corn plants.
The maximum activity of microorganisms that destroy cellulosewas observed in 0–10 cm of soil

layer, and microbiological activity had increased from 24,6 to 74 %.
The most intensive microbiological activity of soil was before harvesting of corn in a layer of 0-10 cm, and with increasing depth of soil to 0–40 cm its biological activity had decreased in all variants of the experiment. Adding nitric acid solution with irrigation water increased soil microbial activity, indicating a promising research in this area.

Keywords: corn, soil, nitric acid, fertigation, concentration, yield, microbiological activity of soil, mineral fertilizers.

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Evaluation of the representativeness of the time series to determine the typical age at natural moisture sown with alfalfa in Northern Steppe of Ukraine (p. 44–48)

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Moisture in the soil has an important role in many processes occurring there in. However, not always the number observations by moisture reservesis is enough. So, with availability of the data need to determine the period which would characterize overall totality, i.e. representative period. It includes several (at least two) pair of closed cycles of humidity fluctuations. The cycles of short duration (2–4 years), which are usually superimpose on the basic cycles and incomplete cycles with only a damp or only arid phase, do not account. Cyclicality oscillation it is advisable to explore the integral (sum or difference) curves deviation of annual values of moisture reserves from of the average values over the entire observation period. The team of authors, headed by prof. A.F. Litovchenko previously determined representative period of observations for the moisture reserves from 1966 to 1987. In order to confirm or refute choice towards to moisture reserves under alfalfa crops were calculated the modular coefficients for 68-year period from 1948 to 2015. As a result, the calculations have found that to assess the type of natural moisture crops of alfalfa in northern Steppe of Ukraine should take the time series 1966–1987.

Keywords: representative period, soil moisture reserves, alfalfa, ahrohidrometeorological method, humidity cycle, modular ratio, integral curve.

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Methodological approach of developing GIS of the soil moisture regime based on the agrarian and meteorological method (p. 49–54)

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The paper deals with modernization of the agrarian and meteorological method of soil moisture content calculation (AMMSMCC) in the fields planted with the main agronomic cultures using weather information portal www.rp5.ua as base to developed GIS of the soil moisture regime. The optimized complex parameter of antecedent weather conditions calculated using open web-meteorological data base and accuracy of the method. The correlation between calculated and measured data is varying between 0,92 and 0,97 within upper 1 m soil layer and 0,9–0,94 – for half meter soil layer. Comparing with basic model the standard deviation is decries all over on 17–31 %. This level of accuracy allows to developed GIS of the soil moisture base on AMMSMCC. It was established that morphology is the main factor that has height level of affecting on precipitation distribution with in soil through infiltration, evaporation and regulation of the surface and subsurface runoff. Methodological approaches that formalized elevation and the soil cover as domain conditions of the soil moisture regime and its space inhomogeneity was developed. The formalization procedure is based on combination of the slope curvature, aspect, topographic wetness index, soil grain-size distribution and infiltration. The GIS algoritm of analysis of the soil moisture accumulation within agrarian cultures is developed. The logical and the statistical correlation between empirical data of the AMMSMCC, digital elevation model and soil cover features is established.
Maps that was built in GIS allows to solve the problems of rational usage the agriculturally used areas, to estimate the hydrothermal inhomogeneity of slopes with different aspect and curvature; GIS of the soil moisture can be advanced in the soil monitoring system, adaptive soil management, precision agriculture, site class determination and land monetary value.

Keyword: soil moisture, the agrarian and meteorological method, GIS of the soil moisture regime.

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I***mpact of soil and climatic conditions, fertilizer and varietal features on the chemical composition of grain of winter wheat (p. 55–61)***

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Varietal features, fertilizers, soil and climatic conditions significantly affect the content of macro- and microelements in the grain of winter wheat. This information was obtained in expeditionary studies in three soil-climatic subzones, where 85 samples of grain were collected on different soils with different fertilizer levels. Particular attention has been focused on new varieties of winter wheat with high adaptive potential and specific requirements to mineral nutrition.
The ratio N: P_2O_5: K_2O in winter wheat grain from the Western Forest zone is 1:0,29:0,22, from the Right-bank Forest-Steppe is 1:0,30:0,20, and of the Left-bank Forest-Steppe is 1:0,32:0,23. This means that a larger amount of Nitrogen corresponds to unit of Phosphorus than previously believed, especially in humid climate. Depending on the varietal factor this ratio varies even more:1:0,25–0,37:0,17–0,28. This indicates a wider ratio of nitrogen to phosphorus in the varieties of modern plant breeding, which aims at increasing the efficiency of nitrogen use by plants.
A typical feature of the grain from the Western Forest zone of Ukraine is low content of phosphorus, from the Right-bank Forest-Steppe – an enrichment of nitrogen, and from the Left-bank Forest-Steppe – a more high content of potassium. Grain products obtained on acid soils of the Western Forest zone and the Right-bank Forest-Steppe are depleted on Zinc, but contains a lot of Iron, however grain from the Left-bank Forest-Steppe – vice versa. The lowest content of Copper was fixed in Right-bank Forest-Steppe.
The variability of the chemical composition of grain of winter wheat is caused by the conditions of its cultivation, fertilizer level and varietal specificity of mineral nutrition. Variability of the content of chemical elements in grain increases in inverse proportion to their absolute content: 5–10 % for basic nutrients (the variability of nitrogen is higher variability of phosphorus and potassium), 12–24 % for the elements with a concentration about 10–100 ppm (Zn, Fe, Mn), and even more – for the elements with the concentration 1–10 ppm (Cu, Co). Fluctuations of Nitrogen in the grain of the most productive varieties of German selection reaches 0,7 %.

Keywords: winter wheat, variability, macro- and microelements, soil and climatic conditions, fertilizer, varietal features.

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Factors of crop rotation complex and phitocenotic mutation of the weediness of sowing (p. 62–67)

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By a main problem for soil protective agriculture today as well as before there is a high risk of loss of harvest through the increase of degree of weediness both as a result of permanent concentration of seminal and vegetative embryos in the top layer of soil and complication of application of herbicides at presence of vegetable bits of pieces of mulch.
With the aim of identify the regularuty of forming of specific composition of basic weeds and their quantitative dynamics, influence of separate cultures on the rates of development of weeds agrocoenosis, determination of role of separate seasonal periods in cleaning of soil from seed and vegetative reproductive organs of different biologic types, and also system of basic till of soil on the degree of weediness this list of questions was studied in a 5-poles crop rotation.
At a high technological culture in a crop rotation during 5 rotary the role of basic till of soil after influence on activity germination of weeds changed substantially. Growing of agricultural cultures in the high-competition sowings promoted degree of weediness in black pair on the stage of 5th rotary to become level on a background moldboard plowign and chisel till without the rotation of layer. Indexes of activity of germination of weeds in this case were near and made 224,5 and 244,3 ps./m^2.
The dynamics of indexes of the productivity for 25-years period of development of crop rotation was characterized by growing tendencies on each cultures of crop rotation and on a background the intensive and soil protection system of soil tillage.
It is thus possible to consider that evolutional adaptation of weeds has extraordinarily powerful renewable energy, that allows to overcome the technological barriers directed on the fight against weeds. Id est the biological variety of weeds is impossible to neutralize fully, but only to support minimum harmfulness below economic threshold.

Keywords: weeds, crop rotation, tillage, adaptation, level of weediness, dynamic of weeds, minimalization of tillage, agricultural culture, crop capacity.

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Methodical approaches to assess sustainable plant wilting point moisture sod-lithogenic soils on reddish-brown clay (p. 68–72)

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The sustainable plant wilting point moisture indicators have been defined in the work for sod-lithogenic soils on reddish-brown clay by means of calculation method and using vegetation miniatures and the causes of variances of these approaches. The sustainable plant wilting point indexes have been found to be 6,4–10,1 % for sod-lithogenic soils on reddish-brown clay. The distribution of this indicator on the profile of technosem type examined has been found to be chara-cterized by significantly unequal. Such features of tehnozem construction can be seen as a negative feature for plant growth and formation of ecosystem productivity. The upper and lower layers of soil with comparatively lower humidity values sustainable withering plants separated medium layer with high values of this index. Based on the results of the regression analysis proved that the greatest influence on the humidity sustainable withering plants have soil salinity. For the calculation of this indicator was taken into account. Constructed pedotransfer function enable to reduce labor costs to determine the hydrological constants and get an indicator that has obvious environmental significance.

Keywords: sustainable plant wilting humidity, sod-litogenic soils, recultivation.

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The influence of tillage systems on it agroni condition (p. 73–77)

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Methods tillage change periodically, to replace one coming the other, but are such fundamental types of basic tillage, as plowing and subsurface treatment. Today among scholars and practitioners are proponents and opponents of these types of tillage.
The paper presents the results of years of research on the effect of primary tillage systems (differentiated treatment till methods) in the rotation on agrophysical soil properties – density and moisture reserves.
Investigations were carried out in crops of sunflower, corn, winter wheat and spring barley in two periods – the beginning and end of the growing season in these tillage systems: 1) differentiated tillage, moldboard plowing to a depth of 22–24 cm, plow PLN-5-35 maize and sunflower, till methods to a depth of 22–24 cm, CNG-250, after cultivation of sunflower and spring barley; 2) till methods to a depth of 22–24 cm, CNG-250, while growing all crops in the rotation.
The results of many years of experience have shown that the maximum soil density 1,22–1,25 g/cm^3, which is higher than the optimum density, noted during the subsurface tillage at a depth of 20–30 cm in crops of corn and spring barley at the end of the growing season crops.

Optimal conditions of soil density and moisture reserves in agricultural crops were formed by using a differentiated system of tillage in crop rotation.

Keywords: soil, moisture, soil density, crop rotation, the tillage system.

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Specificity of chernozem podzolic isotopic composition and agricultural products that was growing on it (p. 78–84)

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The article aims to assess the features of the chernozem podzolic and crops isotopic composition, as well as their changes under the influence of anthropogenic factors, in particular, the application of mineral fertilizers. Contents of elements and their isotopes in the plants and soil samples was determined by a mass spectrometer with inductively coupled plasma (ICP-MS). The article describes importance of studies the soil and plants isotopic composition for indication biogeochemical and geochemical processes of human evolution soils, deficient macro-, micro- and ultramicroelements for plant nutrition. Have been considered perspective areas of research "soil-plant" system isotopic composition, been compared the content of acid-soluble forms the elements and their isotopes in the chernozem podzolized with Clark. Mass fraction of chemical elements in the chernozem podzolized, given the specifics of its genesis, is following: ^{56}Fe > > ^{39}K > ^{43}Ca > ^{70}Zn > ^{55}Mn > ^{50}Cr > ^{24}Mg > ^{23}Na > > ^{34}S > ^{67}Zn > ^{68}Zn > ^{66}Zn > ^{52}Cr > ^{31}P > ^{99}Mo > > ^{64}Zn > ^{35}Cl > ^{63}Cu > ^{59}Co > ^{78}Se > ^{127}I > ^{95}Mo > > ^{98}Mo. For the investigated chernozem podzolic in comparison with other chernozems is characteristic the accumulation of biogenic Mn, Zn and Se.
Have been established the specific features of the application of anhydrous ammonia effect on the elemental composition of chernozems podzolic at different distances from its localization zones. Have been determined contrast accumulation in plants of different isotopes under influence application of different types of nitrogen fertilizer. The concentration of acid-soluble Ca, Mg, Co, Mn increases as it approaches to the tape fertilizers and Se, S, Mo, Na, P, on the contrary, decreases.
Have been established selective absorption by plants from the soil ^{70}Zn isotope compared to ^{67}Zn, ^{68}Zn, ^{66}Zn and ^{64}Zn, isotope ^{53}V above ^{53}V, ^{52}Cr above ^{50}Cr. The isotopes ^{43}Sa and ^{46}Sa, ^{86}Sr and ^{88}Sr, ^{85}Rb and ^{87}Rb are absorbed by plants equally. The correlation relationship between their content in plants and soil has been determined. In chernozem podzolized and plants of winter wheat determined a close correlation be-

tween content of ^{70}Zn, ^{66}Zn, ^{64}Zn, ^{35}Cl, ^{67}Zn, ^{68}Zn, ^{56}Fe, ^{31}P; in chernozem podzolized and sunflower determined a close correlation between content of ^{63}Cu, ^{52}Cr, ^{34}S, ^{50}Cr, ^{43}Ca, ^{56}Fe, 64Zn, ^{98}Mo, ^{66}Zn.

Keywords: ionom, isotopic composition, mass spectrometer, chernozems podzolic, anhydrous ammonia, translocation.

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Agrophysical indices condition of ordinary chernozemsaccording to different technologies of soil cultivation (p. 85–90)

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The change of the main agrophysical indices concerning ordinary chernozems (compactness, porosity, solidity, structure) according to mouldless board combined cultivations and direct

sowing has been ascertained. The dynamics of correlation between soil compactness and its solidity in peas and winter wheat crops has been revealed.

The observations made over the density of 0–30 sm of soil level in the sowings of peas and winter wheat testify about the fact that combined tillage doesn't lead to the compression of 0–10 sm and 20–30 sm of soil layers.

The increased density of soil formation was on the variant with direct sowing along the whole plowed layer. In the layer of 0–10 sm a it increased at the level of pea vegetation by 0,05 gr/sm (4,5 %) and in the layer 20–30 sm – by 0,09 gr/sm (7,2 %). The bigger increase by 0,08 gr/sm (6,8 %) in 0–10 sm layer was observed before peas harvesting. In the whole the tendency towards the increase of density in all soil layers during peas vegetation was noticed.

The result of our studies stress that close connection exists between the indices of density and firmness of the soil. The medium meaning of firmness 0–30 sm of soil layer during vegetation period of peas and winter wheat didin't exceed the level of icreased density (over 30 kg/sm^2). But before peas harvesting the firmness of 0–30 sm of soil layer under direct sowing was 33,5 kg/smand as for the winter wheat correspondently – 32,4 kg\sm.

The study of the structure state of 0–30 sm of soil layer in the sowings of cereal crops proved that technologies of soil tillage had less general influence on the processes of soil formation that crops and crops residues left in the fields after harvesting. The largest quantity of agronomy valuable aggregates (0,25–10 mm)was noticed in the sowings of peas (up to 76,1–82,0 %), less – in the sowings of winter wheat, and in the sowings of sorghum for grain their quality reduced up to 61,7–70,4 %. The productivity of different links in crop rotation satiated with cereals has been shown. The tendencies in crop capacity change depending on the technologies in soil cultivation and fertilizing systems have been disclosed.

Keywords: mouldless board cultivation, combined cultivation, direct sowing, soil compactness, solidity, porosity, structure, cereals productivity, crop capacity, peas, winter wheat, sorghum.

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Strategy as a tool for economic development of the state (p. 91–96)

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The article deals with the theoretical and methodological approaches to strategic planning and understanding the concept of strategy. The main problems, associated with the strategic planning of economic development at the state level, are revealed. The features of foreign and domestic experience of economic strategy formation at the national level are researched. Theoretical and methodological approaches to creating strategies of economic, social and environmental development of national economies are analysed. The basic shortcomings of the existing system of planning and forecasting of economic development of typical Ukrainian strategies are identified.

The essence of economic strategy at the national level, its object and subject are formulated. The strategic goals, directions, objectives and results of the strategy are determined. The positions of leading scientists determining

the state strategic planning and economic development strategy of the country are presented. The tasks of the state economic strategy of Ukraine are identified in the research. The need for effective strategic economic policy is approved for implementation of the state strategy.
The need of forming the strategy of food security as a part of the economic strategy of the state is revealed. The recommendations for improving the methodological and methodical approaches to develop the economic strategies in general and the food security strategies in particular at the national level are proposed.

Keywords: economic strategy of the state, the strategic objective, strategic directions, goals and objectives, strategic results, the strategy of food security.

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Law of Ukraine on agricultural cooperation: challenges and solutions (p. 97–101)

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The article investigates issues of current legislation regulating the establishment and operation of agricultural cooperatives, and developing ways to improve them. Proved that the efficiency of agricultural production of different types of business entities in the agricultural sector depends on proper legislative support of their legal status, the maximum consideration of the specifics of their production activities in the regulation. We consider some urgent issues that need urgent attention and regulatory consolidation, in particular regar-ding: a unified approach to the determination of the members of the agricultural service and agricultural production cooperatives; elimina-ting bias towards regulation of agricultural service cooperatives, and the neglect of issues of industrial development cooperation; determination and settlement of the authorized capital of the agricultural cooperative; deficiencies by-law legal regulation of agricultural cooperatives; improve the mechanism of registration of agricultural service cooperative as a non-profit organization and so on.Attention is paid to the different approach of the current legislation to regulate various aspects of agricultural production and agricultural service cooperatives. Developed and proposed conclusions on improving legislation aimed at regulating cooperative relations.

Keywords: law, agricultural cooperative activity, agricultural cooperatives, membership, non-profit status, charter document.

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Thermodynamic and infodynamic model of physical economy (p. 102–107)

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Physical economy becomes an alternative to the dominant doctrine of XIX–XX centuries – political economy – which has sustained the thesis of the leading role of socioeconomic

factors in the multiplication of the humanity wealth and largely ignored the natural factors, giving them the human life status of substrate only, avoiding its understanding as an important energy and information system, a kind of substance. As a result, this led to a neglect of the nature and the person himself who was seen primarily as an integral part of a more general in its scope and content social and production processes. Teaching of physical economy was developed by ukrainian thinkers S. Podolynsky, V. Vernadsky, M. Rudenko employing the methodological approaches of physiocrats and cameralism. Teaching of physical economy laid the foundation for rethinking the quality of human relationship with nature and its relation to its own work, which begins to be thought as one that is closely connected with the energy and information processes, and can become productive only by rationally grounded mechanisms, intensifying the action of nature. According to the level of science and technology in the bosom of physical economy were formed two models: thermodynamic and infodynamic. The first one focuses on energy processes, and the second – on cognitive processes and information in human's life activity. There is no principal difference between them, because they reflect the related components of natural and socio-economic life and society and organically complement each other. Turning the researchers' and producers' attention to infodynamics allows a deeper grasp of information and cognitive relationship with the universe, encompassing all the phases: production, transmission, reception, consumption and exchange of information and knowledge. Thus, we take into account not only the quantity but also the content (quality) parameters of information and knowledge in human life and society. Information processes are inextricably linked to energy processes, optimal advantage of the same information processes allows a person or society significantly strengthen its role in the growth of solar energy budget, being accumulated on Earth, creating a high-tech product as a result of the synthesis of science and technology on the one hand, and natural processes on the other.

Keywords: physical economy, solar energy, thermodynamic model of physical economy, infodynamic model of physical economy, noosphere, nature, technology, knowledge, information, society.

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The modern information technologies and indicators of quantitative evaluation agroenterprise's risk factor (p. 108–113)

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This question is about effective use of information technologies to provide well choosen management solution at the agricultural enterprise

and using an objective method for evaluation the value of the economic risk based on statistical data of recent years and evaluation of risk's degree with the known value of sensitivity factor. Modern information technology should be focused on accelerating the transition to more advanced production planning techniques. Nowdays agriculture of Ukraine is an economy segment, which evolving fast. It generates a significant part of Ukraine's GDP. The main factors which assist agricultural enterprise's evolvement are applying of modern equipment, the newest management software and creating the methods of automatic evaluation of the risk's degree for business. Since information technologies influence on management's efficiency, therefore it changes the working conditions and attract information as a labor. It is important to use information technologies to evaluate the risk's degree of company activity in time, decrease management expenses, widen the access of risk's degree analysis to agricultural producers and population.

Keywords: company, economic risk, Information Technology, management solution, probability, sensitivity factor, agroenterprise.

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Methodological approaches to forming the economic mechanism for sustainable development of agriculture in Ukraine in terms of European integration (p. 114–118)

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In the article the methodological approaches to forming the economic mechanism for sustainable development of Ukraine's agricultural in the conditions of integration. It is defined the main challenges of European integration at this stage of the global economy such as the unequal relationship between the subjects of the world economy; problems of creation of "the most favorable" political regime and effective global governance; the failure of the entire system of governance to adapt to new economic conditions. It is noted that in the present conditions of democratic mechanisms and management processes at both the national and global levels need to be improved. It is proved that sustainable development is a civilization conservation project, which requires rethinking the foundations of existence and transformation of structural and institutional foundations.

It is proved that countries policy in solving international problems of sustainable development should be established on the basis of national interests, the real capacity of the state to meet international commitments and critical attitude to the concept of sustainable development, as well as directions and means of implementation globally.
The path to sustainable development of agricultural production and building its economic mechanism should be based on the principles of a systematic approach to the establishment of institutions, taking into account the critical trends of functioning of the national economy and the European integration trends.
It is focused that the economic sustainable development of agriculture of Ukraine cannot be achieved without building innovation-investment model, which should take into account national security requirements including food and requirements for standardization of production and management systems based on existing international standards and norms. Resolving the institutional problems of agricultural production for building the sustainable economic mechanism of agrarian sector of Ukraine at the present stage from a methodological point of view is the most important problem. It is necessary to increase the efficiency of the management of the agricultural sector and improve its regulation, to intensify the development of cooperation and integration and improve land relations to increase quality of life.

Keywords: methodological approaches, economic mechanism, sustainable development, European integration, confrontational tendencies, global governance, institutional support, systematic approach.

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Conceptualization of agrarian enterprise employees' human resource (p. 119–123)

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The conceptual model of the scientific research of the concept employees' personnel potential for agrarian enterprises is established. It involves the study of the concept essence from the position of personnel "Aktual" which the employee can transfer to new activities (areas) and human resources. There are some components of human resources, which reflects the author's idea of the nature, development and management of human resources staff clearly.
The scientific and methodological development of human potential mechanism of agrarian enterprises workers is proposed for the cooperation principle and is based on the concept of L.S. Vyhotskyi about the "zone of the proximate development". Using this concept it is emphasized that the formation and development of human potential agrarian enterprises employees is based on the collective social activities through the cooperation organization between colleagues, employees and management and government.
Based on the synthesis methods of human capacity assessment and diagnosis it is determined that the agrarian enterprise employee's human "Aktual" can be diagnosed through various psycho-techniques and principles that fully describe the professional, personal, social, psychological, leadership and other qualities of the employee, while personnel potential can be predicted by statistical and expert methods, by economic-mathematical modeling, etc. and by manager subjective judgement.

Keywords: human resources, its essence, conceptualization; diagnosis; personnel management, agricultural company.

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The economic efficiency of milk production of Holstein cows (p. 124–127)

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In the period of acute economic crisis in Ukraine due to steep pricing increase of all types of goods, generally of dairy products, may affect the relevance in production and further development of dairy farms. One of the most important factors that ought to be faced in that business is cattle weight. However, cattle with a similar or even the same weight in the same technological conditions and feeding may get different milk quality. In this case, it is possible to achieve economic benefit by saving feed when forming herds of cows with optimal body weight. If it is about the economic indicators were positive, it should be analyzed the situation in Private Stock Company "Agro-Soyuz" which is situated in Dnepropetrovsk region. In that way, fifty chosen cows were analyzed by us. So, from a methodical point of view, we were followed by further objectives and decisions: the cattle was differentiated into three groups according to their live weight in conformity with the deviation on 0,67 σ – "relatively small","medium" and "relatively large". For each group the value of main features of milk production and milk ratio was calculated and the group with the highest milk yield coefficient was determined. An econometric analysis of the main features of productivity was conducted in the nest way: milk yield level, the content of fat and protein in milk, milk yield ratio, and draw conclusions about their interdependence. Also the economic benefit by saving feed was set by identifying the most effective group of cattle. The method of forming and the criterion for calculating the economic effects was offered by saving feed and identifying the most effective group of cattle. The economic effect of past 305 days of the second lactation was determined. On 01.01.2016 the effect of the provided operations consisted of 375 760 UAH. The proposed efficiency criterion can be used to forecast economic effectiveness while saving feed rations thanks to the proposed method of formation of the herd.

Keywords: body weight, hope, breast factor, the formation of the herd, the correlation, the criterion of effectiveness, economic impact, MS Excel spreadsheets.

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Mathematical aspects of agricultural enterprises design and planning under uncertainty (p. 128–133)

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Stochastic economic-mathematic model of agricultural enterprise, the optimization concept of agricultural production processes under uncertainty are suggested in this article. The obtained results of research can be used for development plans of agricultural enterprises under uncertainty for any natural and economic zone. Real calculations prove economic efficiency of developed planning concept. It is proved that technical and economic indexes of agricultural enterprise manufacture are largely dependent on the variability of weather and also on optimization criterion. Moreover the received technical and economic indexes of optimal plans make it possible to assess the economic risk of any index.
Analysis of options designed on the model confirms that the application of mathematical methods gives economic strictly substantiated information to plan agricultural production and is very efficient. As a result of this approach, modeling reduced economic risk and mitigated the negative impact of weather conditions, created the structure of production, which in the face of uncertainty would be best adapted to possible changes.
Collection and preparation of information required to build economic and mathematical model of production planning is a complicated and time-consuming process. The inability to obtain the necessary information regarding the research object or environment, unreliable information, and imperfect methods for calculation of technical and economic performance leading to lower quality plans. With the development of information technology there are new possibilities of obtaining, maintaining, using and analyzing information. The possibilities of modern information systems and technologies allow to generate significant amounts of specially organized collections of data complement and work with them.

Keywords: economic risk, stochastic economic-mathematical model, agro-industrial enterprises, strategic planning, tactical planning, optimality criterion, technical and economic indexes, commodity products, profit, profitability.

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Problems of formation development of the agricultural serving cooperatives in Ukraine (p. 134–139)

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Problems of formation and development of the agricultural servicing cooperatives are considered and analyzed. For today the state

only in words or paper cares for development of the agricultural servicing cooperatives (ASC) in Ukraine. One of cooperatives independently survive, and some - have development thanks to a financial support of the European projects or grants. It would be desirable that SOK in each region of Ukraine had full support and protection. Specifics of legal regulation of the relations arising in connection with activity of the agricultural servicing cooperatives are investigated. Advisory and other consultative bodies have to cooperate closely with the management of the agricultural servicing cooperatives, provide them professional knowledge about the purposes and the purpose of creation of cooperative, features of the taxation and business activities of consolidation, ways of its further development. It is also necessary to perform specialized training of specialists in this sphere in system of the higher education. Offers concerning development of the serving cooperation are this and functional cooperative forming is enhanced organizational and economic structure a lot of. At the same time, in the existing conditions when to banks it is unprofitable to credit small agricultural producers (most of which of farmers, individualists and personal subsidiary farms are), the cooperative system of financial and credit mutual assistance which belongs to peasants has to be a financial basis of their development and to become a source of providing rural population with the available credits and other financial services. Are determined a motivational component which will interest members of cooperative to deepen the knowledge of its activities and production organization.

Keywords: agricultural cooperation, the agricultural servicing cooperative, cooperative formations, tax laws, the rural territory, rural population.

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